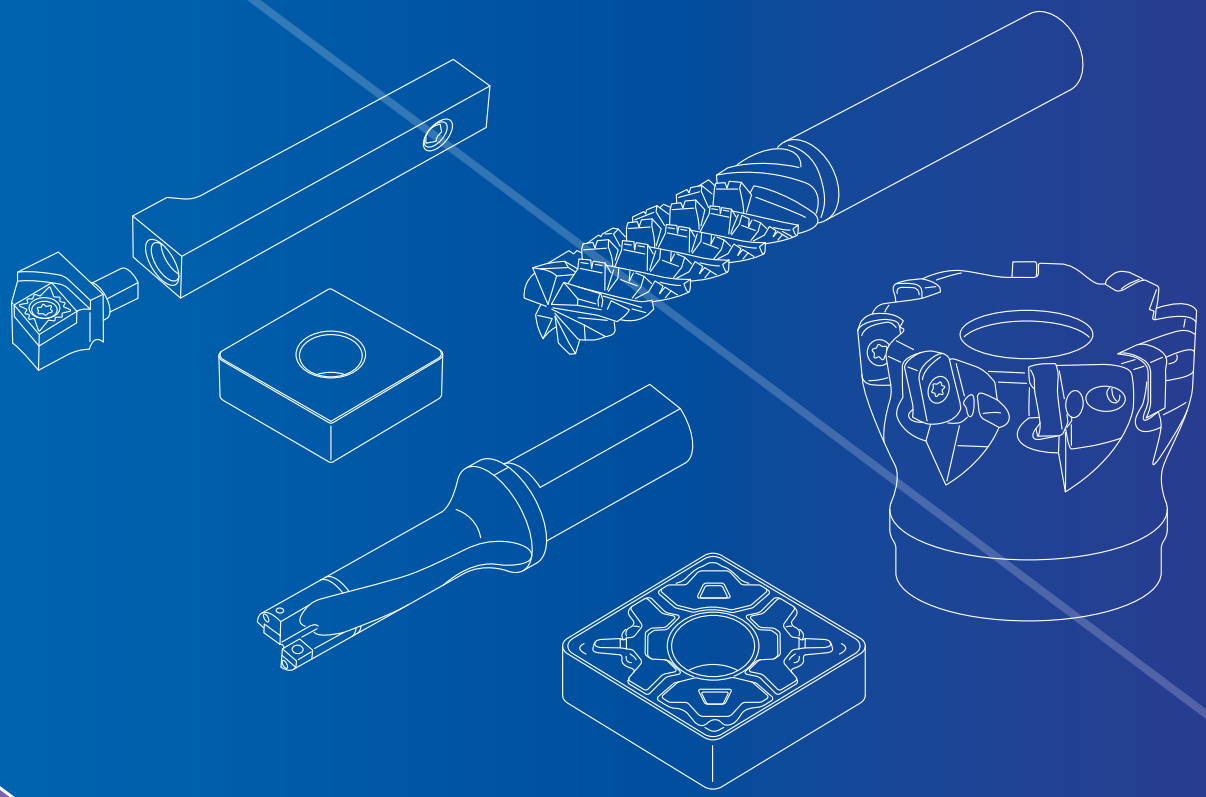
2026►2027

Cutting Tools Catalog

SUMITOMO

CARBIDE - CBN - DIAMOND

PERFORMANCE CUTTING TOOLS



A Insert Grades

B Indexable Inserts

C External Holders

D Small Lathe Tools

E Boring Bars

F Grooving Tools
Cut-off Tools
Threading Tools

G Tooling Systems
Cartridges

H Milling Cutters
Modular Tools
Milling Cutters
(Special Purpose)

I Endmills

J Drills
Reamers

K Carbide Materials
Brazed Tools

L SUMIBORON

SUMIDIA
SUMIDIA BINDERLESS
SUMICRYSTAL

P Parts
Technical Guidance
References

O Index

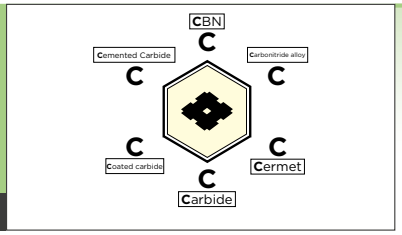
A.L.M.T.

SUMITOMO ELECTRIC GROUP

SUMITOMO ELECTRIC

CONTENTS

A Insert Grades
A1 to A36



- Grades for Turning
- Grades for Milling
- Grade / Chipbreaker Comparison Chart
- Chipbreaker and Grade Selection Guide for Turning
- Coated Carbides (CVD/PVD)
- Cermet
- Cemented Carbide
- CBN
- Polycrystalline Diamond
- Material Properties

B Indexable Inserts
B1 to B128



- Indexable Insert Identification Code
- Chipbreaker Selection
- Negative Inserts
- Positive Inserts
- Solid SUMIBORON
- Precautions when Using Wiper Inserts

C External Holders
C1 to C50



- SEC-External Tool Holder Series
- SEC-External Holder Cat. No. Identification Tables and Cutting Edge Position Dimensions
- SEC-External Holder Clamp Structure
- Negative Insert Applicable Holders
- Positive Insert Applicable Holders
- Internal Coolant Holders
- Tool Holders for Aluminum Wheel Turning
- Double Clamp Tool Holders

D Small Lathe Tools
D1 to D50



- Small Lathe Tools Selection Guide
- Small Lathe Tools SumiSmall
- Insert Grade Selection Guide
- Chipbreaker Selection
- External Holders
  (Refer to Chapter E for Boring Bars and Chapter F for Grooving / Cut-off / Threading Tools)

E Boring Bars
E1 to E86



- Selection Guide for Boring Bars by Tooling
- Boring Bars Identification Table
- Selection Guide for Boring Bars
- Boring Bar series
- Smart Damper™ for Internal Boring
- Twin Head Holders for Multi-functional Small Lathe Tools
- For Bottom Facing
- For Profiling
- For Through Boring
- For Stop Boring
- For Very Small Diameter / Small Diameter Turning
- Double Clamp Tool Holders

F Grooving/Cut-off Threading Tools
F1 to F144



- SEC-Grooving Tool Holder series Selection Guide
- Grooving Tools
  - SEC-Grooving Tool Holders GWC series
  - Chipbreaker Insert for GWC series
  - SEC-Grooving Tool Holders GND series
  - For External / Facing / Internal / Small Lathes
  - For Hardened Steel
- SEC-Cut-off Tool Holder series Selection Guide
- Cut-off Tools
  - SumiGrip Jr. / SumiGrip
  - SEC-Small Diameter Cut-off Tool Holders
  - SEC-Cut-off Tool Holders
- SEC-Threading Tool series Selection Guide
- Basics of Threads
- Threading Tools
  - SSTE type / SSTI type
  - For External/Internal Threading

G Tooling Systems/ Cartridges
G1 to G40



- General Features of Tooling Systems
- ICTM HSK Tooling System
- Polygonal Taper Shank SumiPolygon
- 2 Locating Faces Modular Taper Shank
- 2 Locating Faces HSK Tooling System
- Smart Damper™ for Milling
- IGETALLOY ABS System
- SEC-Micro Units
- SEC-Cartridge Units
- Boring Quills / Carbide Line Boring Bars

- Selection Guide for Milling Cutters
- Grades for Milling
- Cutter Identification Code
- Insert Identification Code
- Face Milling
- Shoulder Milling
- Multi-purpose Milling
- High-feed Milling
- Radius Milling
- Radius/3D Profiling
- Side Cutters / T-Slots Cutters
- Chamfering
- Non-Ferrous Metal Milling
- High-speed Cast Iron Milling
- Modular Tools
- SEC-Goal Mill series
- SEC-High-Feed Mill series
- IGETALLOY QC (Quick Change) System



H Milling Cutters / Modular Tools / Milling Cutters (Special Purpose) — H1 to H288

- Selection Guide
- Endmill Coatings
- Square / Radius Endmills (Coated)
- Ballnose Endmills (Coated)
- AURORA Coat Endmills
- SUMIDIA Coated Endmills
- Long Neck Endmills (Coated)
- Solid Carbide Endmills (Uncoated)
- Endmills for Non-Ferrous Metals
- Endmills for Exotic Alloys
- Endmills for CFRP
- BINDERLESS PCD Endmills for Cemented Carbide and Hard Brittle Materials
- CBN Endmills for Hardened Steel
- PCD Endmills for Non-Ferrous Metals



I Endmills — I1 to I140

- Drill Selection Guide
- Application Range of Major Drills
- Drill Coatings
- General-purpose
- For Flat Bottom Hole
- For Deep Hole Drilling
- For Very Small Hole Drilling
- For Deep Drilling / Pocketing
- SDP, SDM, SDPX
- For Medium to Large Diameter Drilling
- For Non-Ferrous Metal Drilling
- Drilling of CFRP
- For Drilling of Thin Plates
- Indexable Insert/Head type
- Solid/Indexable Insert type Reamers



J Drills / Reamers — J1 to J235

- Carbide Material and Brazed Tools



K Carbide Materials / Brazed Tools — K1 to K2

- SUMIBORON series
- Coated SUMIBORON series
- Guidance for SUMIBORON Grades
  - For Hardened Steel Machining
  - For Cast Iron Machining
  - For Sintered Component Machining
  - For Roll/Hard Facing Alloys/ Hardened Stainless Steel Machining
  - For Titanium Alloy/Heat-Resistant Alloy Machining
- Inserts
  - SUMIBORON Insert series
  - Stock Table for SUMIBORON Indexable Inserts
- Holders
  - SUMIBORON Tool Holder series
- Cutters / Endmills
  - SUMIBORON Cutter series
  - SUMIBORON Endmill series



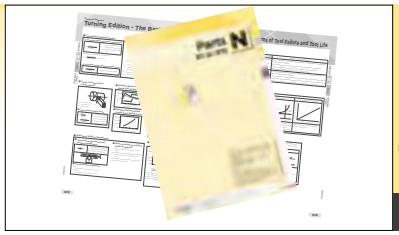
L SUMIBORON — L1 to L170

- SUMIDIA series
- SUMIDIA BINDERLESS series
- Inserts
  - SUMIDIA Insert Identification Code
  - Stock Table for SUMIDIA Indexable Inserts
  - Stock Table for SUMIDIA BINDERLESS Indexable Inserts
- Holders
  - SUMIDIA Tool Holder series
  - SUMIDIA BINDERLESS Boring Bar series
- Cutters / Endmills
  - SUMIDIA Cutter series
  - SUMIDIA Endmill series
- Drills
  - SUMIDIA Drill series
- SUMICRYSTAL



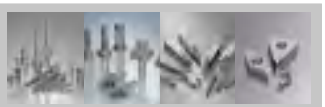
M SUMIDIA/ SUMIDIA BINDERLESS/ SUMICRYSTAL — M1 to M74

- Parts
  - Screws / Springs / Covers / Cassettes / Eccentric Shafts / Lever Pins / Clamp Plates
  - Chipbreakers / Shims / Supports
  - Locators / Retaining Rings / Hoses / Connectors / O-rings
  - Coolant Nozzles / C-rings / Washers / Pins / Nuts / Drawing Pins / Alignment Jigs / Sleeves / Stoppers
  - Wrenches / Anti-seizure Cream
- Technical Guidance
  - Turning Edition
  - Milling Edition
  - Endmilling Edition
  - Drilling Edition
  - SUMIBORON Edition
- References
  - SI Unit Conversion List
  - Metals Symbols Chart (Excerpt)
  - Steel and Non-Ferrous Metal Symbols Chart (Excerpt)
  - Hardness Scale
  - Fitting Tolerances
  - Standard of Tapers
  - Surface Roughness



N Parts / Technical Guidance / References — N1 to N50

- A.L.M.T. Diamond Cutting Tools
  - PCD Rotating Tools
  - Ultra-precision Cutting Tool UPC series
  - PCD Face Milling Cutters
  - New D Holder series



A.L.M.T. Diamond Cutting Tools — AL1 to AL14

O Index — O1 ~

Sumitomo Electric Group provides superior products and services through understanding the needs of our customers. Our Engineering Centers provide strong support for manufacturing by offering a variety of services tailored to the customer's needs.



Seminar

- Regular Seminar
- Individual Workshops

Training

Connect

- Tooling Proposals
- Technical Consultation

Technical Support

Education

- Proposing Optimal Tools and Cutting Conditions
- Troubleshooting
- Evaluation of Performance and Tool Life

Cutting Test

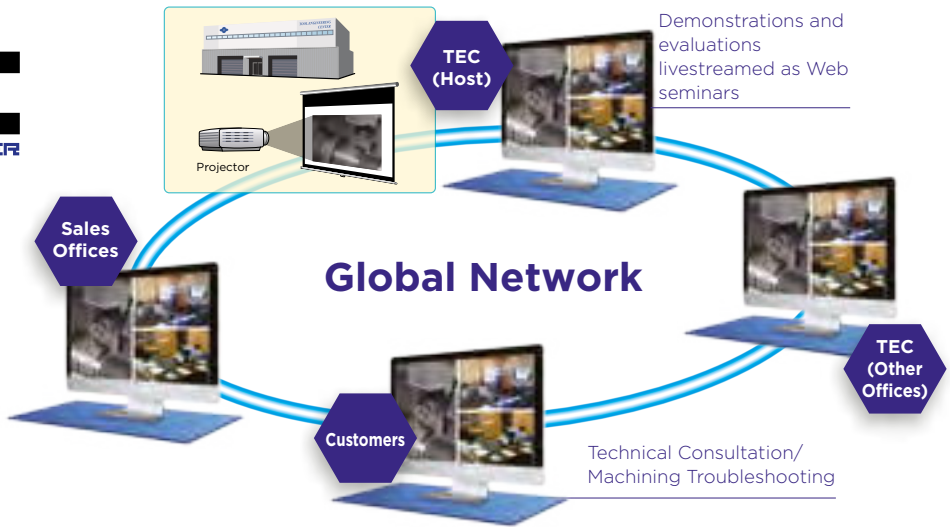


Access online from anywhere!

ONLINE TEC TOOL ENGINEERING CENTER

Online TEC

Live broadcasts of cutting demonstrations can be viewed in real time even at remote locations.
Evaluation requests can be made while watching actual demonstrations remotely.



Seminar

Experience seminars that deliver more: practical, interactive, and tailored to your needs!
With live demos, discussions, and hands-on machine exercises, we provide essential know-how for turning, drilling, milling, and hard machining. Gain strategies to boost productivity, leverage advanced cutting materials, and solve real challenges in expert workshops. Your seminar materials become a valuable reference—and we'll gladly integrate your specific requirements. Learning that makes an impact!
European Design & Engineering Center - Sumitomo Electric Hartmetall GmbH, Industriestr. 2, 73466 Lauchheim, Germany. Do not hesitate to contact us with any requests or questions: seminar@sumitomotool.com.





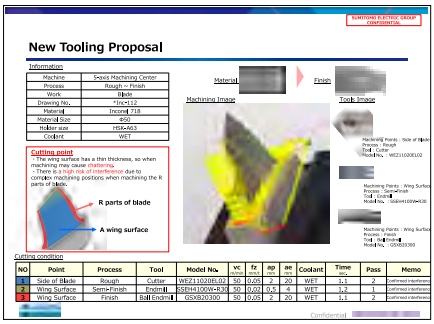
Technical Support

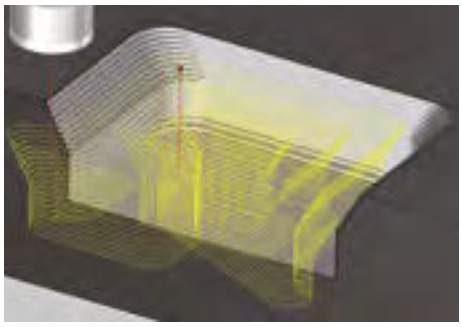
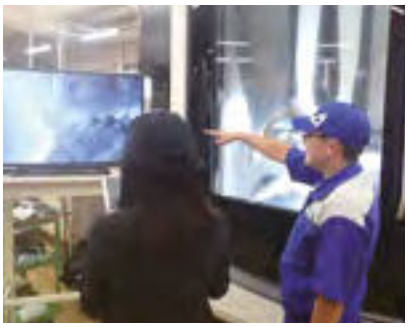
· Tooling Support Plus

We produce reports and proposals including required information on machining sequences, tools, and cutting conditions.

· Technical Consultation

Using CAM, our technical specialists provide support to resolve customers' machining problems.



Cutting Tests

· Proposing Optimal Tools and Cutting Conditions / Troubleshooting / Performance Evaluation

We make use of machine tools and measurement devices to visualize and identify the causes of machining issues.
We work with our customers to resolve their problems.

Sensing Tools

Supporting actual machining.
Analysing machining status.







Dimension symbols are compliant with ISO13399

The following table shows ISO13399-compliant dimension symbols. Contents corresponding to the sample symbols/notations are shown below. Tool shape diagrams and stock charts use the symbols and notation examples from the table below.

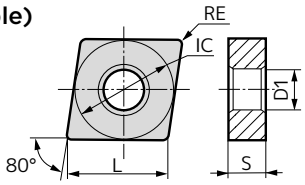
(1) Inserts (For Turning / For Milling)

Symbol	Description
AN	Clearance angle major
APMX	Depth of cut maximum
BS	Wiper edge length
CDX	Cutting depth maximum
CHW	Corner chamfer width
CW	Cutting width
D1	Fixing hole diameter
DMIN	Minimum bore diameter
IC	Inscribed circle diameter
INSL	Insert length
L	Cutting edge length
PDX	Profile distance ex
PDY	Profile distance ey
PNA	Profile included angle
RE	Corner radius
RER	Right side corner radius
REL	Left side corner radius
S	Insert thickness
W1	Insert width
WF	Functional width

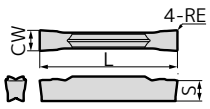
(2) Tool Holders For Turning

Symbol	Description
APMX	Depth of cut maximum
B	Shank width
BD	Body diameter
CDX	Cutting depth maximum
CRKS	Connection retention knob thread size
DC	Cutting diameter
DCB	Connection bore diameter
DCON	Connection diameter
DCSFMS	Contact surface diameter machine side
DMIN	Minimum bore diameter
DMM	Shank diameter
DN	Neck diameter
GAMF	Rake angle radial
GAMP	Rake angle axial
H	Shank height
HBH	Head bottom offset height
HBKL	Head back offset length
HBKW	Head back offset width
HBL	Head bottom offset length
HF	Functional height
KDP	Groove depth
KWW	Keyway width
LF	Functional length
LH	Head length
LHD	Head length
LS	Shank length
LSCX	Clamping length maximum
LU	Usable length
LUX	Usable length maximum
WF	Functional width

(Turning Insert Example)



(Grooving Insert Example)



(External Holder Example)

Fig 1

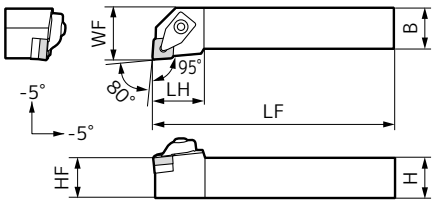
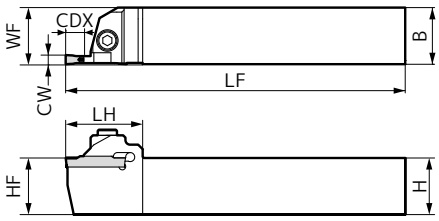


Figure shows right-handed (R) tool.

(Grooving Tool Holder Example)

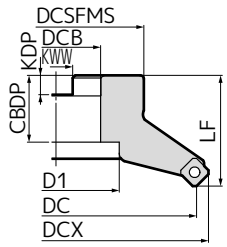


*1: The symbols in the above table are compliant with ISO13399 and do not include symbols unique to our company.
*2: As symbols under review are not included, these may change over time.

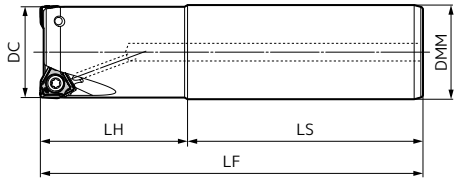
(3) Cutters / Indexable Endmills

Symbol	Description
APMX	Depth Of Cut Maximum
BD	Body Diameter
BDX	Body Diameter Maximum
CBDP	Connection Bore Depth
CRKS	Connection Retention Knob Thread Size
CW	Cutting Width
DBC	Connection Bore Diameter
DC	Cutting Diameter
DCB	Clamping Diameter, Nominal, on Workpiece Side
DCON	Connection Diameter
DCSFMS	Contact Surface Diameter Machine Side
DCX	Cutting Diameter Maximum
DMM	Shank Diameter
DN	Neck Diameter
H	Shank Height
KDP	Groove Depth
KWW	Keyway Width
LBX	Body Length Maximum
LF	Functional Length
	Head Length
	Shank Length
LH	Usable Length
LS	Overall Length
LU	Maximum Ramping Angle
OAL	Hub Thickness
RMPX	Maximum Ramping Angle
SNT	Face Keyway Width
THUB	Disc type Tool Thickness

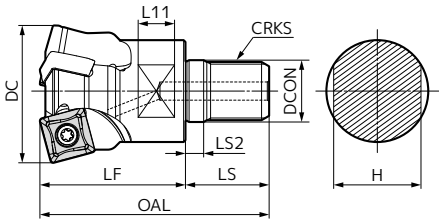
(Shell type Example)



(Shank type Example)



(Modular type Example)



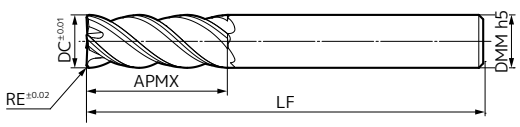
(4) Endmills

Symbol	Description
APMX	Depth Of Cut Maximum
CHW	Corner Chamfer Width
DC	Cutting Diameter
DMM	Shank Diameter
DN	Neck Diameter
LF	Functional Length
LFS	Functional Length Secondary
LU	Usable Length
RE	Corner Radius

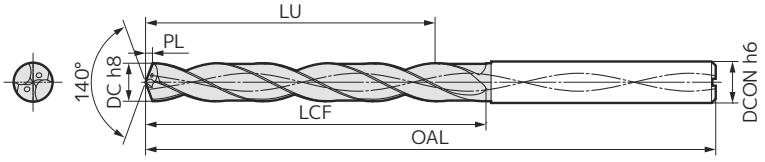
(5) Drills / Reamers

Symbol	Description
BD	Body Diameter
BDX	Body Diameter Maximum
CW	Cutting Width
DC	Cutting Diameter
DCB	Clamping Diameter, Nominal, on Workpiece Side
DCON	Connection Diameter
DCSFMS	Contact Surface Diameter Machine Side
DF	Flange Diameter
DMM	Shank Diameter
LBX	Body Length Maximum
LCF	Length Chip Flute
LF	Functional Length
LFA	A Dimension On Lf
LFS	Functional Length Secondary
LH	Head Length
LPR	Protruding Length
LS	Shank Length
LU	Usable Length
LUX	Usable Length Maximum
OAL	Overall Length
PL	Point Length
WBTHK	Web Thickness

(Endmill Example)



(Drill Example)



Notice

Thank you for using the Sumitomo Electric Cutting Tool General Catalogue (IGETALLOY/SUMIBORON/SUMIDIA Cutting Tools Catalogue).

- This catalogue presents the major items in the Sumitomo Cutting Tools product line. The catalogue is organised as follows:
  (1) Cutting Tool Grades
  (2) IGETALLOY Products
  (3) SUMIBORON / SUMIDIA Products

  ● In addition to this catalogue, there are other product brochures, including the "Tooling News," available upon request.

- This catalogue is current as of December 2025.

- Please note that as a result of our ongoing research, products may reflect enhancements in quality, performance, and specifications not listed in this catalogue.

- To order IGETALLOY/SUMIBORON/SUMIDIA products, contact your nearest Sumitomo Electric Hardmetal dealer or distributor. For inquiries or other requests, feel free to contact our nearest sales office.

Stock Markings

- The following symbols indicate whether products are in stock.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Meaning of Icons

Common

New : Featured for the first time in this catalogue.
Expansion : Item newly added to expand our selection of stock items.

Grade

ISO classification of work material:



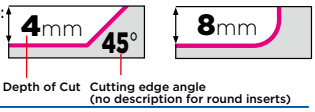
Holders

Example:



Cutters

Example:



Drills

Example:

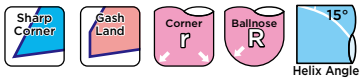


Endmills

Coating type (Example):



Shape:

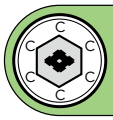


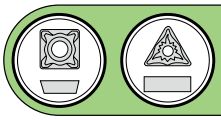
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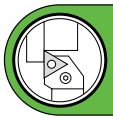


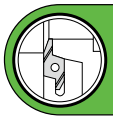
Application (Example):



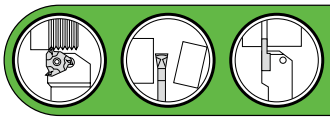

Insert Grades A

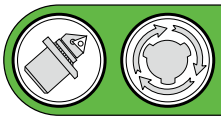

Indexable Inserts B

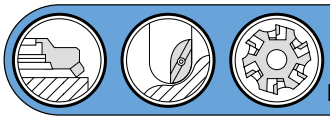

External Holders C

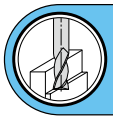

Small Lathe Tools D

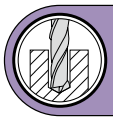

Boring Bars E

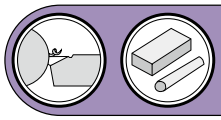

Grooving Tools
Cut-off Tools
Threading Tools F

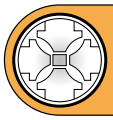

Tooling Systems
Cartridges G


Milling Cutters
Modular Tools
Milling Cutters (Special Purpose) H


Endmills I


Drills
Reamers J


Carbide Materials
Brazed Tools K


SUMIBORON L


SUMIDIA
SUMIDIA BINDERLESS
SUMICRYSTAL M

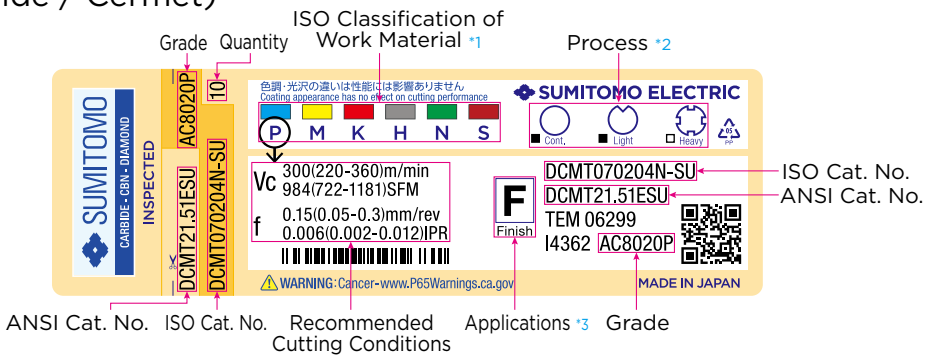

Parts
Technical Guidance
References N


Index O

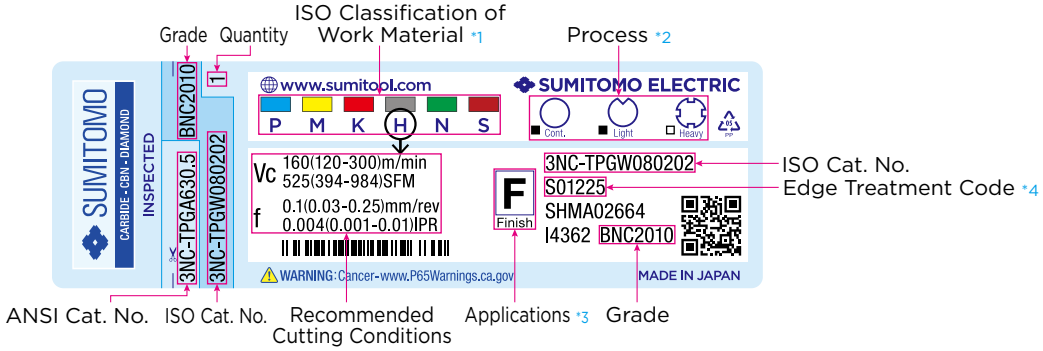
A.L.M.T.

Example of Product Labeling (1)

Insert (Carbide / Cermet)



Insert (SUMIBORON, SUMIDIA)



*1: ISO Classification of Work Material

- P: Steel
- M: Stainless Steel
- K: Cast Iron
- H: Hardened Steel
- N: Non-Ferrous Metal
- S: Exotic Alloy

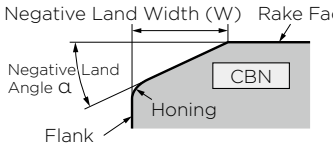
*2: Process

- Cont.: Continuous Cutting
- Light: General Cutting
- Heavy: Interrupted Cutting

*3: Applications

- F: Finishing
- M: Medium Cutting
- R: Roughing

*4: Edge Treatment Code



S 0 1 2 2 5

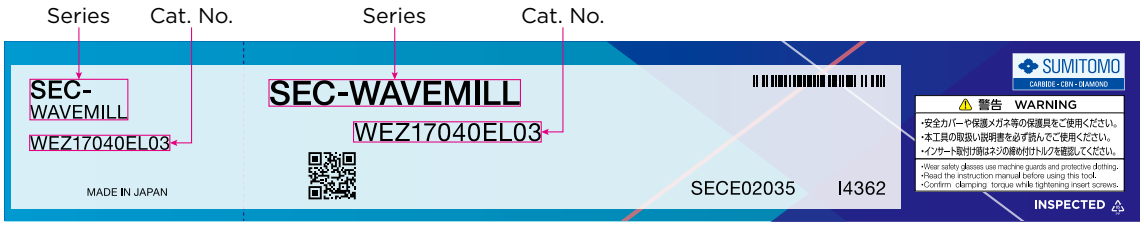
- S: Cutting Edge Shape (T: Negative Land, S: Negative Land + Honing)
- 01: Negative Land Width
- 225: Negative Land Angle

Example: S01225
→ 25°/0.12mm Negative Land with Honing

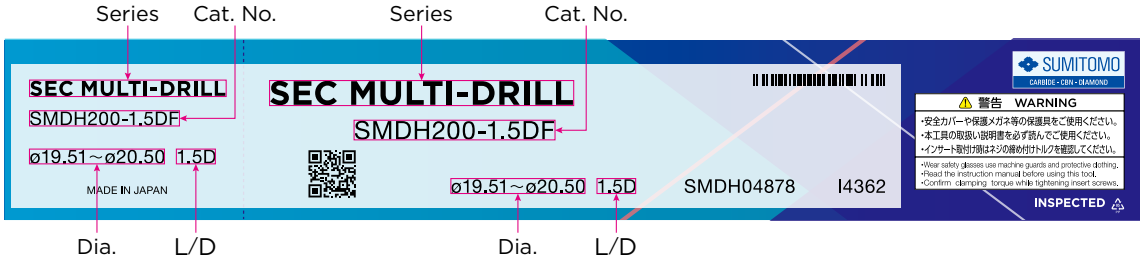
*Products with new and old labels may be mixed together.

Example of Product Labeling (2)

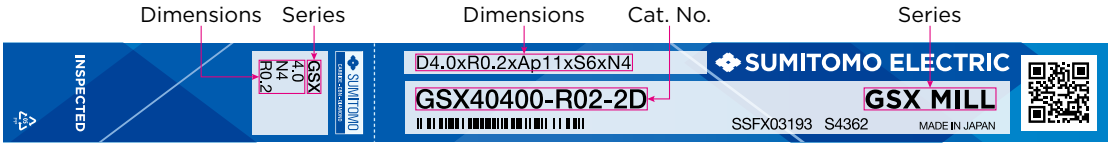
Cutters



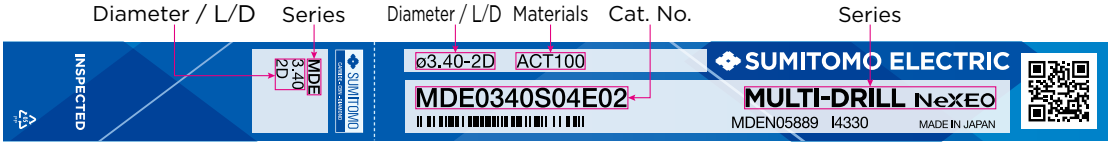
Drills



Endmills



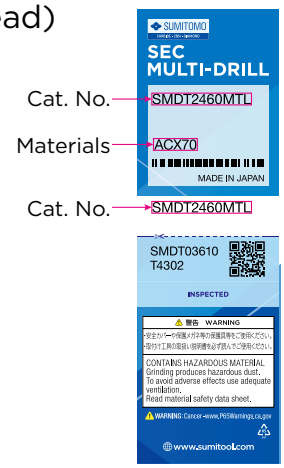
Drills



Cutters



Drill (Head)



*Both new and old label designs may be used.

SUMITOMO
CARBIDE - CBN - DIAMOND

Sharper Tools.
Smarter Savings.
In SUMITOMO Quality.

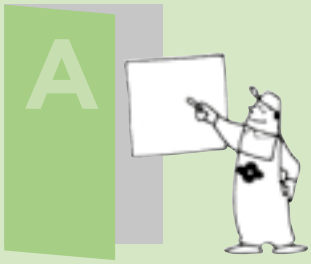


Extend the life of your cutting tools with our precision regrinding service—in SUMITOMO Quality. Reduce costs, maintain performance, and keep your production running at peak efficiency with the reliability you trust.

Sumitomo Electric Hartmetallfabrik GmbH
Industriestraße 2
73466 Lauchheim
+49 7363 87 0
SHF-Administration@sumitomotool.com

Insert Grades A

A1 to A36



Grades for Turning A2
Grades for Milling A3
Grade Comparison Chart
(CVD / PVD Coated Grades) A4
(Cermet, Cemented Carbide, Ceramic) A6
(CBN, Polycrystalline Diamond) A7
Chipbreaker Comparison Chart A8

Chipbreaker and Grade Selection Guide for Turning
For Steel Turning A10
For Stainless Steel Turning A14
For Cast Iron Turning A16
For Exotic Alloy Turning A18
For Hardened Steel Turning A20
For Non-Ferrous Metal Turning A22
For Small Lathes A24

Coated Carbide A26
Cermet A29
Cemented Carbide A30
CBN A32
Polycrystalline Diamond A34
Material Properties A36

Grades for Turning



P General Steel (Carbon Steel, Alloy Steel), Mild Steel

Wear Resistance ← → Fracture Resistance

	—	P01	P10	P20	P30	P40
Coated Carbide (A26)						
For Small Lathes (A24)						
Coated Cermet (A29)						
Cermet (A29)						
Uncoated CBN / Coated CBN (A32)						

- Coated Carbide: New AC8115P; AC8015P; AC8020P; AC8025P; AC8035P; New AC6135M; AC820P; AC830P
- For Small Lathes: AC1030U; AC530U
- Coated Cermet: T1500Z; T2500Z
- Cermet: T1000A; T1500A; T2500A

M Stainless Steel

Wear Resistance ← → Fracture Resistance

	—	M01	M10	M20	M30	M40
Coated Carbide (A26)						
For Small Lathes (A24)						
Cermet (A29)						
Uncoated CBN / Coated CBN (A32)						

- Coated Carbide: AC6020M; AC6030M; New AC6135M; New AC6145M; AC6040M; AC630M
- For Small Lathes: AC1030U; AC530U
- Cermet: T1000A; T1500A
- Uncoated CBN / Coated CBN: NB90S; BN7125; BNC8115; BNS8125; BN500; BNC500 (Dedicated for Ductile Cast Iron)

K Cast Iron

Wear Resistance ← → Fracture Resistance

	—	K01	K10	K20	K30
Coated Carbide (A26)					
For Small Lathes (A24)					
Cermet (A29)					
Uncoated CBN / Coated CBN (A32)					

- Coated Carbide: AC4010K; AC4015K; New AC4125K; AC420K; AC8025P
- For Small Lathes: AC1030U; AC530U
- Cermet: T1000A
- Uncoated CBN / Coated CBN: NB90S; BN7125; BNC8115; BNS8125; BN500; BNC500 (Dedicated for Ductile Cast Iron)

S Exotic Alloy

Wear Resistance ← → Fracture Resistance

	—	S01	S10	S20	S30
Coated Carbide (A26)					
Coated CBN (A32)					
Uncoated CBN (A32)					

- Coated Carbide: AC5005S; AC5015S; AC5025S; AC510U; AC520U; New AC9115T; New AC9125T
- Coated CBN: NB100C; BNC2105; BNC2115; BNC2125; New BNC2135; BNC2010; BNC300; BNC2020
- Uncoated CBN: NCB100; BN7125; BNS8125

H Hardened Steel

Wear Resistance ← → Fracture Resistance

	—	H01	H10	H20	H30
Coated Carbide (A26)					
Coated CBN (A32)					
Uncoated CBN (A32)					

- Coated Carbide: AC5005S; AC503U
- Coated CBN: NB100C; BNC2105; BNC2115; BNC2125; New BNC2135; BNC2010; BNC300; BNC2020
- Uncoated CBN: BN1000; BN2000; BN350

N Non-Ferrous Metal

Wear Resistance ← → Fracture Resistance

	—	N01	N10	N20	N30
Cemented Carbide (A30)					
Polycrystalline Diamond (A34)					

- Cemented Carbide: H1
- Polycrystalline Diamond: New DA1090; DA90; DA150; DA1000

Sintered Alloy

Wear Resistance ← → Fracture Resistance

	—	01	10	20	30
Coated Carbide (A26)					
Cermet (A29)					
Uncoated CBN (A32)					

- Coated Carbide: AC5005S
- Cermet: T1000A
- Uncoated CBN: BN7115; BN7125

Cemented Carbides and Hard Brittle Materials

Wear Resistance ← → Fracture Resistance

	—	01	10	20	30
Polycrystalline Diamond (A34)					

- Polycrystalline Diamond: NPD10; DA1090; DA90

: 1st Recommended Grade : 2nd Recommended Grade : CVD Coating, : PVD Coating, Blank: Uncoated

Grades for Milling



Work Material	P General Steel (Carbon Steel, Alloy Steel), Mild Steel	M Stainless Steel	K Cast Iron
Classification	Wear Resistance ← → Fracture Resistance — P01 P10 P20 P30 P40	Wear Resistance ← → Fracture Resistance — M01 M10 M20 M30 M40	Wear Resistance ← → Fracture Resistance — K01 K10 K20 K30
Coated Carbide A26	ACU2500 ACP2000 ACP3000 ACP100 ACP200 ACP300	ACU2500 New ACS1000 ACS2500 ACS3000 ACM100 ACM200 ACM300 ACK300 ACP300	ACU2500 ACK2000 ACK3000 ACK100 ACK200 ACK300
Cermet A29	T2500A T250A T4500A	T2500A T250A T4500A	
Cemented Carbide A30	A30N	A30N	G10E
Uncoated CBN Coated CBN A32			BN7125 BNC8115 BNS8125

Work Material	S Exotic Alloy	H Hardened Steel	N Non-Ferrous Metal
Classification	Wear Resistance ← → Fracture Resistance — S01 S10 S20 S30 S40	Wear Resistance ← → Fracture Resistance — H01 H10 H20 H30	Wear Resistance ← → Fracture Resistance — N01 N10 N20 N30
Coated Carbide A26	ACU2500 New ACS1000 ACS2500 ACS3000 ACM100 ACM200 ACM300 ACK300		DL1000 DL2000
Cemented Carbide A30	EH520		H1 H20
Uncoated CBN A32		BN2000 BN350	
Polycrystalline Diamond A34			DA1000

: 1st Recommended Grade : 2nd Recommended Grade : CVD Coating, : PVD Coating, Blank: Uncoated

Grade Comparison Chart

■ CVD Coated Grades

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	MOLDINO	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P05	**AC8115P AC8015P**	UE6105 MC6115	T9105 T9205	CA510 CA5505	HG8010		GC4405 GC4305 GC4205	KCP05 KCP05B	TP0501 TP0500	WKP01G WPP05G WPP05S WPP05	IC8005 IC8150 IC9015	TT8105 TT8105B
		P10	**AC8115P AC8020P AC8015P**	MC6115 MC6015 UE6110	T9105 T9115 T9205 T9215	CA115P CA510 CA515 CA5515	HG8010	CP7	GC4415 GC4305 GC4315 GC4215	KCP10 KCP10B	TP1501 TP1500	WPP10S WPP10 WPP10G	IC8150 IC8080 IC9015 IC9150 IC9080	TT8115 TT8115B
		P20	**AC8020P AC8025P**	MC6025 MC6125 UE6020	T9115 T9125 T9215 T9225	CA125P CA025P CA525	GM25 HG8025 GM8020	CP7	GC4425 GC4325 GC4225	KCP25 KCP25B KCP25C	TP2501 TP2500	WPP20S WPP20 WPP20G	IC8150 IC8250 IC9015 IC9150 IC9250	TT5100 TT8125 TT8125B
		P30	**AC8035P AC830P AC630M**	MC6135 MC6035 UE6035	T9125 T9135 T9235	CA025P CA525 CA530	GM25 GM8035		GC4325 GC4335 GC4235	KCP30 KCP30B	TP3501 TP3500	WPP30S WPP30 WPP30G	IC8080 IC9350	TT7100 TT8135 TT8135B
		P40	**AC8035P AC830P AC630M**	MC6135 MC6035	T9135 T9235 T6130	CA530 CA5535	GX30 GM8035		GC4335 GC4235 GC30	KCP40 KCP40B	TP3501 TP3500		IC9350	TT7100
	M Stainless Steel / S Exotic Alloy	M10 S10	**AC6020M**	MC7015 MV9005 US7020 US905	T6215 T9115 T9215	CA6515	HS9105		GC2015 GC1515 S05F S205	KCM15	TM1501		IC9250 IC520M	TT9215 TT3005
		M20 S20	**AC6020M AC6030M AC630M**	MC7025 US7020	T6120 T9125 T9215	CA6525	HG8025 HS9115		GC2025 GC1515	KCM25	TP2501 TM2000 TM2501		IC9025 IC9325 IC4050	TT5100 TT9225
		M30	**AC6030M AC630M**	MC7025 US735	T6130	CA6535	GM8035 GX30 GM25		GC2035 GC235	KCM35	TP3501 TM3501 TM4000		IC9350 IC4050 IC635	TT9235
		M40	**AC6030M AC630M**	US735					GC235 GC2035		TM4000			TT7800
	K Cast Iron	K05	**AC4010K**	MC5005 MC5105 UC5105	T505 T5105	CA310 CA4505 CA4010	HX3505	CP1	GC3205 GC3210	KCK05	TK0501 TK1001	WKP01G WKK10S WAK10	IC5005	TT7005 TT7505
		K10	**AC4010K AC4015K**	MC5015 MC5020 MC5115 UC5115	T515 T5105 T5115	CA315 CA4505 CA4515 CA4115	HX3305 HX3515 HG8010	CP1	GC3210	KCK15 KCK15B	TK1001 TK1501	WKK10S WKK20S WAK10 WAK20	IC5100 IC9150 IC4100	TT7015
		K20	**AC4015K AC420K AC4125K AC8025P**	MC5015 MC5125 UC5115 UE6110	T515 T5115 T5125	CA320 CA4515 CA4120 CA4115	HX3515 GM8020		GC3225	KCK15 KCK20 KCK15B	K2001	WKK20S WAK20 WAK30	IC9150 IC5100 IC4100	TT7015
For Milling	P Steel	P10	**ACP2000 ACP100**	MV1020					GC4220 GC4330	KCPM20	MP1501 MP1500 MP2501 MP2500	WKP25S WKP25 WKP35S WKP35G	IC5400	TT7800
		P20	**ACP2000 ACP100**	F7030 MC7020 MV1020 MV1030	T3225		GX2140		GC4330 GC4340	KSPM20 KCPK30	MP2501 MP2500 MP3501	WKP25S WKP25 WKP35S WKP35G	IC5500	TT7800
		P30	**ACP2000 ACP100**	MC7020 MV1020 MV1030	T3130 T3225		GX2160		GC4340	KCPK30 KCPM30	MP3501		IC5500	TT7800
	M Stainless Steel	M10	**ACM200**							KCPM20				
		M20	**ACM200**	F7030 MC7020 MV1020	T3130 T3225	CA6535	GX2160 AX2040		GC2040	KCPM20 KCPM30	MP2500 MP2501 MS2500	WMP45G WSM45X		TT7800 TT8525
		M30	**ACM200**	MV1030						KCPM20 KCPM30	MP2500 MP2501 T350M		IC5820	TT7800 TT8525
	K Cast Iron	K10	**ACK2000 ACK200**	MV1020 MC5020 MC520	T1215 T1115					KCK15	MP1501		IC5100	TT6800
		K20	**ACK2000 ACK200**	MC520 MV1020 MC5020 MV1030	T1215	CA420M	GX2120		GC3330 GC3220 GC3040	KC915M KC930M KC935M	MP1501 MK1500 MP3501	WAK15 WKP25S WKP35S WKP35G	IC5100 DT7150	TT6800

■ PVD Coated Grades

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	MOLDINO	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P10	**AC1030U ACZ150 AC5005S AC5015S AC5025S AC520U**	VP15TF MS6015	AH110 AH120 AH710 AH725	PR915 PR930 PR1005 PR1215 PR1225 PR1705		TM1 VM1 DT4 DM4	GC1525	KCU10 KC5510	TS2000	WSM10	IC507 IC807 IC907	
		P20	**AC1030U AC5025S AC520U AC530U**	VP15TF VP20RT	AH120 AH725 AH3135	PR1225 PR1425 PR1725	IP2000	TM1 TM4 VM1 QM3 DM4	GC15 GC1125 GC1525	KCU25 KC5525	TS2500	WSM20	IC507 IC807 IC907	TT9030
		P30	**AC1030U AC530U**	VP15TF VP20RT	AH120 AH725 SH730 AH730	PR1425 PR1525 PR1535	IP3000 CY250	QM3	GC1125				IC328 IC928	TT8020 TT9030
		P40	**AC1030U**			PR660	IP3000		GC4335 GC4235				IC830	TT8020

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ PVD Coated Grades (continued)

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	MOLDINO	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning		M10 S10	**AC5005S AC5015S AC5025S AC510U AC520U AC9115T**	MP9005 MP9015 VP15TF VP05RT VP10RT	AH110 AH710 AH725 AH905 AH6225 AH8005	PR005S PR015S PR915 PR1025 PR1215 PR1225 PR1305 PR1310 PR1705 PR115S	IP050S IP100S JP9105 JP9115	TM1 VM1 DT4 DM4 ZM3 ST4	H5D6 GC1105 GC1115 GC1205	KCS10 KCS10B KC5510 KCU10 KCU10B KC5010	TH1000 TS2000	WSM01 WSM10 WSM10S WSM13G WSM23G	IC804 IC807 IC808 IC907 IC908	TT3005 TT3010 TT5080 TT8010
	M Stainless Steel S Exotic Alloy	M20 S20	**AC5015S AC5025S AC1030U AC520U AC6135M AC9125T**	MP9015 MP9025 VP15TF VP20RT VP20MF UP20M MS7025 MS9025	AH630 AH120 AH725 AH6225 AH8015	PR015S PR915 PR930 PR1025 PR1125 PR1215 PR1225 PR1325 PR1725 PR120S	IP100S HS9115	DT4 DM4 ZM3 QM3 TM4 ST4 NTK650	GC15 GC1115 GC1125 GC1210	KC5525 KCU25 KC5025 KC5010 KCU25B	TS2500	WSM20 WSM20S WSM33G	IC330 IC806 IC808 IC830 IC908 IC928	TT3020 TT8010 TT8020 TT9030
		M30	**AC5025S AC6040M AC1030U AC520U AC530U AC6135M**	MP7035 VP15TF VP20MF MS7025 MS9025	AH630 AH645 AH725 AH6235	PR1125 PR1525 PR1535		QM3 TM4 DT4 DM4	GC1125	KCM25S KCS25S		WSM30 WSM30S WSM33G WSM43G	IC328 IC330 IC830 IC840 IC882	TT8020
		M40	**AC6040M AC1030U AC530U AC6145M**	MP7035 VP15TF MS6015 MS7025	AH645 AH6235	PR1125 PR1535	GX30						IC830 IC928	TT8020
	K Cast Iron	K10	**AC1030U AC510U ACZ150 AC5015S**	VP10RT	AH110 AH120	PR905	HX3305 HG3305 HG3315 HX3515 HG8010 TH315 ATH10E		GC15				IC810	TT9030
		K20	**AC1030U AC510U ACZ150 AC5015S AC5025S**	VP10RT VP20RT VP15TF	AH120	PR905		DM4 QM3						TT9030
		K30	**AC1030U AC530U**	VP15TF VP20RT	AH110 AH120 AH725								IC830 IC908 IC910 IC928	
For Milling	P Steel	P10	**ACU2500 ACP200**	VP15TF MP6120	AH110 AH120 AH710 AH725 AH7020	PR1225 PR1825	PN215 PN15M JP4105 JP4115	DT4 DM4	GC1010 GC1230	KC505M KC510M KC515M KCKP10	F25M	WXM15 WHH15X		TT2510 TT7080
		P20	**ACP3000 ACU2500 ACP200 ACP300**	VP15TF MP6120	AH9030 AH120 AH725 AH3225 AH7020	PR1825 PR1525 PR1225 PR1230 PR1835	JP4120 CY150 CY9020 JS4045	TM4 DT4 DM4	GC1010 GC1025 GC1130 GC1230	KC522M KC525M KCSM30	MP3000 F30M F32M F40M	WXM15 WHH15X	IC808 IC810 IC908 IC910	TT7080 TT9030 TT9080
		P30	**ACP3000 ACU2500 ACP200 ACP300**	VP15TF VP30RT MP6130	AH3135 AH3225 AH120 AH130 AH140 AH725 AH7030	PR1835 PR1525 PR1230	JS4045 JS4060 CY25 CY250 CY250V PTH30E	DM4 TM4 ZM3	GC1030 GC1130 GC2030	KC725M KC735M KC525M KC530M KCPM40 KCSM30	F40M T60M MP3000	WSP45 WSP45G WSP45S	IC328 IC330 IC830 IC928	TT8080 TT8020 TT8525B
		P40	**ACP3000 ACU2500 ACP300**	VP30RT	AH140		JS4060 PTH40H			KC725M KC735M KCPM40		WSP45 WSP45G WSP45S	IC830 IC845 IC928	TT8020 TT8080 TT8525B
		M10	**ACS1000 ACU2500 ACM100**	MP9120 VP15TF	AH110 AH120 AH330 AH725 AH8005 AH8015	PR1210 PR1225	CY9020 JP4120 PN08M PN15M PN208 PN215	DT4 DM4 ZM3	GC1010 GC1025 GC1030 GC1130	KC515M SP4019 SP6519			IC808 IC908	
	M Stainless Steel S Exotic Alloy	M20	**ACS1000 ACS2500 ACU2500**	MP7030 MP7130 MP9030 MP9120 MP9130 UP20M VP15TF VP20RT	AH120 AH130 AH330 AH725 AH3225 AH8015	PR1210 PR1225 PR1525 PR830 PR1835	JP4120 CY150 JS1025	DT4 DM4 ZM3	S30T	KC522M KC525M SP4019 SP6519 X700	F25M F30M F32M MP3000 MS2050 MM4500	WSM35 WSM35S WSM35G	IC328 IC330 IC808 IC830 IC840 IC908 IC928	TT9080 TT9030
		M30	**ACS2500 ACS3000 ACM300**	MP7030 MP7130 MP7140 MP9030 MP9130 MP9140 UP20M VP15TF VP20RT	AH130 AH140 AH330 AH725 AH3135	PR1525 PR1535 PR830 PR1835	JM4160 PTH30E JS1025	DT4 DM4 ZM3	GC2030 GC1040 S30T	KC522M KC525M KC530M KC725M KC735M KCPM40 KCSM30 KCSM40 X700	F30M F32M F40M MP2050 MS2050	WSM35 WSM35S WSM35G WSP45 WSP45G WSP45S	IC328 IC330 IC830 IC840 IC882 IC928	TT8020 TT8080 TT9080
		M40	**ACS3000 ACM300**	MP7140 MP9140 VP30RT	AH140	PR1535 PR1835	JM4160 PTH40H			KC725M KCPM40 KCSM40		WSP45 WSP45G WSP45S	IC328 IC330 IC882	TT8020 TT8080
	K Cast Iron	K05	**ACK3000**	MP8010	AH110		TH308 ATH80D		GC1010	KCKP10	MH1000			
		K10	**ACK3000 ACU2500**	MP8010	AH110 AH120 AH7020	PR1810 PR1210	ATH10E TH315 CY100H		GC1010 GC1020	KC514M KC515M KC520M KCK20 KCK20B	MH1000	WXM15 WHH15X	IC810 IC910	TT7515
		K20	**ACK3000 ACU2500 ACK300**	VP15TF VP20RT	AH120 AH7020 AH9030	PR1810 PR1210 PR1510	JP4120 PTH13S CY100H CY9020	DM4	GC1020	KC514M KC524M KCK20 KCK20B KCKP30	MK2050 MK3000	WKK25S WKK25G	IC808 IC810 IC908 IC910	TT6080 TT7515
		K30	**ACK3000 ACU2500 ACK300**	VP15TF VP20RT	AH120 AH7030	PR1810 PR1510 PR1210	JS4045 CY150 CY250		GC1020	KC520M KC522M KC524M KC725M	MK2050		IC810 IC910	TT6080

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ Cermet

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	MOLDINO	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P10	**T1500Z* T1000A T1500A**	AP25N* VP25N* NX2525	GT720* GT9530* AT9535* J9530* NS520	TN60 TN6020 TN610 TN620 PV710* PV720* CCX*	CZ25* CH550	CT5015	KT125 HTX KT1120			IC20N IC30N IC520N*	PV3030* PV3010* CT3000
		P20	**T1500Z* T2500Z* T1500A T2500A**	AP25N* NX2525 NX3035 MP3025*	NS9530 GT9530* AT9530* J9530*	TN90 TN620 TN6020 PV720* CCX*	CZ25* CH550	GC1525*	KT6215 KT315* KT175 KT5020*	CM CMP C15M TP1020		IC20N IC30N IC520N* IC530N*	CT7000
		P30	**T2500Z* T2500A**	NX2525 MP3025* VP45N*	NS9530 GT9530* AT9530*	TN620 PV720* PV730*							
	K Cast Iron	K10	**T1000A**	AP25N* VP25N* NX2525	GT720* GT9530* NS9530 J9530* NS520	TN610 PV7005* PV710* CCX*	CH550	CT5015	KT125 HTX				PV3030* CT3000
For Milling	P Steel	P30	**T2500A T250A T4500A**	NX2525 MX3030 NX4545 VP45N*	NS540 NS740	TN60 TN90 TN100M TN620M	MZ1000* MZ2000* MZ3000* CH7030 CH7035	CT530	KT530M* KTPK20*	C15M		IC30N	

* mark indicates coated cermet

■ Cemented Carbide

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	MOLDINO	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning / For Milling	P Steel	P10	**ST10P**		TH10		WS10		S1P					
		P20	**ST20E**	UTi20T	KS20		EX35		SMA	K125M			IC07 IC50M	UF10
		P30	**A30 A30N**	UTi20T	KS15F UX30	PW30	EX35 EX40		SM30				IC54 IC28	P30
		P40	**ST40E**		TX40		EX45		S6				IC54 IC28	
	M Stainless Steel	M10	**EH510**		TH10		EX35 WA10B	KM1	H10A	KU10,K313 K68,KYSM10	890		IC07,IC20 IC08	
		M20	**EH520**	UTi20T	KS20		EX35		H13A	K313 K68	HX 883		IC07,IC20 IC08	UF10
		M30	**A30 A30N**	UTi20T	UX30				H10F SM30				IC28	
	K Cast Iron	K01	**H2 H1**	HTi05T	KS05F		WH01 WH05			KU10,K313 K68,K115M			IS8	
		K10	**H1 EH510**	HTi10	TH10	KW10 GW15	WH10	KM1	H13A	KU10,K313 K68,K115M K110M KY3500	890		IC20,IS8	K10
		K20	**G10E,H10E EH520**	UTi20T	KS15F KS20	GW25	WH20	KM3	H13A	KMF KY3500 KYHS10	890 883 HX		IC20 IS8	
		K30	**G10E,H10E**	UTi20T			WH30			KY3500	883			
	S Exotic Alloy	S10 S20	**EH510 EH520**	RT9005 RT9010 MT9015 TF15	TH10 KS05F KS15F KS20	SW05,SW10 SW25,KW10 GW15	WH10		H10A H10F H13A	KU10,K313 K68,KMF K110M,KYHS10 K1025	HX H25		IC20,IC07 IC08,IC28	K10
	Micro-fine Grained Carbide	Z01	**F0**	SF10,MF07 MF10,TBA16A	F,MD1508 MD08F		NM08						IC07	UF1A
		Z10	**AFU XF1**	HTi10 MF20	M,MD10 MD05F,MD07F	FW30	NM15		6UF,8UF PN90,H6FF		890		IC07	UF1A
		Z20	**AF0 AF1**	TF15 MF30	EM10,MD20 MD15		BRM20 EF20N		12UF		890 883		IC08	UF10
		Z30	**A1**		UM		NM25		N6F,H10F		883		IC08	

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ CBN

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	NTK	Chukyo	Sandvik	Kennametal	SECO Tools	ISCAR
For Turning / For Milling	K Cast Iron	K01	**NCB100 BNC500*** **BN7125 BN500**	BC5110 MB710 MB5015	BX910 BX930 BX870	KBN475 KBN60M	B30 B16		CB50 CB7525	KB1340		IB50 IB85
		K10	**BN7125 BN500**	MB710,MB730 MB5015,MB4020	BX470,BX480 BX950	KBN60M KBN900	B23 B16	HB55,HB56 HB569 HB580,HB57	CB7925		CBN200,CBN300 CBN300P,CBN400C	IB55 IB90
		K20	**BN7125 BNC8115 BNS8125**	MB730,MB4020 MB4120,MBS140	BX470,BX480 BXC90,BX90S	KBN900		HB56,HB569 HB580,HB57				
		K30	**BNC8115 BNS8125**	MB4120,MBS140 BC5030	BXC90 BX90S			HB57		KB5630	CBN500	
	S Exotic Alloy	S01	**NCB100 BN7125**	MB730 MB4020 MB4120	BX940,BX950 BX470,BX480 M714B			HB55 HB580 HB52		KB5630 KB1340		IB85 IB05S IB10S
	H Hardened Steel	H01	**BNC2105 BNC2010 BNC2115 BN1000 BN2000 BNX10**	BC8105 BC8110 BC8210 MB8110 MB8210	BXA10 BXM10 BX310	KBN05M KBN10M KBN010 KBN510	B5K B52	HB55 HB550 HB580 HB590	CB7105	KBH10B KB5610	CH0550 CBN10 CBN100 CBN060K	IB05H IB50 IB10HC
		H10	**BNC2010 BNC2020 BNC2115 BNC2125 BN2000**	BC8110 BC8210 BC8120 BC8220 MB8110 MB8210 MB8025	BXA10 BXM10 BX330 BX530	KBN05M KBN010 KBN25M KBN020 KBN525	B5K B6K B52 B36	HB55 HB59 HB550 HB580 HB52	CB7015 CB7115 CB20	KBH20B KBH20 KBH10B KB5610 KB5625	CBN10 CBN100 CBN150 CBN060K CBN160C	IB10H IB55 IB25HA
		H20	**BNC2020 BNC2125 BNX20**	BC8020 BC8120 BC8220 MB8025 MB8120 MB8220	BXA20 BXA40 BXM20 BX360	KBN25M KBN020 KBN900	B36 B40 B6K	HB57,HB59 HB590 HB580	CB7025 CB7125 CB50	KBH20B KBH20 KB5625 KB5630	CH2540 CBN150 CBN160C	IB20H,IB20HC IB25H,IB25HC
		H30	**BNC300 BNC2135 BN350**	BC8130 MB8130	BXA30 BXC50 BX380 BR35F	KBN020 KBN35M KBN900	B40	HB57 HB580	CB7135 CB7525	KB5630	CH3515	IB90

* mark: For ductile cast iron cutting

■ Polycrystalline Diamond

Application	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	NTK	Chukyo	Sandvik	Kennametal	SECO Tools	ISCAR
For Turning / For Milling	N Non-Ferrous Metal	N01	**DA1000 DA90 DA1090 NPD10**	MD205	DA160 DX180 DX200	KPD001	PD1		CD05 CD10	KD1400		ID5
		N10	**DA1000 DA150**	MD205 MD220	DX140	KPD001 KPD010 KPD230	PD2	HD100 HD30 HD60	CD1810	KD1400 KD1425	PCD05 PCD10	ID5
		N20	**DA1000 DA2200**	MD220 MD230	DX120 DX110	KPD230 KPD250	PD2	HD100 HD30 HD50		KD1400 KD1425	PCD05 PCD20	
		N30	**DA1000 DA2200**	MD2030 MD230	DX110			HD30,HD50 HD700 HD100		KD1400	PCD05 PCD30 PCD30M	

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Chipbreaker Comparison Chart

■ Negative type Inserts

Work Material	Application	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi-Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
P Steel	Fine Cutting	**FA**	FH,FP	TF	GP			QF	FF	FF1		SF	FLP, FA,FS
		FL,FB	FS,FY	NS,ZF	XP,XF,VF, VC,SK	FE	WM			FF2	FP5		FA,FX
	Finishing	**LU,FE**	SA,SY	NM	PP,XQ,CQ	BE	ZF1	LC	FN		NF3		FG,FLP
		SU	SH	TS,TSF	HQ	CE,B,BH	UL,WV	XF,MF	CT	MF2		NF	FC
	Finishing (Wiper Edge)	**LUW**		AFW,FW	WP,WF			WL,WP		W-FF2	FW5		
		SEW	SW	ASW,SW	WQ			WF,WMX	FW	W-MF2	NF	WF	WS
	Finishing to Light Cutting	**SE,SX**	LP	AS,ZM	CJ,XS,VC	AB,CT	ZW1,WR	PF,KF	LF,33		MP3,NS6	F3P,TF	MLP,FC,FP
	Medium Cutting	**GU(UG)**	MA,MV	TM,TQ	HS,PS, PMG	AH	ZP	XM,QM, PMC	P,MG, MV	M3	MU5	GN	MGP, MC
		GE,UX	MH,MP	DM,AM	PQ,GS, PT,PG	AE,AY	Z5	PM,SM, KM,HM	MN, MP1		MP5,NM4, NM6	RF,LF	MGP, MT
	Medium Cutting (Wiper Edge)	**GUW**	MW		WE			WM	MW, RW	W-M3	NM, NW5	WG	WT
	Roughing	**MU,ME**	RP,GH	TH,S	HT,GT, PH	RE,AR	G	PR,XMR, KR	RP	M5,MR7	RP5,NM9, RP7	M3P, NR	RT, RGP
		MX	HAS,MT	CH					RN	MR6			RT
	Heavy Cutting	**HG**	HZ,HX, HL	THS, TRS	PX, Standard	TE,UE		QR	RM,MR	R4,R5, M6	NR6,NRF, HU3	NM	RX,RH
		HP	HH,HXD, HR	65				HR,SR	RH	R7,MR7	NR8	TNM	RX,RH
		HU,HW	HV			H					HU7		HT,HD,HY
		HF	HCS	TUS		HX,HE		MR		RR9	NRR	R3P	HZ
M Stainless Steel	Finishing	**SU,EF**	LM,SH	SS	MQ,GU	SE,MP, AB	ZF1	MF	FP,FS, LF	MF2	NF4, FM5	F3M	EA,SF
	Light to Medium Cutting	**EX,EG**	GM,MS	SF,SA	MS,MU	PV	ZP	23	MS	MF1,M1	MM5	TF,VL	EM,ML
	Medium Cutting	**GU,EH**	MM	SM,SDM		DE		MM,MMC, SMR	MP	MF3,M3	NM4,MS3, MU5	M3M, PP	EM,ML
	Roughing	**HM**	ES,1M, 2M,HL	S		AE			UP	MF4, MF5	NR4, RM5		VF
		EM,MU	RM,GH, HM	SH	TK			MR,MRR	RP	M5,MR3, MR4	HU5	MR,R3M, M4MW	ET
K Cast Iron	Light Cutting	**UZ**	LK,MA, MK	CM,CF	Standard, C, KQ	V,VA		KF	UN	M4	NM5	GN	MT
	Medium Cutting	**GZ(UX)**	GK,RK, GH	Standard, CH, 33	ZS,GC, KG,KH	Y,RE		KM,KR, KRR		MR7	RK5,RK7, MK5,HU7		RT,KT, MG
N Non-Ferrous Metal	Finishing	**AX**		P	AH				MS		MN3	12	ML
S Exotic Alloy	Finishing	**EF**	LS,FJ	HRF				SF,SGF			NFT,FM5	F3S	EA,SF
	Medium Cutting	**EG,EX**	MS,MJ	HMM,SA, HRM	SQ	VI		SM, SMC		M1	NMT,NMS, MM5,RK5	VL	MGS, MP
	Roughing	**MU**	RS,GJ		SG,SX			SMR		MR3, MR4	NRT,HU5, NRS,RM5		ET
H Hardened Steel	Finishing	**GH, FV***		HP*									
	Light Cutting	**LV***	BF*	HF*	HH*, HL*							HF*	
	Carburised Layer Removal	**SV***	BM* BR*	HM* HS*	HD*							HM*	

( ) indicates a discontinued item.* mark indicates CBN/PCD tool breaker

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Chipbreaker Comparison Chart

■ Positive type Inserts

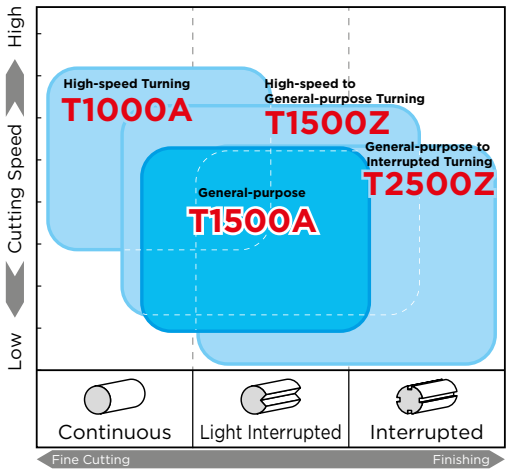
Work Material	Application	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi-Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
P Steel	Fine Cutting / Finishing	**FF**		01	CF		AMX,FG						SL
	Finishing	**FC**	FJ,AM	JRP,JTS	GF,VF, P,PF		AM3, AZ7	UM		GT-F1	FL2		SA,SM
		FB,LU (FP,FK)	FP,FM, FV,SQ	PSF,PF,23, SS,JSS	GP,XP,PP, MQ,DP	JQ,MP	ZR	PF,UF, MF,XF	11,UF,MF, KF,XF	FF1	FP4,FM4	PF	FA,FX
	Finishing (Wiper Edge)	**SDW**						WK,WM	MW	W-F2		WG	
		LUW	SW		WP			WF	FW	W-F1	FW4	WF	WT
	Finishing to Light Cutting	**SI, SL**	SMG	JS,CM, PSS,JP	CK,SKS		YL,1L, TMV				FM2, FP2	F1M-20P, F1M-12P	SA,SM
		LB	LP,LM		XQ		AM2		LF				
	Light to Medium Cutting	**SC**			GQ, SK, Standard		AF1,CL		MP	MF2			
		SU,GU (SK,SF)	SV,MQ	PS,TSF, TM	HQ,XQ, GK	JE	AZ8,AM2, AM5	PM,UM, XM		F1	MP4,MM4, FP6,PM5	SM,14	FG,PC, SH
	Medium Cutting	**MU**	MP,MM, MK,MV	PM				PR,UR, MMC,MPC, XR	MF	F2,M3,M5	RP4,RM4, MP6	19	MT,PMR, SH
M Stainless Steel	Fine Cutting / Finishing	**FF**											SL
	Finishing	**FC**	FM,FV	PSF,PF,SS, JSS,JP			AZ7	MF,XF	11,UF	FF1	FL2, FM6	PF	FA,FX, SM
	Finishing to Light Cutting	**SI, SL**	SMG	JS,JP			YL,1L, CL,TMV	UF	LF,FP		FM2, FP2	F1M-20P, F1M-12P	SM
		LB	LM		MQ					F1			
	Light to Medium Cutting	**SU,GU**	SV		HQ		AM5	MM	MP	MF2	FM4,MM4, PS5	SM	PC,FG
	Medium Cutting	**MU**	MM, MV, Blank	PM				UM,MR, XR,UR	MF	F2,M3, M5	PM5, RM4		MT,PMR, SH
K Cast Iron	Fine Cutting / Finishing	**FF**		CF									SL
	Finishing	**FC**						KF,XF	11,UF		FK6,FL2, FP2		SM
	Light to Medium Cutting	**MU**	MK				AF1,FM	KM,UM, XR	FP,LF, MF,MP	M5	FP2,MK4, RK4		MT
N Non-Ferrous Metal	Finishing	**AG,AW,AY**	AZ	AL,PP	AH,AP			AL	HP	AL	PM2,MN2	AS,AF	FL
	Finishing to Light Cutting	**LD*, GD***											SA
S Exotic Alloy	Fine Cutting / Finishing	**FF**											SL
	Finishing	**FC, SI, SL**	FS	PSS	PP,MQ			WF,MF			FM4, FM2	F1M-20P, F1M-12P	SM,SH, FG
	Light to Medium Cutting	**SU,GU**	LS,MS	PS,PM	HQ,GK			UM,PM		MF2,R2, R3	FV4,MV4, MM4		SH,PC
H Hardened Steel	Finishing	**FV***		HP*									
	Light Cutting	**LV***	BF*										

( ) indicates a discontinued item.* mark indicates CBN/PCD tool breaker

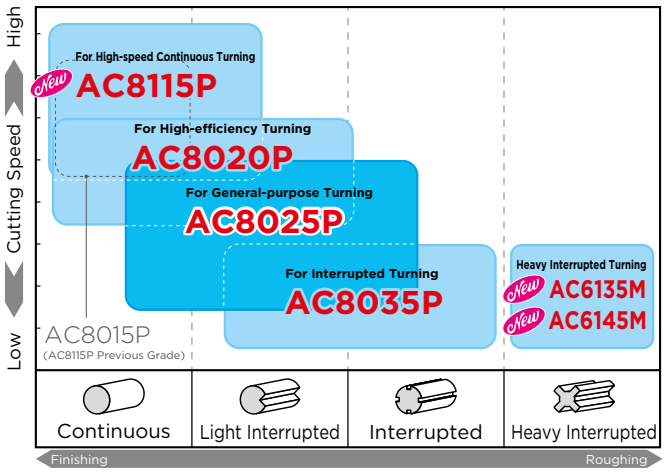
Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grades

● Fine Cutting to Finishing (Cermet)

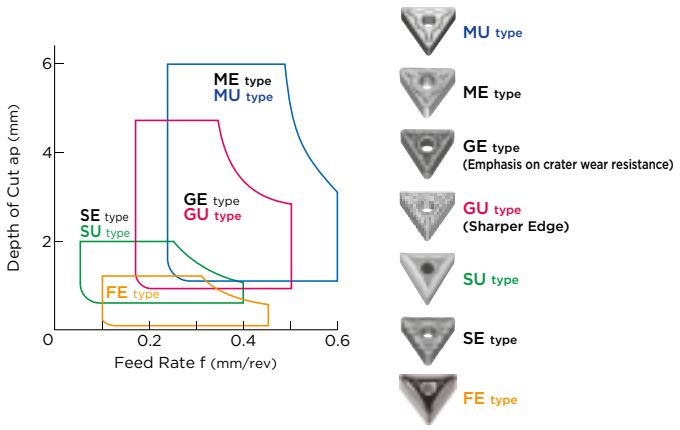


● Finishing to Roughing (Coated Carbide)

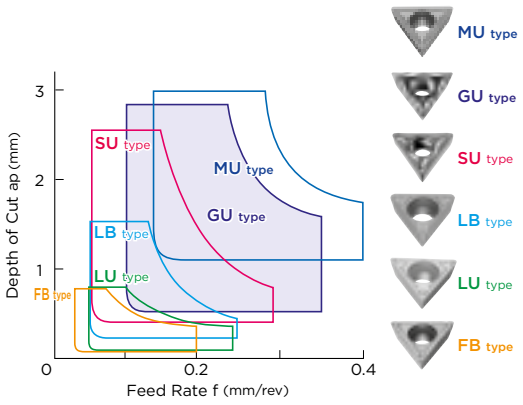


Main Chipbreakers

Negative type



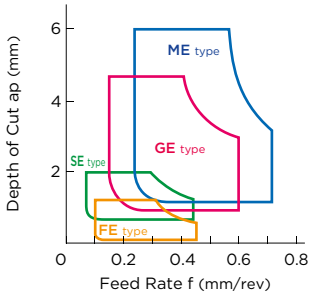
Positive type



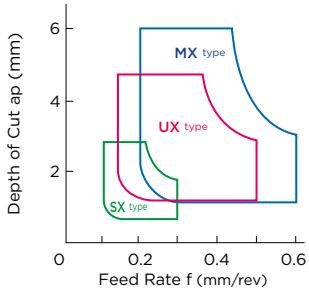
Sub-Chipbreakers

Negative type

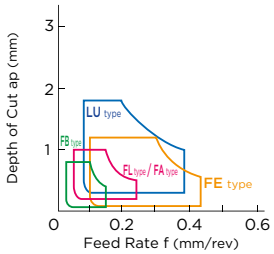
Chipbreakers for High-efficiency Turning



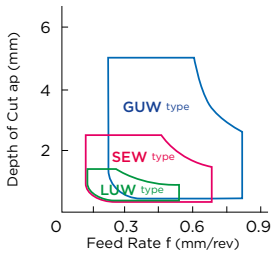
Strong Cutting Edge Chipbreakers



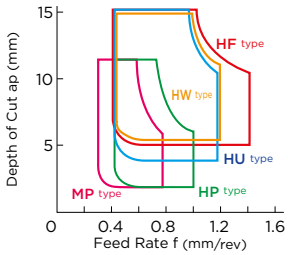
Chipbreakers for Small Depth of Cut



Wiper Insert



Chipbreakers for Heavy Cutting



Grades

Uncoated Cermet / Coated Cermet

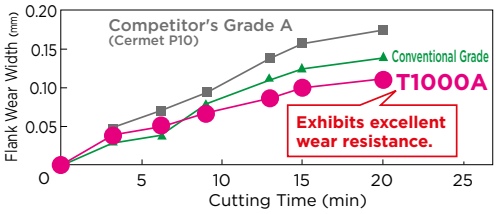
T1000A / T1500A / T1500Z / T2500Z

T1000A: High-hardness cermet with outstanding wear resistance and toughness. Realises high dimensional accuracy for continuous steel machining or finishing of sintered alloy or cast iron.
T1500A: General-purpose cermet made from hard grains with different grain sizes, delivering functionality that provides an excellent balance of wear resistance and toughness. Also achieves good surface finish quality.
T1500Z: Employs Brilliant Coat PVD coating with excellent lubricity to provide better wear resistance and consistent surface finishes in low-speed cutting applications such as machining of small products or low carbon steel.
T2500Z: A new cermet substrate with excellent thermal conductivity is used to achieve outstanding thermal crack resistance. Also uses Brilliant Coat, which has excellent lubricity.

Cutting Performance

T1000A

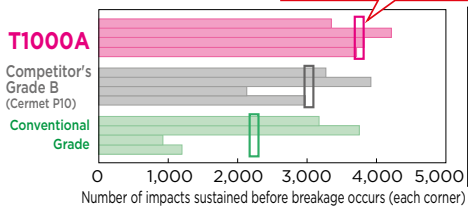
● Wear Resistance



Work Material: 34CrMo4
Insert: CNMG120408 NSU
Cutting Conditions: vc = 320m/min, f = 0.20mm/rev, ap = 1.5mm Dry

● Fracture Resistance

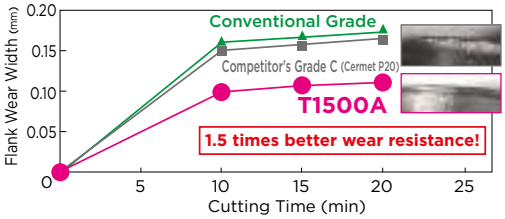
Provides excellent fracture and wear resistance.



Work Material:34CrMo4 (Interrupted Cutting)
Insert: CNMG120408 NSU
Cutting Conditions: vc = 230m/min, f = 0.20mm/rev, ap = 1.0mm Wet

T1500A

● Wear Resistance



Work Material: 34CrMo4
Insert: CNMG120408 NSU
Cutting Conditions: vc = 230m/min, f = 0.20mm/rev, ap = 1.0mm Wet

● Machined Surface Quality

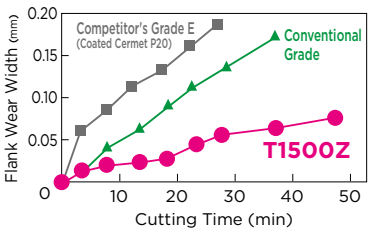
Beautiful glossy surface finishes when facing.



Work Material: Ck25
Insert: CNMG120408 NSU
Cutting Conditions: vc = 185 to 0m/min, f = 0.15mm/rev, ap = 1.5mm Wet

T1500Z

● Wear Resistance



Work Material: 34CrMo4
Insert: CNMG120408 NSU
Cutting Conditions: vc = 230m/min, f = 0.20mm/rev, ap = 1.0mm Wet

● Machined Surface Quality

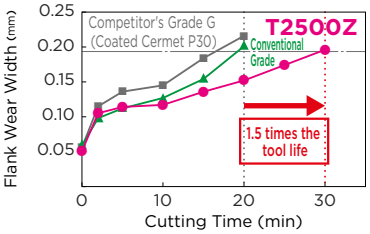
Reduces cloudy finish on machined surfaces.



Work Material: 20NiCrMo2-2
Insert: DNMG150408 NSU
Cutting Conditions: vc = 150m/min, f = 0.20mm/rev, ap = 1.0mm Wet

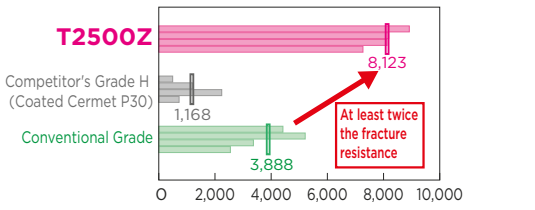
T2500Z

● Wear Resistance



Work Material: 34CrMo4
Insert: CNMG120408 NSU
Cutting Conditions: vc = 260m/min, f = 0.23mm/rev, ap = 1.5mm Wet

● Fracture Resistance



Work Material: 34CrMo4 (Interrupted Cutting)
Insert: CNMG120408 NSU
Cutting Conditions: vc = 260m/min, f = 0.23mm/rev, ap = 1.50mm Wet

Recommended Cutting Conditions

Work Material	Application	Chipbreaker	Grade	Cutting Conditions (Min. - **Optimum** - Max.)		
				Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed vc (m/min)
Mild Steel (S235JR, etc.)	Fine Cutting	FB / FL	T1500Z	0.2-**0.5**-1.0	0.05-**0.15**-0.25	150-**280**-400
	Finishing	FE / LU	T2500Z	0.3-**1.0**-1.8	0.08-**0.20**-0.35	150-**280**-400
Carbon Steel Alloy Steel (C45E, 34CrMo4, etc.)	Fine Cutting	FB / FA	T1500A	0.2-**0.5**-1.0	0.05-**0.15**-0.25	100-**200**-300
	Finishing	FE / SU	T1500A	0.5-**1.0**-2.0	0.08-**0.20**-0.35	100-**200**-300
	Medium	GU	T1500Z	0.8-**2.2**-4.0	0.15-**0.25**-0.50	100-**200**-300
Hard Steel Alloy Steel (42CrMo4, etc.)	Fine Cutting	FB / FA	T1000A	0.2-**0.5**-1.0	0.05-**0.15**-0.25	50-**150**-250
	Finishing	FE / SU	T1500Z	0.5-**1.0**-2.0	0.08-**0.20**-0.35	50-**150**-250
	Medium	GU	T1500Z	0.8-**2.2**-4.0	0.15-**0.25**-0.50	50-**150**-250

Grades

New ABSOTECH AC8115P / ABSOTECH AC8020P / ABSOTECH AC8025P / ABSOTECH AC8035P

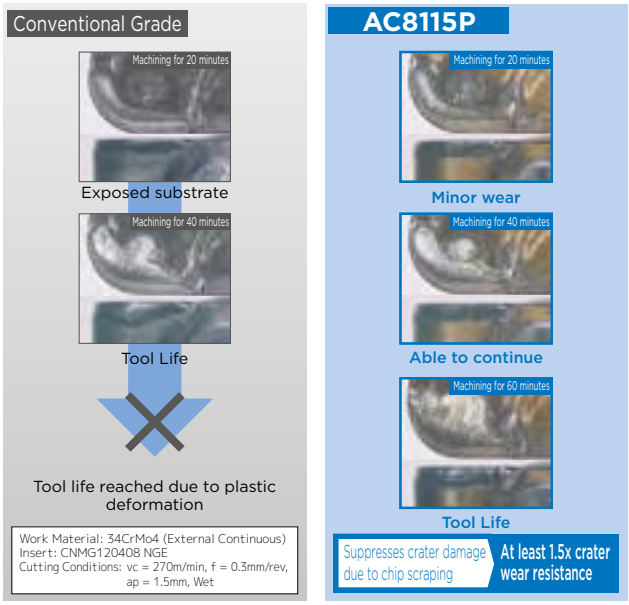


AC8115P: Advancement in fine crystal alumina grain orientation control technology greatly reduces the progress of crater damage. Achieves excellent wear resistance in high-efficiency and dry machining.
AC8020P: Alumina coating with even higher strength balances outstanding stability and wear resistance in turning mill-scale on forged materials. Gold-coloured exterior makes used corners easily identifiable.
AC8025P: Our 1st recommended grade for turning steel. Surface smoothing technology significantly suppresses adhesion of work material components. Achieves long, stable tool life with various cutting speeds and work materials.
AC8035P: Tensile stress removal of the coating layer greatly improves fracture resistance. Achieves long, stable tool life in heavy interrupted cutting.

Cutting Performance

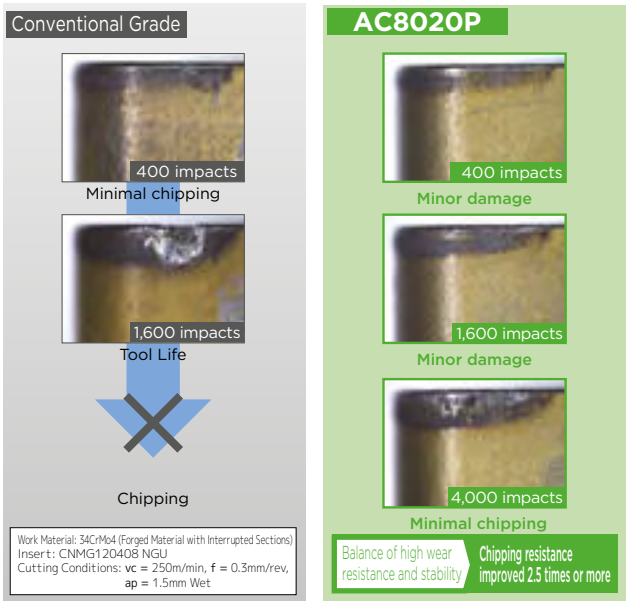
AC8115P

● Fine crystal alumina grain orientation control technology suppresses crater damage caused by chip abrasion



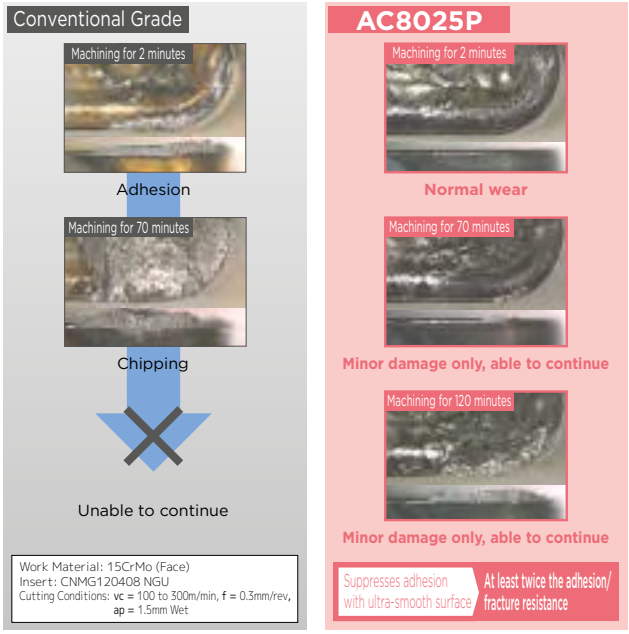
AC8020P

● Alumina coating with even higher strength suppresses chipping



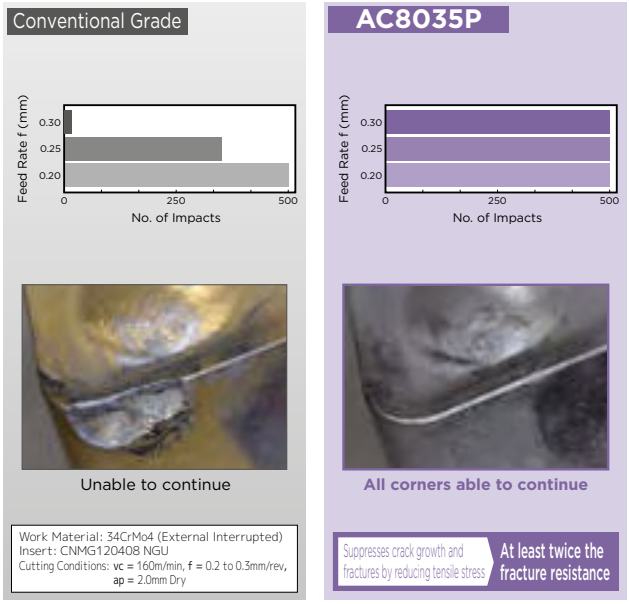
AC8025P

● Surface smoothing treatment significantly suppresses adhesion and chipping



AC8035P

● Special surface treatment reduces tensile stress in the coating layer, significantly suppressing fractures



■ Application Guide

1st Recommended Grade: General-purpose machining **AC8025P**

1st Recommended Chipbreaker: **GU type**

	Chipbreakers for High-efficiency Machining		Main Chipbreaker	Strong Cutting Edge Chipbreakers
Finishing to Small Depth of Cut	FE type, SE type		SU type	SX type
General-purpose	GE type		GU type (1st Recommendation)	UX type
Roughing to Large Depth of Cut	ME type		MU type	MX type

For high-speed and dry machining

High-speed Machining **AC8115P** New

To improve tool life at small depths of cut	FE type
To increase feed rate	GE type

For heavy interrupted cutting emphasizing stability

Interrupted Machining **AC8035P**

To improve tool life	GU type
To improve machining stability	UX type

For high-efficiency machining of hard steel and forgings

High Efficiency **AC8020P**

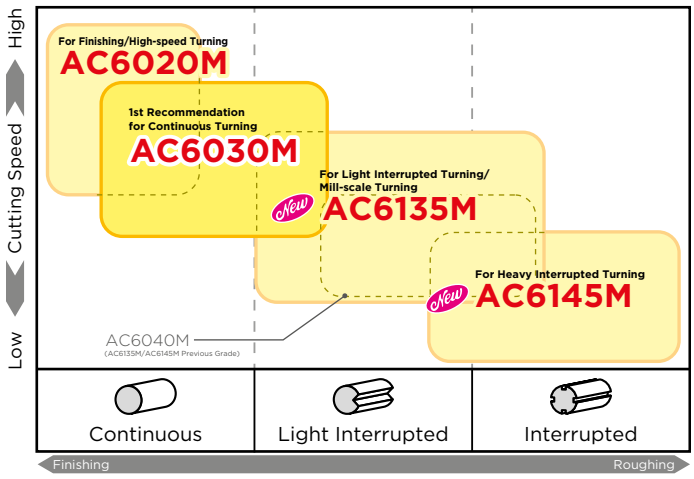
To increase feed rate	GE type	To increase cutting speed	GU type

P Steel Recommended Cutting Conditions

Work Material	Application	Chipbreaker	Grade	Cutting Conditions Min. - **Optimum** - Max.		
				Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed VC (m/min)
Mild Steel Low Carbon Steel (S235JR, C15, etc.)	Fine Cutting	FB, FE	**T1500Z**	0.2-**0.6**-1.0	0.05-**0.15**-0.25	100-**250**-400
	Continuous	GU, GE	**AC8115P**	1.0-**2.5**-4.0	0.1-**0.25**-0.4	260-**350**-500
	General to Interrupted	**GU, GE**	**AC8025P**	1.0-**2.5**-4.0	0.2-**0.35**-0.5	200-**260**-320
	Heavy Interrupted	MU, ME	**AC8035P**	1.5-**4.0**-6.0	0.3-**0.45**-0.6	140-**150**-220
Medium to High Carbon Steel Alloy Steel Hard Steel (C45E, 34CrMo4, 42CrMo4, etc.)	Fine Cutting	FB, FE	**T1500Z**	0.2-**0.6**-1.0	0.05-**0.15**-0.25	50-**200**-300
	Continuous to General	**GU, GE**	**AC8020P**	1.0-**2.5**-4.0	0.2-**0.35**-0.5	150-**235**-290
	Interrupted	GU, GE	**AC8025P**	1.0-**2.5**-4.0	0.2-**0.35**-0.5	130-**165**-230
	Heavy Interrupted	MU, ME	**AC8035P**	1.5-**4.0**-6.0	0.3-**0.45**-0.6	90-**135**-160

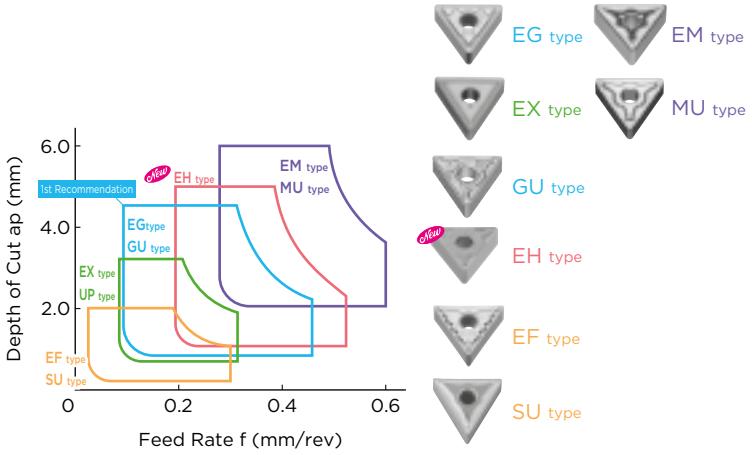
Stainless Steel

Grades

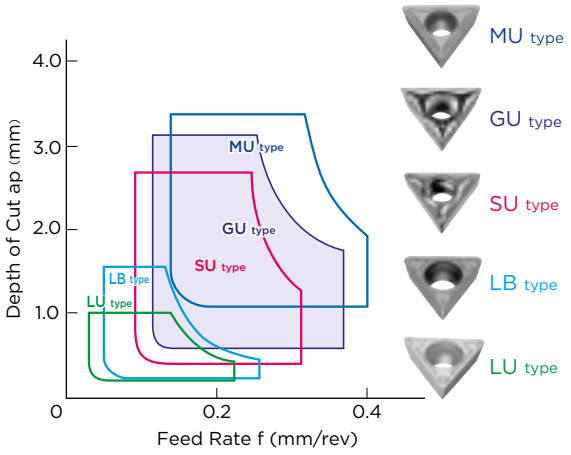


Chipbreakers

Negative type



Positive type



Refer to the Tools for Small Lathes chapter D7 for the Chipbreaker Selection Guide for ground (G Class) inserts.

Recommended Cutting Conditions

Work Material	Application	Chipbreaker	Grade	Cutting Conditions (Min. - **Optimum** - Max.)		
				Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed VC (m/min)
Ferritic (X6CrAl13, X12Cr13, X6Cr17, etc.)	Finishing	EF(SU)	**AC6020M**	0.5-**1.5**-2.0	0.05-**0.15**-0.25	170-**230**-300
	Continuous	**EG/GU**/EX	**AC6030M**	1.0-**2.5**-4.0	0.10-**0.25**-0.40	140-**170**-250
	Light Interrupted	GU/EH	**AC6135M**	1.0-**3.0**-5.0	0.20-**0.35**-0.50	140-**170**-200
	Interrupted	EH/EM	**AC6145M**	1.5-**3.5**-6.0	0.25-**0.40**-0.60	100-**130**-160
Martensitic (X12Cr13, X46Cr13, X105CrMo17, etc.)	Finishing	EF(SU)	**AC6020M**	0.5-**1.5**-2.0	0.05-**0.15**-0.25	120-**180**-240
	Continuous	**EG/GU**/EX	**AC6030M**	1.0-**2.5**-4.0	0.10-**0.25**-0.40	100-**150**-200
	Light Interrupted	GU/EH	**AC6135M**	1.0-**3.0**-5.0	0.20-**0.35**-0.50	80-**130**-180
	Interrupted	EH/EM	**AC6145M**	1.5-**3.5**-6.0	0.25-**0.40**-0.60	60-**100**-140
Austenitic (X5CrNi18-10, X5CrNiMo17-12-2, X6CrNiTi18-10, etc.)	Finishing	EF (SU)/EX	**AC6030M**	0.5-**1.5**-2.0	0.05-**0.15**-0.25	120-**180**-240
	Continuous	EG/GU	**AC6135M**	1.0-**2.5**-4.0	0.10-**0.25**-0.40	100-**150**-200
	Light Interrupted	**GU/EH**	**AC6135M**	1.0-**3.0**-5.0	0.20-**0.35**-0.50	80-**130**-180
	Interrupted	EH/EM	**AC6145M**	1.5-**3.5**-6.0	0.25-**0.40**-0.60	60-**100**-140
Duplex (X3CrNiMoN27-5-2, X2CrNiMoN22-5-3, X2CrNiMoCuN25-6-3, etc.)	Finishing	EF (SU)/EX	**AC6030M**	0.5-**1.5**-2.0	0.05-**0.15**-0.25	100-**140**-180
	Continuous	EG/GU	**AC6135M**	1.0-**2.5**-4.0	0.10-**0.25**-0.40	80-**120**-160
	Light Interrupted	**GU/EH**	**AC6135M**	1.0-**3.0**-5.0	0.20-**0.35**-0.50	70-**100**-140
	Interrupted	EH/EM	**AC6145M**	1.5-**3.5**-6.0	0.25-**0.40**-0.60	50- **80**-120
Precipitation Hardened Structure (X5CrNiCuNb16-4, X7CrNiAl17-7, X7CrNiCuTi13-7, etc.)	Finishing	EF(SU)	**AC6020M**	0.5-**1.5**-2.0	0.05-**0.15**-0.25	90-**115**-140
	Continuous	**EG/GU**/EX	**AC6030M**	1.0-**2.5**-4.0	0.10-**0.25**-0.40	70- **90**-130
	Light Interrupted	GU/EH	**AC6135M**	1.0-**3.0**-5.0	0.20-**0.35**-0.50	50- **80**-120
	Interrupted	EH/EM	**AC6145M**	1.5-**3.5**-6.0	0.25-**0.40**-0.60	40- **70**-100

Stainless Steel

M Stainless Steel

Grades

ABSOTECH AC6020M / ABSOTECH AC6030M / New ABSOTECH AC6135M / New ABSOTECH AC6145M

AC6020M: The combination of a CVD coating and a high-hardness carbide substrate realises long and stable tool life in finishing and high-speed turning.

AC6030M: 1st recommended grade for continuous turning, using CVD coating to drastically reduce the occurrence of abnormal damage, a problem in stainless steel turning, to achieve a long and stable tool life.

AC6135M: Balances excellent wear resistance and fracture resistance in light interrupted turning and mill-scale work through the use of new PVD coating.

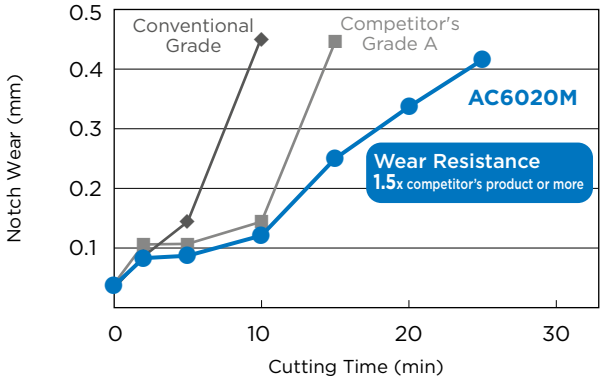
AC6145M: The combination of a PVD coating and a high-toughness carbide substrate realises absolute stability in heavy interrupted turning.

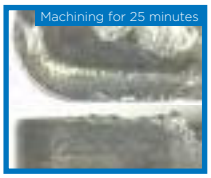


Cutting Performance

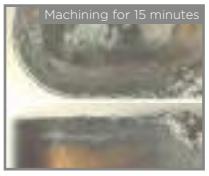
AC6020M

● **Continuous Turning**



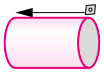


AC6020M



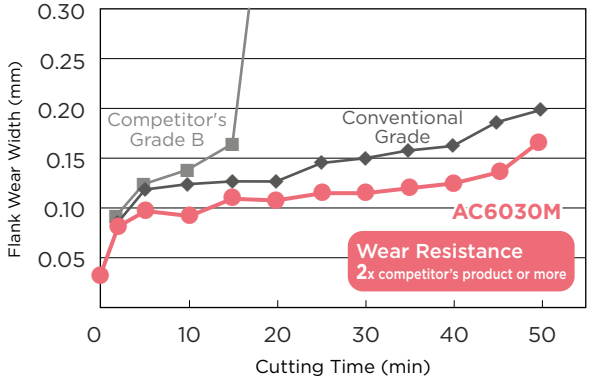
Competitor's Grade A

Work Material: X2CrNiMo17-12-2 Insert: CNMG 120408
Cutting Conditions: vc = 150m/min, f = 0.3mm/rev, ap = 2.0mm Wet



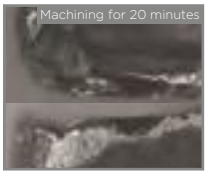
AC6030M

● **Continuous Turning**



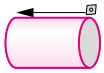


AC6030M



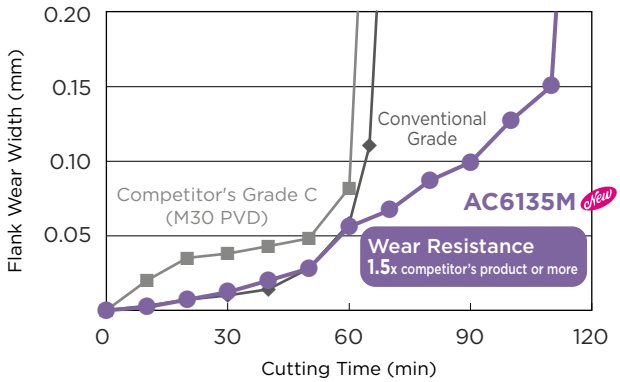
Competitor's Grade B

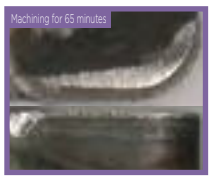
Work Material: X5CrNiMo17-12-2 Insert: CNMG 120408
Cutting Conditions: vc = 200m/min, f = 0.2mm/rev, ap = 2.0mm Wet



AC6135M

● **Continuous Turning**



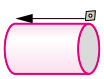


New AC6135M



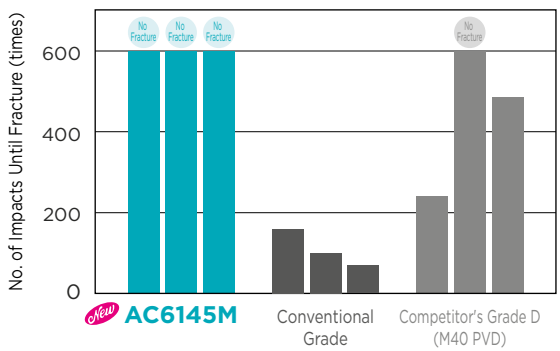
Competitor's Grade C (M30 PVD)

Work Material: X5CrNiMo17-12-2 Insert: CNMG 120408
Cutting Conditions: vc = 150m/min, f = 0.2mm/rev, ap = 2.0mm Wet

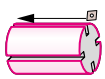


AC6145M

● **Interrupted Turning**



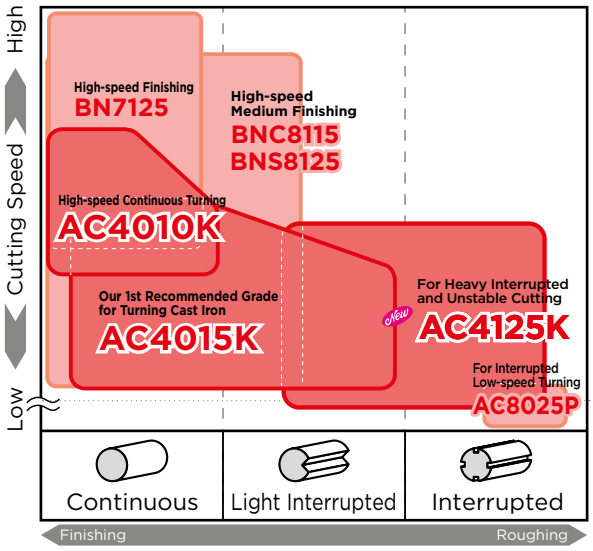
Work Material: X5CrNiMo17-12-2 Insert: CNMG 120408
Cutting Conditions: vc = 70m/min, f = 0.25mm/rev, ap = 1.0mm Wet



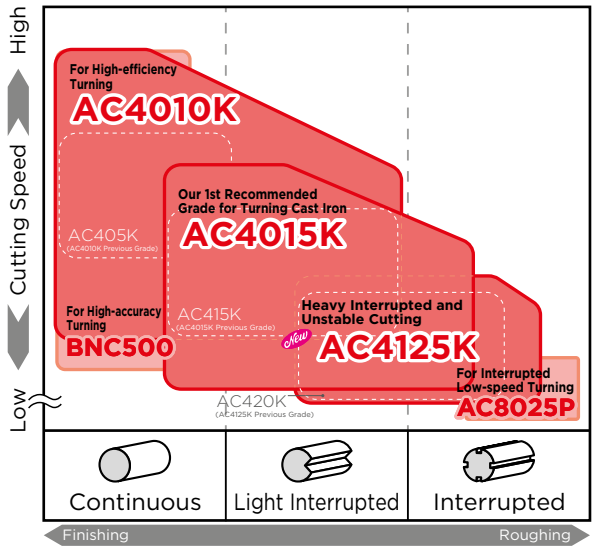
Grades

CBN Coated SUMIBORON BNC500 / SUMIBORON BN7125 / Solid SUMIBORON BNC8115 / Solid SUMIBORON BNS8125 ··· L7

● FC (Grey Cast Iron)

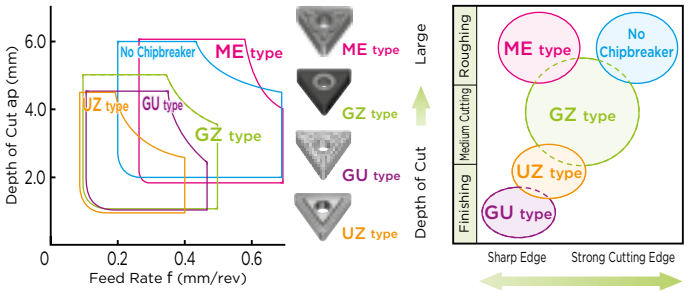


● FCD (Ductile Cast Iron)

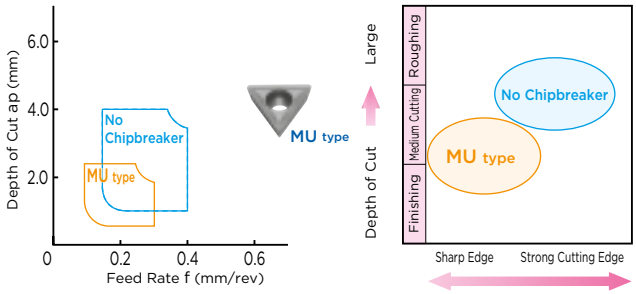


Chipbreakers

Negative type



Positive type



K Cast Iron Recommended Cutting Conditions

Work Material	Application	Grade	Cutting Conditions (Min. - **Optimum** - Max.) Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed VC (m/min)
Grey Cast Iron (GG-25, etc.)	High-speed	BN7125	0.1 - **0.3** - 1.0	0.10 - **0.20** - 0.50	500 - **1,500** - 2,000
	Continuous to General	**AC4010K**	0.5 - **2.0** - 6.0	0.10 - **0.25** - 0.40	200 - **400** - 700
	Interrupted	AC4015K	0.5 - **2.0** - 6.0	0.10 - **0.30** - 0.50	180 - **300** - 450
	Heavy Interrupted	AC4125K	0.5 - **2.0** - 6.0	0.10 - **0.30** - 0.60	150 - **200** - 300
Ductile Cast Iron (GGG-40.3, etc.)	High-speed	BNC500	0.1 - **0.2** - 0.5	0.10 - **0.20** - 0.40	150 - **350** - 500
	Continuous to General	AC4010K	0.5 - **2.0** - 6.0	0.10 - **0.25** - 0.40	180 - **300** - 450
	Interrupted	**AC4015K**	0.5 - **2.0** - 6.0	0.10 - **0.30** - 0.50	160 - **250** - 400
	Heavy Interrupted	AC4125K	0.5 - **2.0** - 6.0	0.10 - **0.30** - 0.60	120 - **170** - 250
High-strength Ductile Cast Iron (GGG-70, etc.)	High-speed	BNC500	0.1 - **0.2** - 0.5	0.10 - **0.20** - 0.40	200 - **350** - 500
	Continuous to General	AC4010K	0.5 - **2.0** - 6.0	0.10 - **0.25** - 0.40	160 - **250** - 400
	Interrupted	**AC4015K**	0.5 - **2.0** - 6.0	0.10 - **0.30** - 0.50	140 - **200** - 350
	Heavy Interrupted	**AC4125K**	0.5 - **2.0** - 6.0	0.10 - **0.30** - 0.60	80 - **150** - 220

Grades

ABSOTECH AC4010K / ABSOTECH AC4015K / New ABSOTECH AC4125K

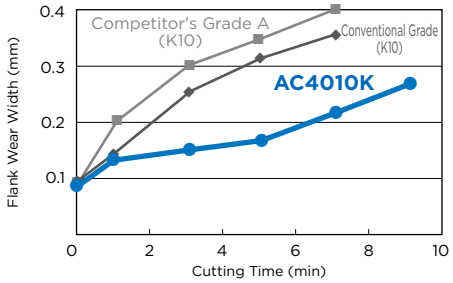


AC4010K: Our 1st recommended grade for turning grey cast iron.
New ultra-thick film CVD coating enables ultra-high-speed turning at Vc = 700m/min.
AC4015K: Our 1st recommended grade for turning of ductile cast iron.
High-adhesion and high-strength coating enables stable and long tool life.
AC4125K: Our 1st recommended grade for interrupted turning of cast iron.
Especially effective for stable long life in roughing of parts like differential cases and carriers.

Cutting Performance

AC4010K/AC4015K Wear Resistance

● Grey Cast Iron

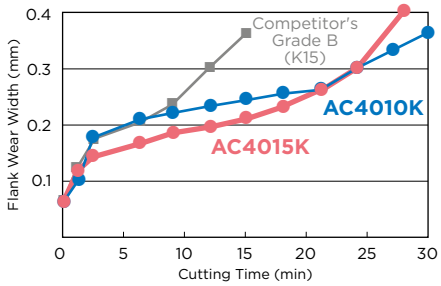


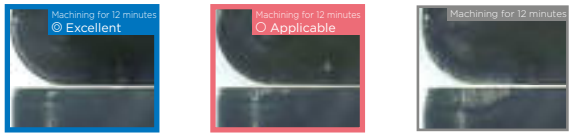


AC4010K+GZ | Conventional Grade (K10) | Competitor's Grade A (K10)

Work Material: GG-25 Continuous Cutting Insert: CNMG120408
Cutting Conditions: vc = 600m/min, f = 0.4mm/rev, ap = 2.0mm, Dry

● Ductile Cast Iron



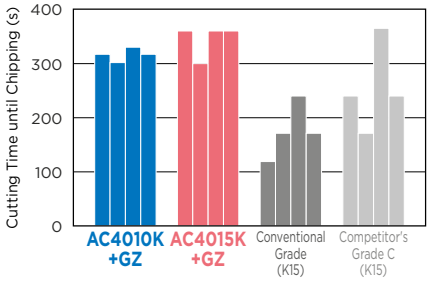


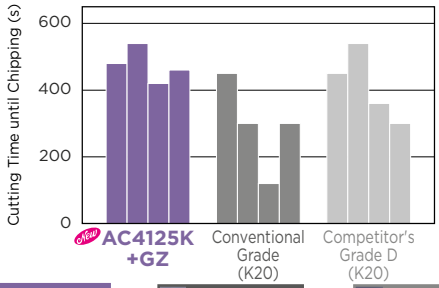
AC4010K+GZ | AC4015K+GZ | Competitor's Grade B (K15)

Work Material: GGG-70 Continuous Cutting Insert: CNMG120408
Cutting Conditions: vc = 140m/min, f = 0.3mm/rev, ap = 1.5mm Wet

AC4010K/AC4015K/AC4125K Chipping Resistance

● Ductile Cast Iron







AC4010K | AC4015K | Conventional Grade (K15) | Competitor's Grade C (K15)

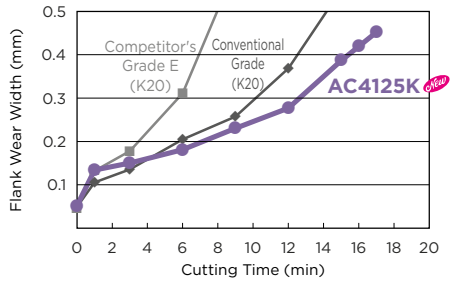
Work Material: GGG-40.3 Interrupted Cutting Insert: CNMG120408
Cutting Conditions: vc = 450m/min, f = 0.3mm/rev, ap = 1.5mm Wet



New AC4125K+GZ | Conventional Grade (K20) | Competitor's Grade D (K20)

Work Material: GGG-40.3 Interrupted Cutting Insert: CNMG120408
Cutting Conditions: vc = 450m/min, f = 0.3mm/rev, ap = 1.5mm Wet

AC4125K Wear Resistance





New AC4125K+GZ | Conventional Grade (K20) | Competitor's Grade E (K20)

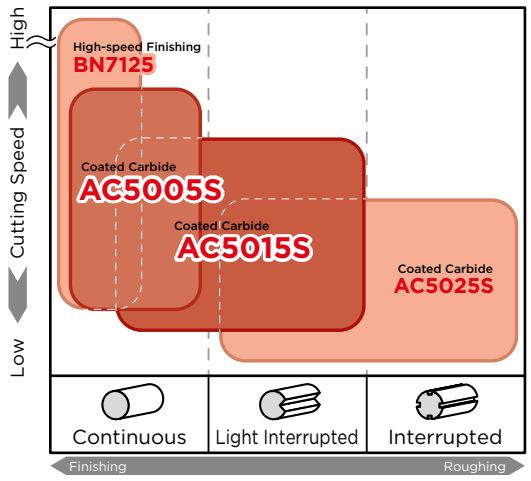
Work Material: GGG-70 Continuous Cutting Insert: CNMG120408
Cutting Conditions: vc = 140m/min, f = 0.3mm/rev, ap = 1.5mm Wet

Exotic Alloy S Exotic Alloy

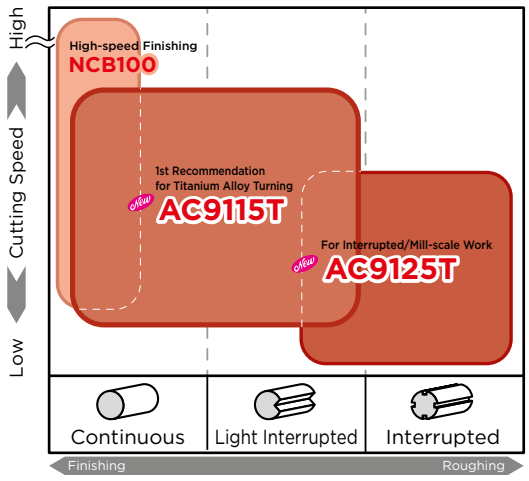
Grades

CBN SUMIBORON BN7125/NCB100 SUMIBORON BINDERLESS ··· L10

● Heat-Resistant Alloy

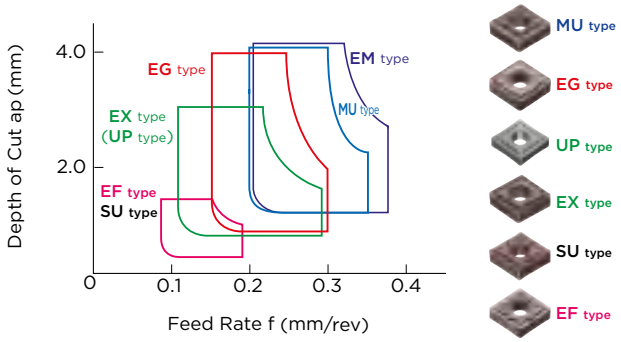


● Titanium Alloy

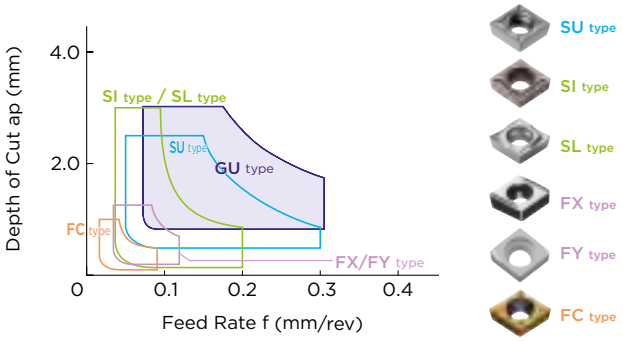


Chipbreakers

Negative type



Positive type



S Exotic Alloy Recommended Cutting Conditions

Work Material	Application	Chipbreaker	Grade	Cutting Conditions Min. - **Optimum** - Max.		
				Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed vc (m/min)
Heat-Resistant Alloy (Ni-based Material, Fe-based Material, Co-based Material)	Finishing	**EF**	**AC5005S**	0.2-**0.5**-1.5	0.10-**0.12**-0.20	50-**70**-110
	Continuous	EX	**AC5015S**	0.5-**1.0**-3.0	0.10-**0.20**-0.30	40-**60**-90
	Light Interrupted	**EG**	**AC5015S**	0.5-**2.0**-4.0	0.15-**0.25**-0.30	40-**60**-90
	Interrupted	MU/EM	**AC5025S**	1.0-**2.0**-4.0	0.20-**0.25**-0.40	30-**55**-80
Titanium Alloy (Pure Titanium (99.5%), α + β Alloy)	Finishing	**EF**	**AC9115T**	0.2-**0.5**-1.5	0.1-**0.15**-0.2	50-**75**-100
	Continuous	**EG**/EX	**AC9115T**	0.5-**1.0**-2.5	0.1-**0.20**-0.25	40-**60**-80
	Light Interrupted	**EG**/EM	**AC9115T**	0.5-**2.0**-3.5	0.15-**0.25**-0.3	35-**50**-65
	Interrupted	**EM**/EG	**AC9125T**	1.0-**2.0**-3.5	0.2-**0.25**-0.3	30-**40**-50

Grades

ABSOTECH AC5005S / ABSOTECH AC5015S / ABSOTECH AC5025S / New ABSOTECH AC9115T / New ABSOTECH AC9125T

● New PVD coated grades with excellent wear and thermal resistance

AC5005S: High-speed, high-efficiency grade with excellent high-thermal strength and outstanding wear resistance in high-efficiency turning.

AC5015S: Our 1st recommended grade for turning exotic alloys as it realises stable tool life in high-speed, high-efficiency machining.

AC5025S: High-toughness grade that achieves stable and long tool life in interrupted cutting and turning mill-scaled work.

● PVD coating grade with excellent wear resistance, dedicated for titanium alloy machining

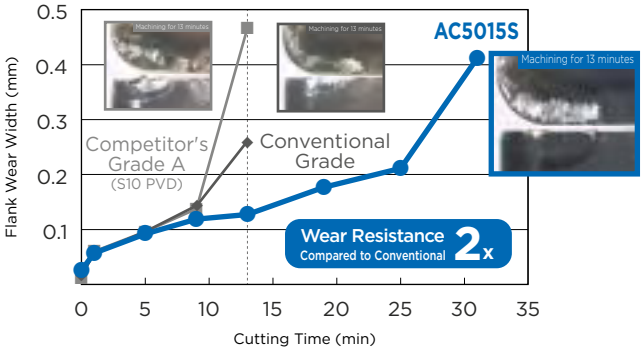
AC9115T: First recommended grade for exceptionally long tool life in a wide range of applications.

AC9125T: High-toughness grade realising exceptionally long tool life in interrupted turning.

Cutting Performance

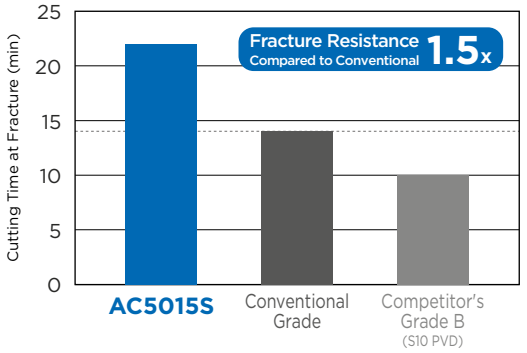
AC5015S

● Wear Resistance



Work Material: Inconel 718 (44HRC) Insert: CNMG120408
Cutting Conditions: vc = 40m/min, f = 0.1mm/rev, ap = 1.5mm Wet

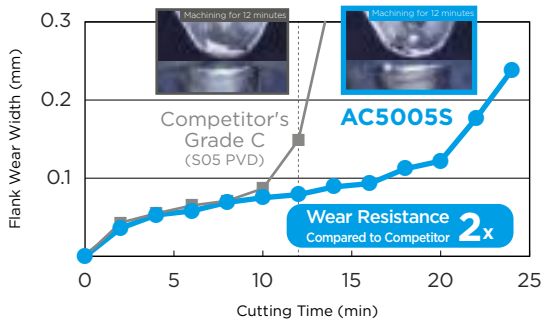
● Fracture Resistance



Work Material: Hastelloy (22HRC) Insert: CNMG120408
Cutting Conditions: vc = 50m/min, f = 0.1mm/rev, ap = 1.5mm Wet

AC5005S

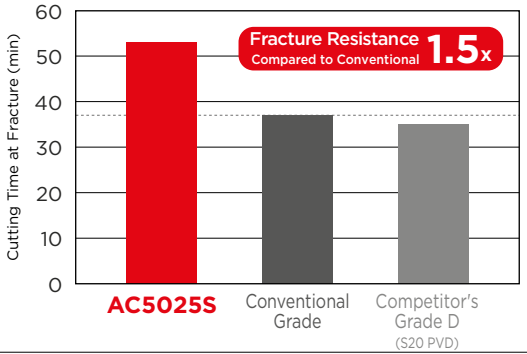
● Wear Resistance (High-speed)



Work Material: Inconel 718 (44HRC) Insert: DNMG150408
Cutting Conditions: vc = 100m/min, f = 0.15mm/rev, ap = 0.5mm Wet

AC5025S

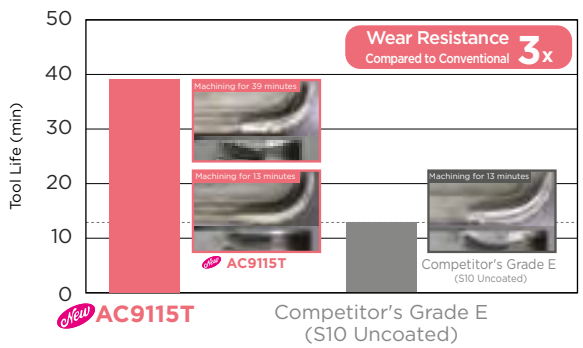
● Fracture Resistance



Work Material: Hastelloy (22HRC) Insert: CNMG120408
Cutting Conditions: vc = 50m/min, f = 0.1mm/rev, ap = 1.5mm Wet

AC9115T

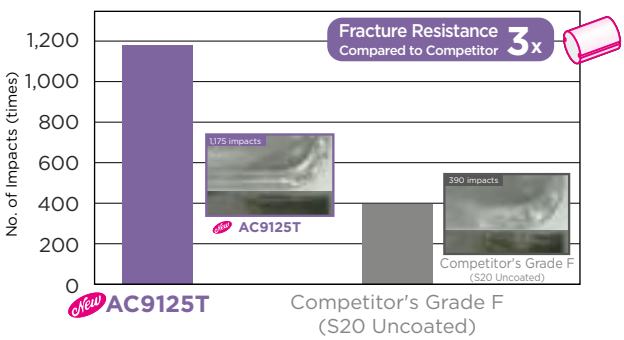
● Wear Resistance



Work Material: Ti-6Al-4V Insert: CNMG120408
Cutting Conditions: vc = 70m/min, f = 0.3mm/rev, ap = 1.5mm Wet

AC9125T

● Fracture Resistance

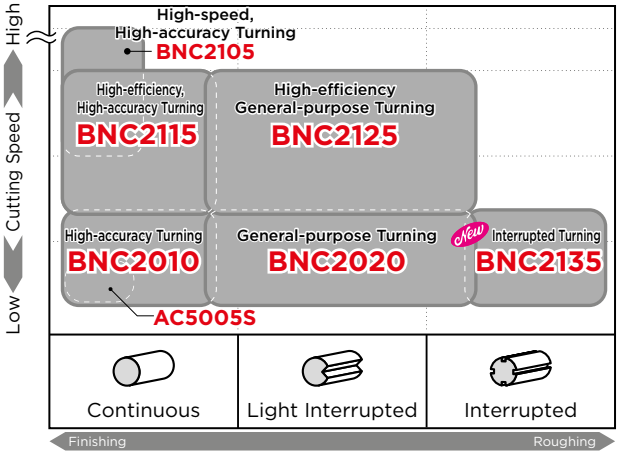


Work Material: Ti-6Al-4V 2 Grooves Insert: CNMG120408
Cutting Conditions: vc = 40m/min, f = 0.3mm/rev, ap = 1.5mm Wet

Hardened Steel

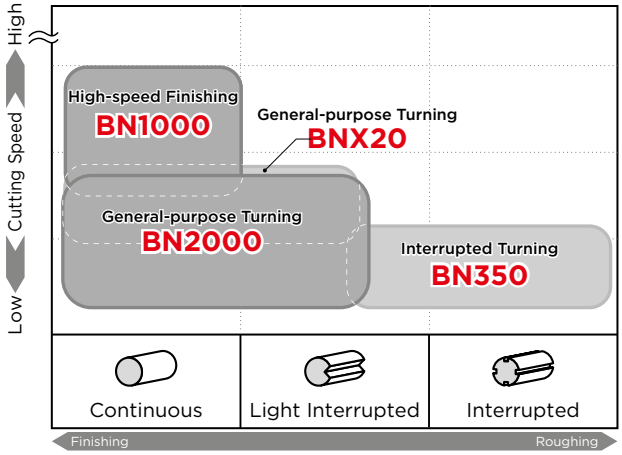
Grades

● Coated SUMIBORON, Coated Carbide



● Uncoated SUMIBORON

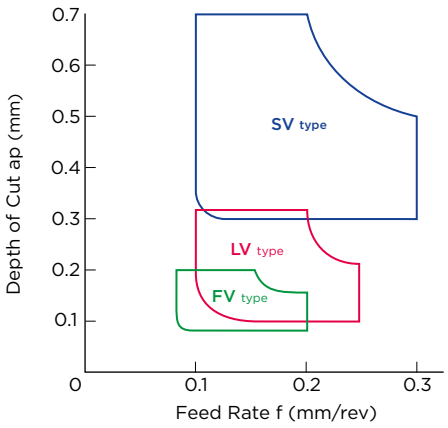
CBN SUMIBORON ••• L2

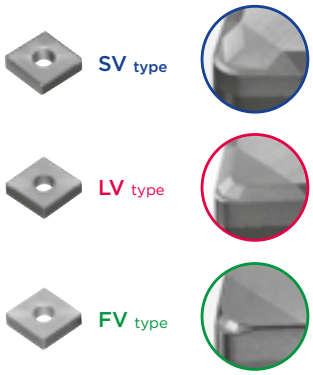


Chipbreakers

LV type/FV type Chipbreaker: For chip control during hardened steel finishing
SV type Chipbreaker: For chip control during carburised layer removal

CBN SUMIBORON BREAK MASTER ••• L30





Recommended Cutting Conditions

Application	Grade	Cutting Conditions (Min. - **Optimum** - Max.)		
		Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed VC (m/min)
Continuous	**BNC2105**	0.03-**0.15**-0.20	0.03-**0.10**-0.15	150-**200**-350
	BNC2115	0.03-**0.20**-0.35	0.03-**0.10**-0.20	110-**180**-300
	BNC2010	0.03-**0.20**-0.35	0.03-**0.10**-0.20	50-**140**-180
	BN1000	0.03-**0.15**-0.20	0.03-**0.10**-0.15	120-**180**-300
	AC5005S	0.03-**0.50**-1.00	0.02-**0.05**-0.10	40- **70**-100
General	**BNC2125**	0.05-**0.30**-0.50	0.05-**0.20**-0.40	110-**160**-300
	BNC2020	0.05-**0.30**-0.50	0.03-**0.20**-0.40	50-**120**-180
	BN2000	0.03-**0.20**-0.30	0.03-**0.10**-0.20	30-**100**-200
	BNX20	0.03-**0.30**-0.50	0.03-**0.15**-0.30	70-**130**-170
Interrupted	**BNC2135**	0.03-**0.20**-0.30	0.03-**0.10**-0.20	50-**100**-150
	BNC300	0.03-**0.20**-0.30	0.03-**0.10**-0.20	50-**100**-150
	BN350	0.03-**0.20**-0.30	0.03-**0.10**-0.20	50-**100**-150

Hardened Steel

Grades

BNC2105 / BNC2115 / BNC2125 / BNC2135 / BN1000 / BN2000

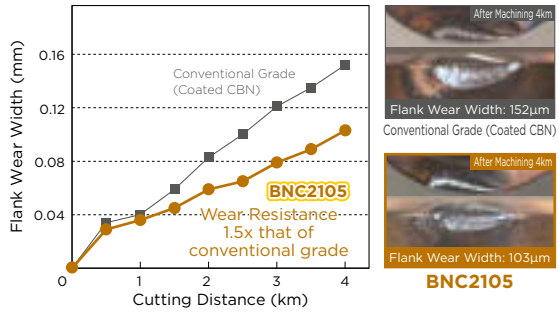
BNC2105 : Grade for high-speed finishing. Stable performance in high-speed turning of hardened steel, thanks to outstanding wear resistance.
BNC2115 : High-precision grade realizing long tool life with excellent surface roughness and stable machining. Maintains excellent surface roughness thanks to a coating with high notch wear resistance and tough CBN substrate.
BNC2125 : 1st recommended grade, balancing excellent wear resistance and fracture resistance in hardened steel turning. Along with a tough CBN substrate, the coating combines wear resistance and toughness to achieve long, stable tool life even in high-efficiency and interrupted turning.
BNC2135 : Utilising a highly fracture-resistant coating and a high-strength substrate to achieve long and stable tool life in interrupted turning.
BN1000 : For high-speed turning, BN1000 provides the highest wear resistance of all uncoated SUMIBORON grades, improving fracture resistance while maintaining an emphasis on wear resistance.
BN2000 : General-purpose grade for general hardened steel turning with a high degree of fracture and wear resistance.



Cutting Performance

BNC2105

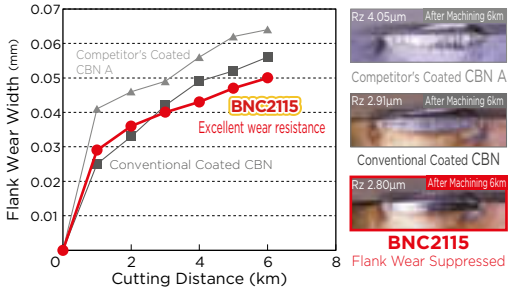
● Wear Resistance (Continuous Turning)



Work Material: 100Cr6 (58-62HRC)
Tool Cat. No.: DNGA150408 NC4
Cutting Conditions: vc = 200m/min, f = 0.1mm/rev, ap = 0.1mm Wet

BNC2115

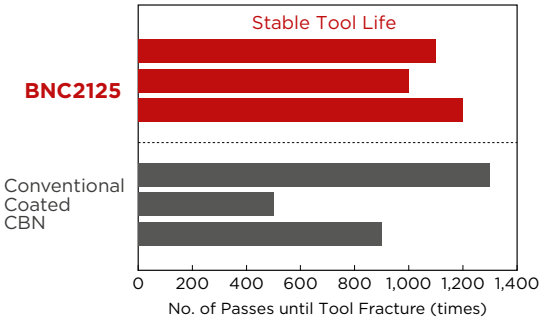
● Wear Resistance (Continuous Turning)



Work Material: 18CrMo4 (58-62HRC)
Tool Cat. No.: DNGA150408 NC4
Cutting Conditions: vc = 200m/min, f = 0.1mm/rev, ap = 0.15mm Wet

BNC2125

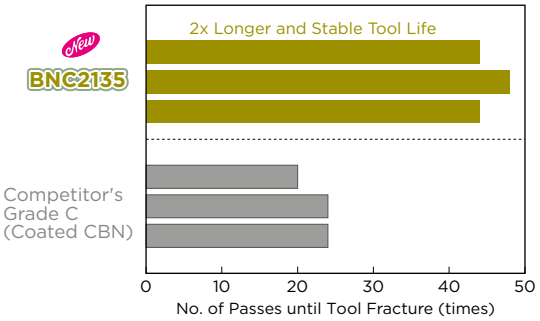
● Fracture Resistance (High-load Turning)



Work Material: 100Cr6 (58-62HRC)
Tool Cat. No.: DNGA150408 NC4
Cutting Conditions: vc = 150m/min, f = 0.15mm/rev, ap = 0.5mm, 63m/times Wet

BNC2135

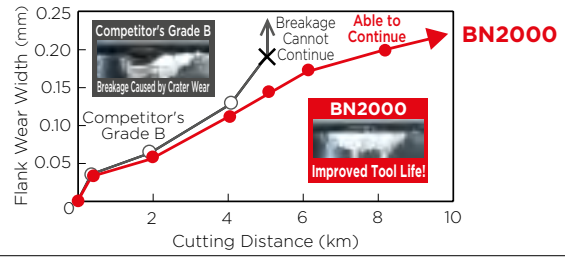
● Fracture Resistance (Heavy Interrupted Turning)



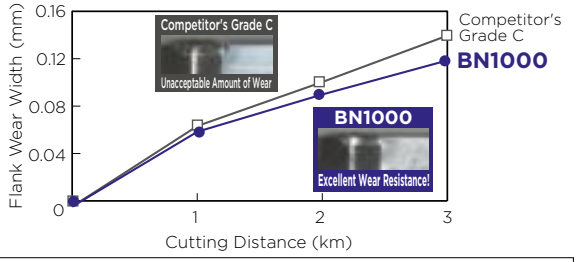
Work Material: 15CrMo5 (ECMO 80) Heavy Interrupted Grooved Facing (58-62 HRC)
Tool Cat. No.: CNGA120408 NC4
Cutting Conditions: vc = 120m/min, f = 0.1mm/rev, ap = 0.2mm Wet

BN1000 / BN2000

● Wear Resistance (Continuous Turning)



Work Material: 15CrMo5 (ECMO 80) Round Bar (58-62HRC)
Insert: CNGA120408 NU2
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm Dry

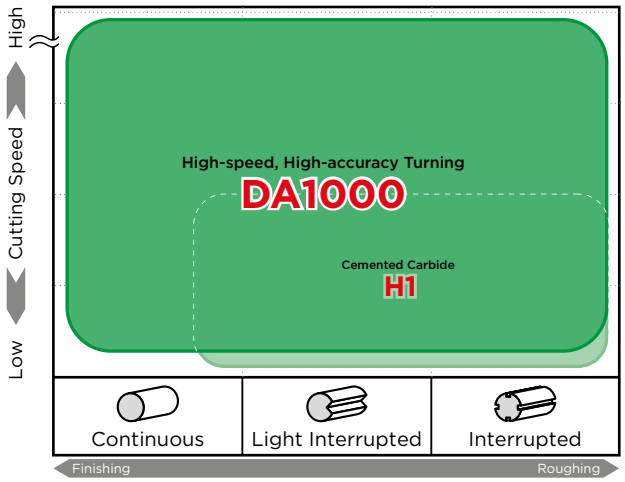


Work Material: 100Cr6 Round Bar (62HRC)
Insert: CNGA120408 NU2
Cutting Conditions: vc = 150m/min, f = 0.1mm/rev, ap = 0.2mm Dry

Non-Ferrous Metal

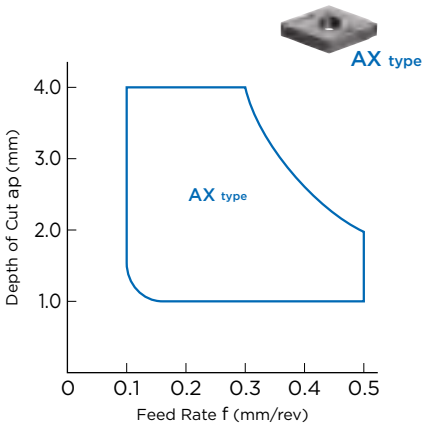
Grades

PCD SUMIDIA DA1000 ••• M6

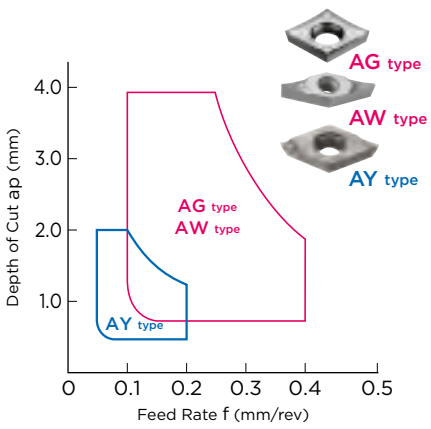


Main Chipbreakers

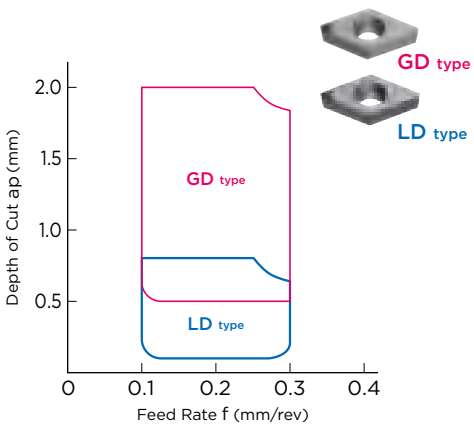
Negative type



Positive type



Positive type (PCD)



Recommended Cutting Conditions

Application	Series	Grade	Cutting Conditions (Min. - **Optimum** - Max.)		
			Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed vc (m/min)
Continuous General Interrupted	SUMIDIA	**DA1000**	0.1-**0.5**-3.0	0.05-**0.10**-0.20	up to 2,000
	Cemented Carbide	**H1**	0.3-**1.0**-5.0	0.1-**0.20**-0.5	up to 1,000

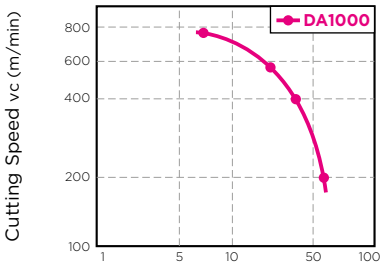
Non-Ferrous Metal

Grades DA1000

- Ultra-high-density sintered ultra-fine grained diamond
- Significantly improved surface roughness on machined surfaces
- World's highest wear resistance and strength
- Suitable for use on a wide variety of aluminum and non-ferrous alloys

Cutting Performance

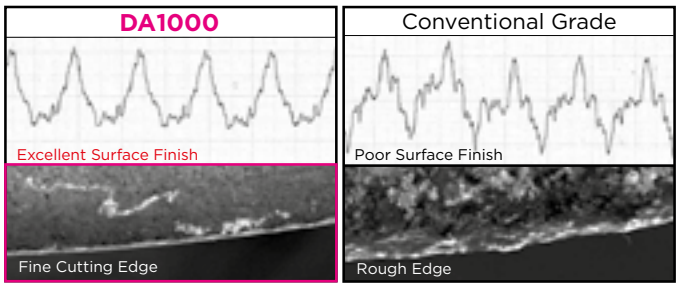
● Wear Resistance



Flank Wear Width = Cutting Time until 0.1mm (min)

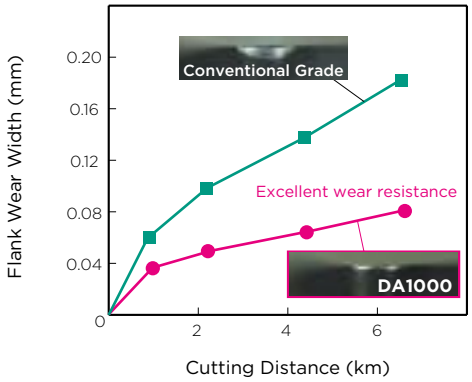
Work Material: 17% Si-Al Alloy
Insert: TPGN160304
Cutting Conditions: vc = 200 to 800m/min, f = 0.12mm/rev, ap = 0.5mm Wet

● Cutting Edge Surface Roughness Comparison



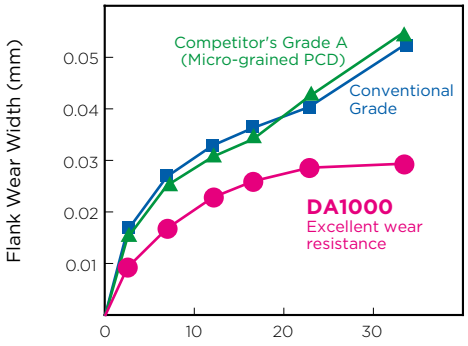
Work Material: 17% Si-Al Alloy
Insert: TPGW160308
Cutting Conditions: vc = 1,000m/min, f = 0.15mm/rev, ap = 0.2mm Wet

● Wear Resistance in Turning Applications



Work Material: 17% Si-Al Alloy
Insert: TPGN160304
Cutting Conditions: vc = 800m/min, f = 0.12mm/rev, ap = 0.5mm Wet

● Wear Resistance in Milling Applications



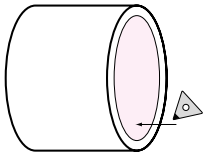
Work Material: G-AlSi12(Cu) (12% Si-Al Alloy)
Insert: SNEW1204ADFR NF
Cutting Conditions: vc = 2,000m/min, f = 0.15mm/rev, ap = 3.0mm Wet

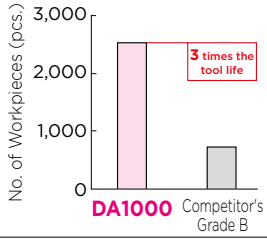
Application Examples

DA1000

[Copper Alloy Bushing]

Stable surface roughness with no cutting edge breakage (3.2S).
Tool life improved to 3 times that of conventional models.



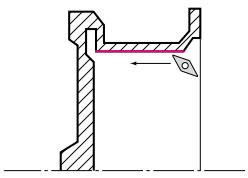


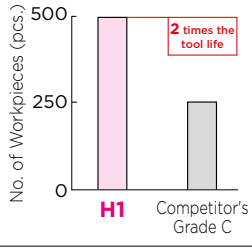
Insert: TPGN160308 NF
Cutting Conditions: vc = 300m/min, f = 0.07mm/rev, ap = 0.08mm Wet

H1

[Al-Si11Cu3 – Aluminum Wheel]

Excellent adhesion resistance.
Longer tool life.





Insert: VCGT160408N AG
Cutting Conditions: vc = 2,200m/min, f = 0.25mm/rev, ap = 2.0mm Wet

For Small Lathes

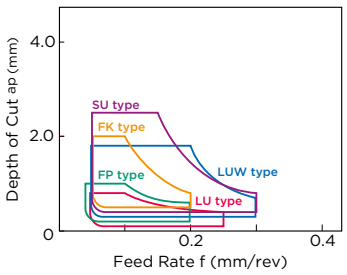
Grades

Insert Grade	Application Range: High-precision / Finishing to Light Cutting / Medium Cutting	Applicable Work Material: P General Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Metal	S Heat-Resistant Alloy	H Hardened Steel
Coated Carbide (PVD)	AC5015S	○	◎	○		◎	
	AC5025S	○	◎	○		◎	
	AC530U	◎	◎	○	○	○	
	AC1030U	◎	◎	○	○	○	
Uncoated Cermet Coated Cermet	T1000A	◎	○	◎	○		
	T1500A/T1500Z	◎	○	○	○		
Cemented Carbide	BL130	○	○	○	○		
	H1	○	○	○	◎		
	EH510	○	○	○	○	◎	
CBN (SUMIBORON)	BN1000/BN2000						◎
	BN7125			◎		○	
PCD (SUMIDIA)	DA1000				◎		

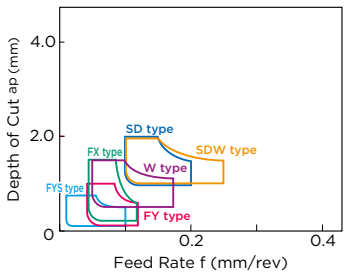
◎ 1st Recommendation ○ 2nd Recommendation

Chipbreakers

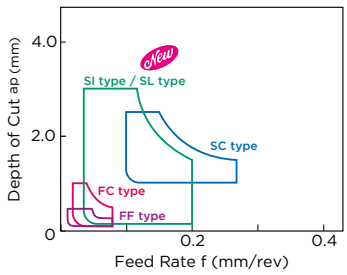
● M Class Finishing to Light Cutting



● G Class Ground type



● G Class Bumpy Chipbreaker



Recommended Cutting Conditions

Work Material / Insert Grade	P Free-Cutting Steel vc(m/min)	f(mm/rev)	P Carbon Steel vc(m/min)	f(mm/rev)	M Stainless Steel vc(m/min)	f(mm/rev)	S Heat-Resistant Alloy vc(m/min)	f(mm/rev)	H Hardened Steel vc(m/min)	f(mm/rev)	N Aluminum Alloy vc(m/min)	f(mm/rev)	N Brass vc(m/min)	f(mm/rev)
AC5015S	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10	30 to 100	0.02 to 0.10					70 to 300	0.05 to 0.20
AC5025S	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10	30 to 100	0.02 to 0.10					70 to 300	0.05 to 0.20
AC530U	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10							70 to 300	0.05 to 0.20
AC1030U	50 to 200	0.02 to 0.15	50 to 150	0.02 to 0.10	50 to 150	0.02 to 0.10							70 to 300	0.05 to 0.20
T1000A	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
T1500A	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
T1500Z	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
BN1000									120 to 300	0.03 to 0.15				
BN2000									50 to 200	0.03 to 0.20				
BN7125							50 to 200	0.05 to 0.25						
DA1000											70 to 300	0.02 to 0.10	70 to 300	0.02 to 0.10

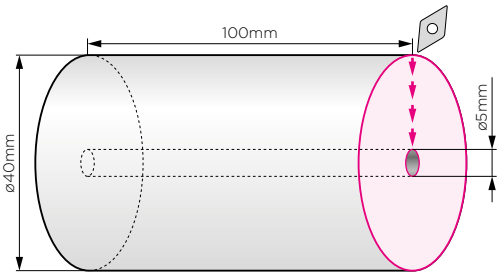
Grades

ABSOTECH
AC1030U

Employs a new PVD coating and a dedicated tough carbide substrate.
High-quality cutting edge suppresses adhesion and micro-chipping, realising excellent machined surface quality.

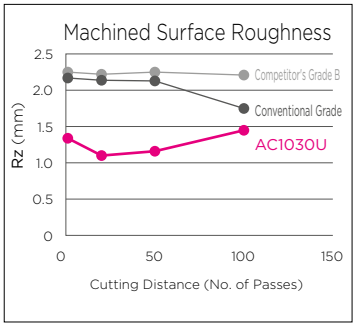
Cutting Performance

AC1030U



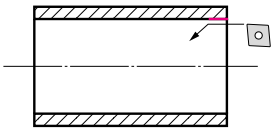
Work Material: X5CrNi18-10 Insert: DCGT11T302R FY
Cutting Conditions: vc = 100m/min, f = 0.05mm/rev, ap = 0.1mm Wet (Oil-based)

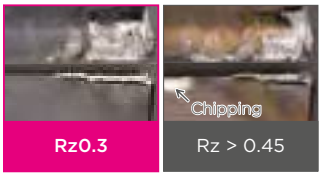




Application Examples

[STKM12C-EC Pipe]

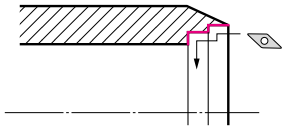


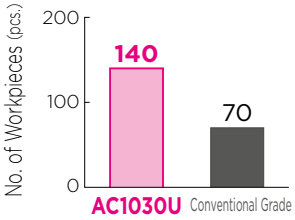


AC1030U (1,700 pcs) | Conventional Grade (1,650 pcs)

Insert: CCGT060201L FX
Cutting Conditions: vc = 196m/min, f = 0.04mm/rev, ap = 0.4mm Wet

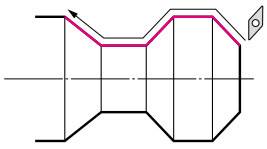
[C45 Shaft Stator]

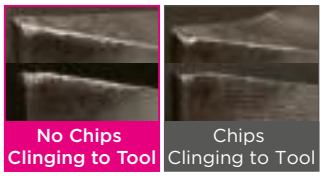




Insert: VCGT110302R FX
Cutting Conditions: vc = 195m/min, f = 0.12mm/rev, ap = 0.175 to 0.25mm Wet

[X5CrNi18-10 Body Valve]

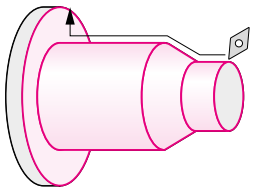


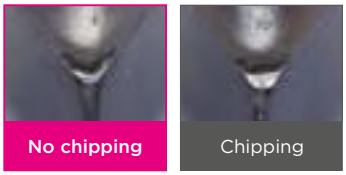


AC1030U (1,500 pcs) | Competitor's Grade C (1,000 pcs)

Insert: VCGT110301R FY
Cutting Conditions: vc = 131.5m/min, f = 0.025mm/rev, ap = 0.2mm Wet

[Stainless Steel Nozzle Component]

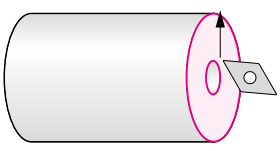


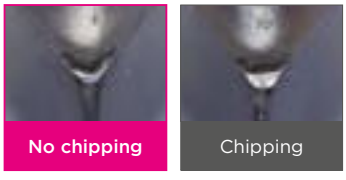


AC1030U + SI (2,400 pcs) | Conventional Grade (1,200 pcs)

Insert: DCGT070202MN SI
Cutting Conditions: vc = 200m/min, f = 0.06 to 0.08mm/rev, ap = 0.1mm Wet (Oil-based)

[C45 Sleeve Component]

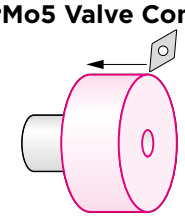


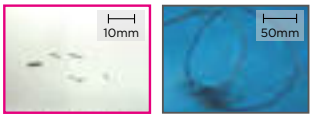


AC1030U (5,000 pcs) | Competitor's Grade D (5,000 pcs)

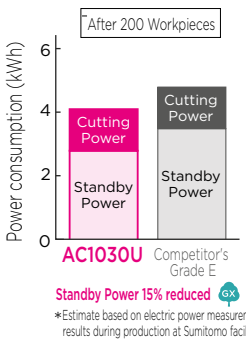
Insert: DCGT11T302MN SL
Cutting Conditions: vc = 90m/min, f = 0.05mm/rev, ap = 0.10mm Wet (Oil-based)

[15CrMo5 Valve Component]





AC1030U + FF | Competitor's Grade E



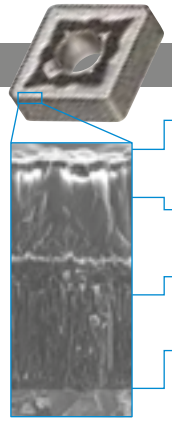
Insert: DCGT11T302MN FF
Cutting Conditions: vc = 80m/min, f = 0.050mm/rev, ap = 0.075mm Wet (Oil-based)

Coated Carbide

Features

ABSOTECH : New coating technology that realises absolute stability

CVD



Special Surface Treatment:
Chipping resistance and adhesion resistance are significantly improved by special surface treatments applied to suit the application

High Strength Alumina Layer:
Significantly improves the coating strength by controlling crystal growth direction

High Hardness Micro-grained TiCN Layer:
Significantly improves the coating hardness by using a fine and uniform crystal structure

High Adhesion Technology:
Significantly improves adhesion strength through a smooth interface between the coating and carbide substrate

- Suppresses abnormal damage such as chipping and adhesion. Stable machining is achieved in various situations.
- Next-level high strength and high hardness coating is achieved. Achieves long and stable tool life even in high-efficiency machining.

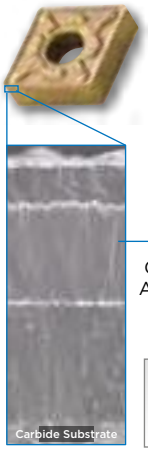
[ABSOTECH] For CVD Turning

■ Applicable Grades (For Turning)

Steel	: AC8015P, AC8020P, AC8025P, AC8035P, AC8115P
Stainless Steel	: AC6020M, AC6030M
Cast Iron	: AC4010K, AC4015K, AC4125K

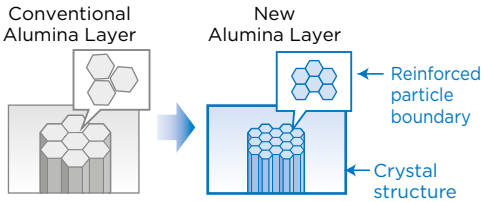
■ Applicable Grades (For Milling) : ACP2000, ACK2000

Latest technology

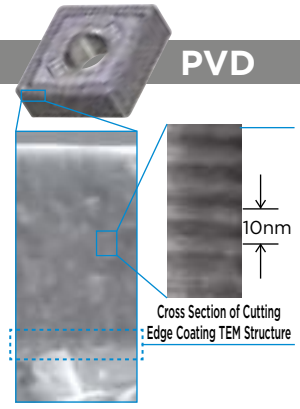


■ Applicable Grades (For Turning):
AC4125K, AC8115P

Crystal Orientation-Controlled Ultra-fine Alumina Layer:
Improved coating strength suppresses wear due to crystal fallout, achieving wear resistance of at least 1.5x against conventional coating



PVD



Our proprietary super multi-layered coating structure: Advanced nanotechnology enables nanometre-level thickness (1 nanometre is one billionth of a metre). Hardness, thermal resistance and toughness are significantly improved by alternately layering one thousand layers of super thin films

High Adhesion Technology:
Significantly improves adhesion strength through advanced control technology at the interface of the coating and carbide substrate

- Optimised coating composition according to application. Achieves stable machining regardless of the work material.
- Significantly improves chipping resistance by improving coating adhesion strength. Stable machining is realised even under high load conditions.

[ABSOTECH] For PVD Turning/Milling

■ Applicable Grades (For Turning)

Stainless Steel	: AC6040M, AC6135M, AC6145M
Heat-Resistant Alloy	: AC5005S, AC5015S, AC5025S
Titanium Alloy	: AC9115T, AC9125T
For Small Lathes	: AC1030U

■ Applicable Grades (For Milling) : ACS1000, ACS2500, ACS3000, ACU2500, ACP3000, ACK3000

Latest technology

■ Applicable Grades (For Turning) Stainless Steel: AC6135M, AC6145M



TiAlBCN-based multi-layered coating provides excellent wear, fracture and adhesion resistance and exhibits absolute stability in the turning of stainless steels

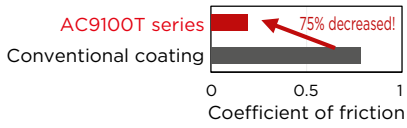
- Adhesion Resistance Layer
  The use of a TiCN-based composition with excellent lubricity suppresses adhesion and the resulting chipping
- Wear Resistance Layer
  The use of our proprietary high-hardness TiAlBN-based super multi-layered coating significantly suppresses crater wear and flank wear
- Chipping Resistance Layer
  The use of an ultra-fine grain TiAlBN-based composition with excellent toughness suppresses unexpected chipping
- High Adhesion Technology
  Improved stability with special technology enhancing coating adhesion strength

■ Applicable Grades (For Turning) Titanium Alloy: AC9115T, AC9125T



Utilising the industry's first WC-based composition that suppresses chemical reactions to titanium alloy, which significantly improves wear resistance

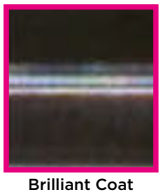
Coefficient of friction for Ti-6Al-4V (Load: 1N, test time: 30 seconds)



Brilliant Coat PVD

Brilliant Coat provides excellent lubricity for higher quality machining

- PVD coating with excellent wear resistance and lubricity
- Suppresses reactions with work material and realises beautiful machined surfaces





Work Material: St52
Insert: CNMG120408 NLU
Cutting Conditions: vc = 100m/min
f = 0.15mm/rev
ap = 1.0mm Wet

■ Applicable Grades: (For Turning) T1500Z, T2500Z

AURORA Coat (DLC: Diamond Like Carbon) PVD

Using our proprietary PVD process technology, we have developed a hydrogen-free DLC coating that is extremely hard, flat and smooth

- Comparison of Cutting Edge Adhesion after Cutting ADC12



Work Material: G-AlSi12(Cu)
Cutting Conditions: vc = 300m/min
fz = 0.15 mm/t
ap = 5 mm
ae = 5mm Dry

- Second only to diamond in terms of hardness, this flat and smooth coating has a low coefficient of friction and provides excellent adhesion resistance to deliver better quality machined surfaces
- Can be used for high-speed, high-efficiency cutting of aluminum alloys, copper alloys, resins and more

■ Applicable Grades: (For Milling) DL1000, DL2000 (For Endmilling) DL1000, DL1200 (For Drilling) DL1300, DL1500

Coated Carbide

Characteristic Values

For Turning (CVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grades
P Steel	**AC8015P**	91.0	2.3	ABSOTECH	14	· For high-speed and high-efficiency machining of steel · Crystal orientation control technology is used to drastically suppress the advancement of crater wear, achieving long, stable tool life during high-speed and high feed cutting	AC810P
	New **AC8115P**	91.4	2.3	ABSOTECH	20	· Advancement in fine crystal alumina grain orientation control technology greatly reduces the progress of crater damage. · Supports dry machining as well as high-speed, high-efficiency machining of steel	AC8015P
	AC8020P	90.5	2.2	ABSOTECH	18	· Our 1st recommended grade for turning mill-scale on forged material · Alumina coating with even higher strength balances outstanding stability and wear resistance in turning mill-scale work	AC820P
	AC8025P	90.1	2.3	ABSOTECH	12	· Our 1st recommended grade for turning steel · Smooth surface treatment suppresses abnormal damage from adhesion/chipping while realizing stable tool life over a wide range of work materials and cutting speeds	AC820P
	AC8035P	89.4	2.6	ABSOTECH	9	· For interrupted machining of steel · Coating layer tensile stress removal technology greatly improves fracture resistance and achieves long, stable tool life in heavy interrupted cutting	AC830P
M Stainless Steel	**AC6020M**	90.1	2.3	ABSOTECH	5	· For high-speed machining of stainless steel · Adopts a high-hardness carbide substrate and new coating to realise excellent wear resistance and fracture resistance, resulting in stable long tool life in high-speed machining	AC610M
	AC6030M	89.5	2.7	ABSOTECH	5	· Our 1st recommended grade for turning stainless steel · Drastically reduces the occurrence of abnormal damage in stainless steel machining and achieves long and stable tool life thanks to the new coating	AC630M
	AC630M	89.5	2.7	Super FF Coat	5	· General-purpose grade with a superior balance of fracture and wear resistance for stainless steel machining · Supports continuous and light cutting of steel with low cutting speeds	AC304
K Cast Iron	**AC4010K**	91.1	2.5	ABSOTECH	20	· Our 1st recommended grade for turning grey cast iron · For high-speed cast iron turning · New thick coating realises stable long tool life even with ultra-high-speed machining of grey cast iron at vc = 700m/min	AC405K
	AC4015K	91.1	2.5	ABSOTECH	16	· Our 1st recommended grade for turning ductile cast iron · New high-adhesion, high-strength coating realises high wear resistance and chipping resistance for stable long tool life over a wide range of cutting conditions	AC415K
	AC420K	91.1	2.5	Super FF Coat	12	· For interrupted machining of cast iron · Designed as a grade with emphasis on fracture resistance and chipping resistance, outstanding stability is realised with heavy interrupted cutting and unstable cutting of cast iron	AC700G
	New **AC4125K**	91.1	2.5	ABSOTECH	12	· Our 1st recommended grade for interrupted machining of cast iron · Especially effective for stable long life in roughing of parts like differential cases and carriers	AC420K

For Milling (CVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grades
P Steel	**ACP100**	89.3	3.1	Super FF Coat	6	· For high-speed machining of steel · Grade emphasising wear resistance for high-speed cutting	AC230
	ACP2000	89.5	3.2	ABSOTECH	10	· For high-speed machining of steel · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	**ACM200**	89.8	3.4	Super FF Coat	6	· For machining high-hardness stainless steel · Adopts newly developed high-strength carbide substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK100**	92.0	2.4	Super FF Coat	6	· For high-speed cast iron milling · Adopts a high-hardness substrate with high wear resistance	—
	ACK200	91.7	2.5	Super FF Coat	6	· For high-speed cast iron milling · Adopts a tough carbide substrate with excellent wear resistance and thermal crack resistance	AC211
	ACK2000	91.7	3.1	ABSOTECH	10	· For high-speed cast iron milling · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

Coated Carbide

Characteristic Values

For Turning (PVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**AC530U**	91.4	3.3	Super ZX Coat	3	· For interrupted machining of steel and stainless steel · Adopts a micro-grained tough carbide substrate and super multi-layered coating to realise outstanding fracture resistance	ACZ310
M Stainless Steel	**AC6040M**	91.6	3.8	ABSOTECH	3	· Improved stability in interrupted machining through utilising a coating with excellent adhesion resistance and peel-off resistance	AC530U
M Stainless Steel	New **AC6135M**	91.6	3.8	ABSOTECH	3	· Our 1st recommended grade for interrupted machining of stainless steel · Outstanding stability in interrupted machining through utilising a multi-layered coating, balancing high wear resistance and adhesion resistance · Can also be used for interrupted machining of steel	–
M Stainless Steel	New **AC6145M**	89.8	3.4	ABSOTECH	3	· Grade specialized for fracture resistance, ideal for heavy interrupted machining of stainless steel · Achieves long and stable tool life in heavy interrupted machining through the use of a high-toughness substrate	–
S Exotic Alloy	**AC5005S**	93.1	2.8	ABSOTECH	5	· For high-speed and high-efficiency machining of exotic alloys · Utilising a dedicated carbide substrate with exceptional high-temperature strength realises excellent wear resistance in high-speed, high-efficiency machining	–
S Exotic Alloy	**AC510U**	92.6	2.6	Super ZX Coat	3	· For continuous to partially interrupted machining of exotic alloys · Grade with an emphasis on wear resistance and thermal resistance for continuous machining of exotic alloys · Can also be used for interrupted machining of cast iron	EH510Z EH10Z
S Exotic Alloy	**AC5015S**	92.7	3.2	ABSOTECH	5	· Our 1st recommended grade for machining exotic alloys · Adopts a carbide substrate with excellent thermal resistance and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cutting conditions	AC510U
S Exotic Alloy	**AC520U**	91.7	3.0	Super ZX Coat	3	· For interrupted machining of exotic alloys · Grade with an emphasis on fracture resistance for interrupted machining of exotic alloys · Also suitable for interrupted machining of stainless steel	EH520Z EH20Z
S Exotic Alloy	**AC5025S**	91.8	3.6	ABSOTECH	5	· For partially interrupted to interrupted machining of exotic alloys · Adopts a carbide substrate with excellent fracture resistance and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life under unstable cutting conditions	AC520U
S Exotic Alloy	New **AC9115T**	92.6	2.6	ABSOTECH	1	· Our 1st recommended grade for titanium alloy machining · Utilising a specialised coating with reaction resistance in titanium alloy turning realises long tool life with significantly improved wear resistance	–
S Exotic Alloy	New **AC9125T**	91.7	3.0	ABSOTECH	1	· For interrupted machining of titanium alloy · Utilising a high-toughness substrate for improved stability in interrupted machining applications	–
H Hardened Steel	**AC503U**	93.2	1.7	Super ZX Coat	3	· For roughing of hardened steel · Adopts a high-hardness carbide substrate coupled with a super multi-layered coating to realise outstanding wear resistance	–
For Small Lathes	**AC1030U**	91.6	3.8	ABSOTECH	2	· Our 1st recommended grade for high-precision machining · Adopts a new coating with excellent adhesion resistance and peel-off resistance which realises outstanding stability and machined surface quality due to the improved cutting edge quality	–

For Milling (PVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**ACU2500**	91.6	3.8	ABSOTECH	3	· General-purpose grade covering steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials	–
P Steel	**ACP200**	89.5	3.2	(New) Super ZX Coat	3	· Our 1st recommended grade for steel applications · General-purpose grade with an excellent balance of wear and fracture resistance · Also suitable for machining stainless steel	ACZ330
P Steel	**ACP300**	89.3	3.1	(New) Super ZX Coat	3	· For interrupted machining of steel · Tough grade with an emphasis on fracture resistance · Also suitable for interrupted machining of stainless steel	ACZ350
P Steel	**ACP3000**	89.5	3.2	ABSOTECH	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM300**	89.8	3.4	(New) Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts a high-strength carbide substrate and a super multi-layered coating for next-level wear resistance and fracture resistance	–
K Cast Iron	**ACK300**	91.4	3.3	(New) Super ZX Coat	3	· General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
K Cast Iron	**ACK3000**	91.7	3.1	ABSOTECH	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL1000**	92.9	2.1	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	–
N Non-Ferrous Metal	**DL2000**	91.6	3.8	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	–
S Exotic Alloy	New **ACS1000**	91.6	3.8	ABSOTECH	3	· For high-efficiency milling of exotic alloys · High-hardness carbide substrate coupled with a chipping-resistant coating provides long and stable tool life in high-speed, high-efficiency machining applications	–
S Exotic Alloy	**ACS2500**	90.8	4.2	ABSOTECH	3	· First recommendation for titanium alloy applications · Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance	ACM200
S Exotic Alloy	**ACS3000**	89.8	3.4	ABSOTECH	3	· Suitable for a wide range of exotic alloy machining applications · Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating	ACM300

*Brilliant Coat may appear a slightly different colour or lustre due to light interference, but these variations do not affect the performance.

Cermet



Various grades and expanded range of catalogue items meet a wide range of finishing needs.

Grade with Better Wear Resistance T1000A, General-purpose Grade T1500A, General-purpose Coated Grade T1500Z, Grade with Better Toughness T2500Z in the Lineup.
Expanded lineup of catalogue items for a wide variety of finishing applications.

Features

Uncoated

T1000A

High-hardness grade with superior wear resistance
- Improved wear and fracture resistance
- Solid solution hard phase reduces reaction with steel
- Perfect for high-speed continuous finishing of steel, cast iron, and sintered alloys



Coated

T1500Z

General-purpose coated grade that employs our proprietary Brilliant Coat* PVD coating with excellent lubricity
- Excellent wear resistance provides long tool life
- Reduces adhesion of work material for beautiful finished machined surfaces



Uncoated

T1500A

A general-purpose grade that provides both wear and fracture resistance with higher-quality surface finishes
- Mixing hard phases of different functionality, grain size and composition improves balance of wear and fracture resistance
- Improved cutting edge treatment technology provides beautiful finished machined surfaces



Coated

T2500Z

Tough grade with excellent fracture resistance and thermal crack resistance
- Fine, uniform grain structure greatly improves toughness
- Improves thermal crack resistance due to high thermal conductivity and realises stable, long tool life
- Uses Brilliant Coat* with excellent lubricity to realise excellent machined surface quality



Characteristic Values

For Turning

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grades
P Steel K Cast Iron	**T1000A**	93.3	1.8	—	—	· For continuous machining of steel · High-hardness grade with superior wear resistance · Supports finishing of cast iron and sintered alloys	T110A
	T1500A	92.0	2.2	—	—	· Our 1st recommended cermet grade for machining steel · General-purpose grade with an excellent balance of wear and fracture resistance, achieving an excellent machined surface over a wide range of cutting conditions	T1200A
	T2500A	91.8	2.4	—	—	· For interrupted machining of steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes even with interrupted cutting	—
	T1500Z	92.0	2.2	Brilliant Coat*	3	· Adopts Brilliant Coat for excellent lubricity and higher machined surface quality	T2000Z
	T2500Z	91.8	2.4	Brilliant Coat*	3	· For finishing of steel · The use of Brilliant Coat with excellent lubricity and a tough cermet substrate realises excellent machined surface quality and superb stability	T3000Z

For Milling

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grades
P Steel M Stainless Steel	**T1500A**	92.0	2.2	—	—	· For finishing of steel and stainless steel · Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	· For finishing of steel and stainless steel · Tough grade with enhanced crack development resistance	—
	T2500A	91.8	2.4	—	—	· For finishing of steel and stainless steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A
	T4500A	91.0	2.3	—	—	· For finishing of steel and stainless steel · Tough grade with excellent fracture resistance and reduced thermal cracking	—

*Brilliant Coat may appear a slightly different colour or lustre due to light interference, but these variations do not affect the performance.

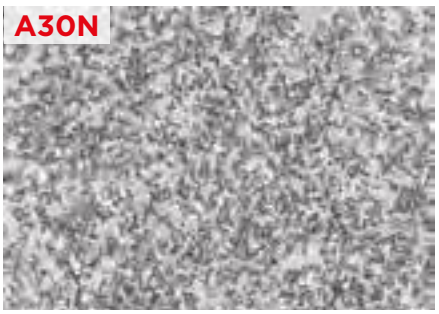
Cemented Carbide

IGETALLOY cemented carbides have a solid history and a wide variety of grades to suit many different applications. They are widely used and appreciated for their superior performance.

The IGETALLOY range consists of cemented carbide grades with various characteristics that correspond to the cutting tool application. This is achieved by varying the carbide components: the WC structure (main component) and additives such as TiC, TaC, and Co (binder).
The wide selection of IGETALLOY grades provides excellent wear resistance and toughness in various cutting conditions.

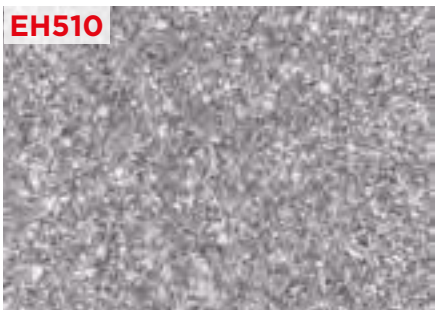
● For Steel

A30N



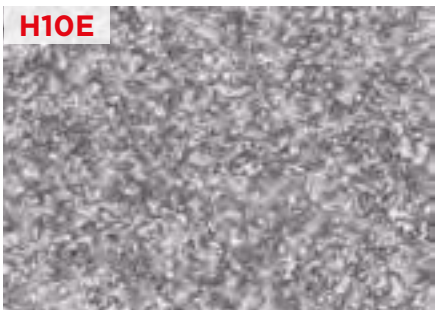
● For Stainless Steel

EH510



● For Cast Iron

H10E



Characteristic Values

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Thermal Conductivity (W/m/°C)	Young's Modulus (GPa)
P Steel	ST10P	92.1	1.9	25	470
	ST20E	91.8	1.9	42	550
	ST40E	90.4	2.6	75	—
M Stainless Steel	A30	91.3	2.1	35	520
	A30N	91.0	2.4	35	500
K Cast Iron	BL130	94.3	2.9	56	660
	H2	93.2	1.8	105	600
	H10E	92.3	2.0	67	560
	G10E	91.1	2.2	105	620
N Non-Ferrous Metal	H1	92.9	2.1	109	650
	H20	91.6	3.8	—	590
S Exotic Alloy	EH510	92.6	2.6	76	630
	EH520	91.7	3.0	78	600

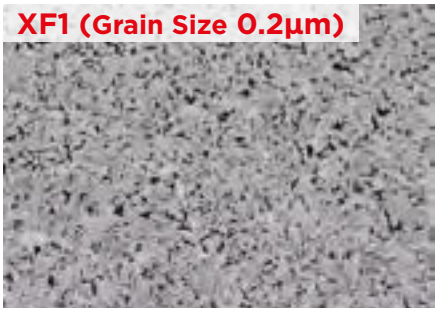
Cemented Carbide

The IGETALLOY micro-fine grained carbide series performs at a world-class level to deliver superior performance in small drills and other tools.

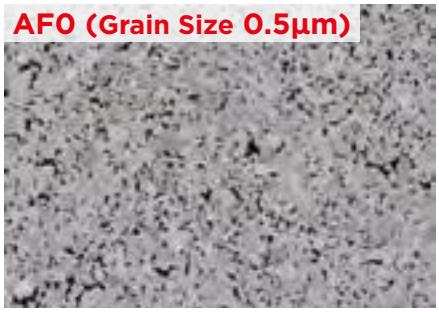
IGETALLOY micro-fine grained cemented carbides feature a WC structure between 0.2 and 1µm and are extremely strong and hard. They also provide excellent sharpness and superb surface quality on machined surfaces.
These features provide excellent performance in a variety of applications from ø0.1mm PCB drills and endmill materials to thin-bladed slitters and precision molds.

● Ultra-fine Grained Carbide

XF1 (Grain Size 0.2µm)

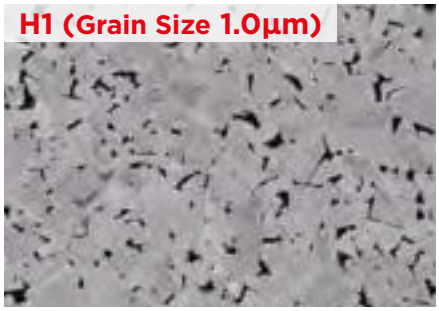


AF0 (Grain Size 0.5µm)



● Micro-grained Carbide

H1 (Grain Size 1.0µm)



Characteristic Values

Classification	Grade	Properties					Features	Applications
		Grain Size *1 (µm)	Co Content (wt%)	TRS *2 (GPa)	Hardness (HRA)	Hardness HV (GPa)		
Ultra-fine Grained Carbide	**XF1**	0.2	9.0	4.0	93.5	20.4	World's smallest grain size ultra-fine grained carbide	Microdrills, Very Small Diameter Drills
	AF1	0.5	12.0	4.4	92.5	17.3	World's toughest ultra-fine grained carbide	Microdrills, Mini-tools, Punches
	AF0	0.5	10.0	4.1	93.0	18.1	Tough, wear-resistant ultra-fine grained carbide	Microdrills, Routers
	AFU	0.5	8.0	3.8	93.6	19.4	Wear-resistant ultra-fine grained carbide	PCB Drills, Endmills for High-Hardness Materials
Micro-fine Grained Carbide	**A1**	0.7	13.0	4.2	91.4	15.6	Tough micro-fine grained carbide	Endmills, Taps, Drills for Cast Iron, Punches
	KH12	0.7	10.0	4.0	92.4	17.0	Micro-fine grained carbide with excellent wear resistance and toughness	Endmills, Drills for Steel
	KH15	0.7	12.0	4.4	92.0	16.3	Micro-fine grained carbide with a balance of hardness and strength	Endmills for Exotic Alloys
	F0	0.7	5.0	3.6	93.6	20.1	Micro-fine grained carbide with superior wear resistance	PCB Drills, Routers
Micro-grained Carbide	**KH03**	1.0	10.0	3.8	91.4	15.2	Micro-grained carbide with excellent strength and toughness	Molds/Dies, Drills, Endmills
	KH05	1.0	13.0	3.5	90.4	13.6	Tough, micro-grained carbide	Molds/Dies
	H1	1.0	5.0	3.3	93.2	17.7	Micro-grained carbide with superior wear resistance	Drills for Cast Iron and High-Hardness, Reamers
	EH10	1.2	6.0	3.4	92.4	17.3	Fine-grained carbide with good balance of hardness and toughness	Drills for Exotic Alloy, Reamers
	ZF16A	1.0	6.0	3.5	93.0	17.6	Wear and chipping resistant micro-grained carbide for high-speed machining	PCB Drills

*1: Grain size shown is the average grain size of the WC (tungsten carbide) material. *2: Transverse rupture strength differs between round bars and plates.

Carbide Materials ••• K2

CBN



High hardness and thermal resistance for cutting hardened steel and hard cast iron.
High-speed finishing of grey cast iron with long tool life is also possible.

"SUMIBORON" was first successfully developed in Japan by our company in 1977. "Coated SUMIBORON" with a special ceramic coating and "SUMIBORON BINDERLESS" made by directly bonding CBN particles without a binder are new additions to our product lineup.

Features

Structure Features	Structure	CBN Content	Hardness (GPa)	Grades	Work Materials/Applications	Features
Pure CBN particles, firmly bonded		High	54	NCB100	Cast Iron, Titanium Alloy, Pure Titanium, Cobalt-chrome Alloy, Cemented Carbide, Cermet	· Containing no binder, its structure of directly bonded nano- to sub-micron CBN particles provides high hardness and thermal conductivity, making it highly efficient with a longer tool life when machining exotic alloys such as titanium alloys and cobalt-chrome alloys
Mainly CBN grains fused together				BN7125 BN7115 BNC8115 BNS8125	Cemented Carbide, Chilled Cast Iron, Ni-Hard Cast Iron, Sintered Ferrous Alloy, Heat-Resistant Alloy, Cast Iron	· High CBN content. Structure consists of strongly fused CBN grains · Suited to cutting cast iron, heat-resistant alloy, cemented carbide and other high-hardness materials
Mainly CBN grains held together with a binder		Low	27	BN1000 / BN2000 / BN350 BNX10 / BNX20 / BN500 BNC2115 / BNC2125 / BNC2105 / BNC2135 / BNC2010 / BNC2020 / BNC300 / BNC200 / BNC500	Alloy Steel, Case Hardened Steel, Carbon Tool Steel, Bearing Steel, Die Steel, Ductile Cast Iron	· CBN grains are fused together strongly with a special ceramic binder · Strong CBN binding provides superior wear resistance and toughness when cutting hardened steel and cast iron

Grade Range Map

Work Material	Series	High-speed Cutting	Finishing to Light Cutting	Medium Cutting		Rough to Heavy Cutting
H Hardened Steel	Classification	–	H01	H10	H20	H30
	Coated SUMIBORON	BNC2105	BNC2115	BNC2125		BNC2135 (New)
			BNC2010	BNC2020		BNC300
				BNC200		
	Uncoated SUMIBORON	BN1000		BN2000		
		BNX10			BNX20	BN350
Sintered Alloy	Classification	—	01	10	20	30
	Uncoated SUMIBORON	BN7115				
			BN7125			
K Cast Iron	Classification	—	K01	K10	K20	K30
	Coated SUMIBORON	BNC500*			BNC8115	
	Uncoated SUMIBORON	NCB100				
			BN500			
		BN7125				
					BNS8125	
S Exotic Alloy	Classification	—	S01	S10	S20	S30
	Uncoated SUMIBORON	NCB100				
			BN7125			
				BNS8125		

*Dedicated for Ductile Cast Iron

CBN

Characteristic Values

Work Material	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
H Hardened Steel	**BNC2105**	TiCN	45 to 50	3	30 to 32	1.1 to 1.2	TiAlBN Super Multi-layered Coating	3	Grade with excellent wear resistant coating and a CBN substrate ideal for high-speed finishing applications.
	BNC2115	TiN	60 to 65	3	31 to 33	1.3 to 1.4	TiAlSiN Super Multi-layered Coating	3	Utilizing a coating with exceptional notch wear resistance and a tough CBN substrate to achieve stable and excellent surface finish.
	BNC2125	TiN	65 to 70	4	33 to 35	1.5 to 1.6	TiAlBN Super Multi-layered Coating	3	Combination of a tough CBN substrate and a coating that has a balance of wear resistance and toughness, to achieve even more stable machining.
	New **BNC2135**	TiN	60 to 65	1	33 to 35	1.6 to 1.7	TiAlN/AlCrN	1	Utilising a highly fracture-resistant coating and a high-strength CBN substrate to achieve long and stable tool life in interrupted machining.
	BNC2010	TiCN	50 to 55	2	30 to 32	1.1 to 1.2	TiCN Multi-layered Coating	2	Improved wear resistance from coating and substrate, achieves excellent and consistent surface roughness.
	BNC2020	TiN	70 to 75	5	34 to 36	1.4 to 1.5	TiAlN Multi-layered Coating	2	Utilising a tough substrate along with a highly wear-resistant and adhesive coating layer, to achieve long tool life in general-purpose to high-efficiency machining.
	BNC300	TiN	60 to 65	1	33 to 35	1.5 to 1.6	TiAlN	1	Suitable for finishing of workpieces with a mixture of continuous and interrupted cutting portions.
	BNC200	TiN	65 to 70	4	33 to 35	1.4 to 1.5	TiAlN	3	A tough CBN substrate and a coating with high wear resistance provide a long tool life.
	BN1000	TiCN	40 to 45	1	27 to 31	0.9 to 1.0	—	—	Grade with ultimate wear and fracture resistance, suitable for high-speed cutting.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	—	—	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.
	BNX20	TiN	55 to 60	3	31 to 33	1.0 to 1.1	—	—	Grade with excellent crater wear resistance, suitable for high-efficiency cutting under high-temperature conditions.
	BN350	TiN	60 to 65	1	33 to 35	1.5 to 1.6	—	—	Grade with the highest cutting edge strength, suitable for heavy interrupted cutting.
	BNX10	TiCN	40 to 45	3	27 to 31	0.9 to 1.0	—	—	Highly wear-resistant grade, suitable for high-speed continuous machining.
K Cast Iron / Sintered Alloy	**BN7115**	Co Compound	90 to 95	1	41 to 44	2.2 to 2.3	—	—	Grade with the best cutting edge sharpness and fracture resistance, suitable for finishing of sintered alloy.
	BN7125	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	General-purpose grade with excellent wear resistance, fracture resistance, and thermal shock resistance, suitable for machining of cast iron and exotic alloys
	BNS8125	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	—	—	Grade with 100% solid CBN structure that exhibits excellent wear and fracture resistance
	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure, using PVD coating with excellent wear resistance to enable roughing operations.
	BNC500 (For Ductile Cast Iron)	TiC	60 to 65	4	32 to 34	1.1 to 1.2	TiAlN	3	Grade suitable for machining of hard-to-cut cast iron, thanks to the highly wear-resistant substrate and coating.
	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron cutting. Provides superior wear and fracture resistance.
	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting improved wear and fracture resistance in roughing of sintered materials and machining of cast iron and exotic alloys
	BN7500	Co Compound	90 to 95	1	41 to 44	2.0 to 2.1	—	—	Grade maintaining good cutting edge sharpness, suitable for finishing of sintered alloys
S Exotic Alloy	**NCB100**	—	100	Up to 0.5	51 to 54	1.8 to 1.9	—	—	Achieves high efficiency, improved machining accuracy, and longer tool life in machining of exotic alloys such as titanium alloy and cobalt-chrome alloys

TRS measured with test piece equivalent to the insert's CBN layer

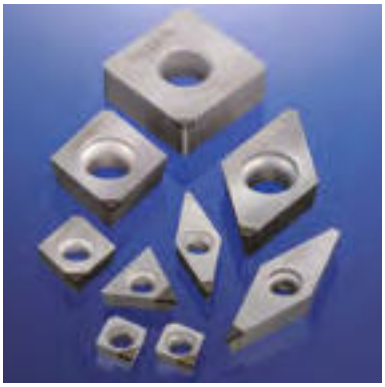
CBN **SUMIBORON Coated SUMIBORON series** ••• L2 ~

Polycrystalline Diamond



Excellent wear resistance, longer tool life and high-speed, high-efficiency, high-precision cutting of non-ferrous metals and non-metals.

SUMIDIA is a polycrystalline diamond material made from sintered diamond powder that was first created using our proprietary technology in 1978.
SUMIDIA's superior wear resistance achieves longer tool life in high speed, high-efficiency and high precision machining of non-metal and non-ferrous metal applications including aluminum, copper, magnesium and zinc alloys.

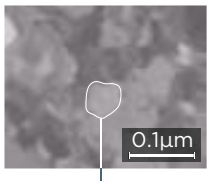
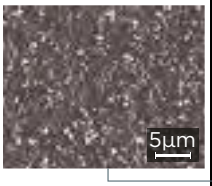
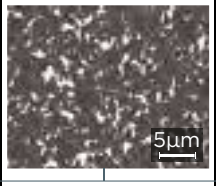
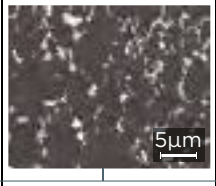
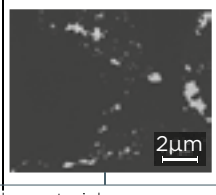


SUMIDIA BINDERLESS uses nano-polycrystalline diamond for the cutting edge, demonstrating excellent wear resistance and fracture resistance. In particular, it achieves extended tool life and machining accuracy superior to conventional polycrystalline diamond when machining hard brittle materials such as cemented carbide.

Features

● High density sintered material made of diamond particles ranging from sub-microns to tens of microns.

Structure

SUMIDIA BINDERLESS	SUMIDIA				
NPD10	DA1000	DA2200	DA150	New DA1090	DA90
					
Diamond particles	*White areas in the image are the binder material				

Grade Range Map

Work Material	Series	Finishing to Light Cutting		Medium Cutting	Rough to Heavy Cutting
Hard Brittle Materials	Classification	01	10	20	30
	SUMIDIA BINDERLESS	NPD10			
	SUMIDIA		DA1090		
			DA90		
N Non-Ferrous Metal	Classification	N01	N10	N20	N30
	SUMIDIA	DA1000			
			DA2200		
		DA1090	DA150		
		DA90			

Polycrystalline Diamond

Characteristic Values

Work Material	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HK (GPa)	TRS (GPa)	Features
Hard Brittle Materials	**NPD10**	—	100	up to 0.05	120 to 130	≈ 3.15	100% diamond structure that directly binds nano-order diamond particles with high strength. Demonstrates optimum wear and fracture resistance as well as the best edge sharpness.
N Non-Ferrous Metal	**DA1000**	Co	90 to 95	up to 0.5	50 to 60	≈ 2.60	High-density sintered material made of ultra-fine grain diamond that exhibits optimum wear and fracture resistance as well as excellent edge sharpness.
	DA2200	Co	85 to 90	0.5	45 to 55	≈ 2.45	Sintered material made of ultra-fine grain diamond that demonstrates both wear and fracture resistance and excellent edge sharpness.
	DA150	Co	85 to 90	5	50 to 60	≈ 1.95	Micro-grained sintered diamond particles with both machinability and wear resistance.
	New **DA1090**	Co	92 to 97	Up to 50	55 to 70	≈ 1.30	A polycrystalline diamond material with the highest diamond content, made by sintering coarse diamond particles at high density. High density and enhanced particle binding strength exhibit excellent wear and fracture resistance.
	DA90	Co	90 to 95	50	50 to 65	≈ 1.10	Coarse sintered diamond particles, with high diamond content for excellent wear resistance.

TRS measured with test piece equivalent to insert PCD layer

PCD **SUMIDIA series** ••• M2

PCD **SUMIDIA BINDERLESS** ••• M4

Material Properties

■ Material Properties

Material		Specific Gravity	Hardness (mHv) (GPa)	Young's Modulus (GPa)	Thermal Conductivity (W/m/°C)	Coefficient of Linear Expansion (X 10^{-6}/°C)	Melting Point (°C)
Tungsten Carbide	**WC**	15.6	21	690	126	5.1	2,900
Titanium Carbide	**TiC**	4.94	31	450	17	7.6	3,200
Tantalum Carbide	**TaC**	14.5	18	280	21	6.6	3,800
Niobium Carbide	**NbC**	8.2	20	340	17	6.8	3,500
Titanium Nitrate	**TiN**	5.43	20	260	29	9.2	2,950
Aluminum Oxide	**Al_2O_3**	3.98	29	410	29	8.5	2,050
Silicon Nitride	**Si_3N_4**	3.17	25	310	29	3.0	> 1,900 (decomposes)
Cubic Boron Nitride	**cBN**	3.48	44	700	1,300	4.7	—
Diamond	**C**	3.52	> 90	970	2,100	3.1	—
Cobalt	**Co**	8.9	—	100 to 180	69	12.3	1,495
Nickel	**Ni**	8.9	—	200	92	13.3	1,455
Cemented Carbide	**WC-5% Co**	15.0	18	630	79	5.0	—
	WC-10% Co	14.6	14	580	75	5.0	—
	WC-20% Co	13.5	10	530	67	6.0	—
High Speed Steel		8.7	8	210	17	11.0	—

Indexable Inserts for Turning

Negative / Positive / Ceramic B1 to B130

B



Indexable Insert Identification Code ····· B2
Chipbreaker Selection ····· B4

New Chipbreakers EH type / SL type / RE type ····· B10

Negative Inserts
C / 80° Diamond type (With Hole) ····· B12
D / 55° Diamond type (With Hole) ····· B23
S / Square type (With Hole) ····· B31
S / Square type (Without Hole) ····· B44
T / Triangular type (With Hole) ····· B46
T / Triangular type (Without Hole) ····· B56
V / 35° Diamond type (With Hole) ····· B58
W / Trigon type (With Hole) ····· B61

Positive Inserts
C / 80° Diamond type (With Hole) ····· B66
D / 55° Diamond type (With Hole) ····· B78
R / Round type (With Hole) ····· B86
S / Square type (With Hole) ····· B88
S / Square type (Without Hole) ····· B94
T / Triangular type (With Hole) ····· B98
T / Triangular type (Without Hole) ····· B99
V / 35° Diamond type (With Hole) ····· B116
W / Trigon type (With Hole) ····· B124

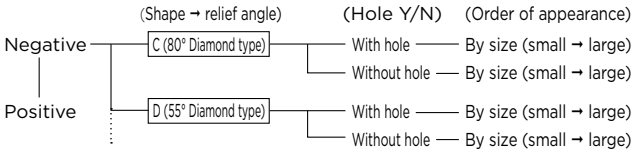
Solid SUMIBORON ····· B126

Precautions When Using Wiper Inserts ····· B127

Format of This Chapter

(1) Turning insert listing order is negative type inserts followed by positive type inserts.
(2) The order of listing in each type group is as follows: C (80° Diamond type) → D (55° Diamond type) → R (Round type) → S (Square type) → T (Triangular type) → V (35° Diamond type) → W (Trigon type).
(3) Listings of inserts with the same relief angle starts with for those with holes and then those without holes.
(4) Inserts are grouped by shape and then further divided by size (small to large according to cutting edge length and thickness).

•Structure Diagram



Symbols in Insert Diagrams

*Symbols conform to ISO13399.

L: Cutting edge length, IC: Inscribed circle, S: Thickness, RE: Corner radius, D1: Hole diameter (For SUMIBORON and SUMIDIA, L indicates side length.)

Handed Inserts

*Typically, photos show right-handed inserts.

Insert Grades

(1) For IGETALLOY, the grades listed include Coated Carbide (CVD/PVD), Cermet, Cemented Carbide, and Ceramic.
(2) SUMIBORON and SUMIDIA are described only in SUMIBORON section (→ page L34 onward), and SUMIDIA section (→ page M10 onward).

Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Indexable Insert Identification Code

Example **C N M G**

(1) **(1) Insert Shape** — Refer to Table 1

(2) **(2) Relief Angle** — Refer to Table 2

(3) **(3) Tolerance** — Refer to Table 3

(4) **(4) Insert Hole** — Refer to Table 4

Table 1: (1) Insert Shape

Symbol	Insert Shape		Apex Angle
C		Diamond type	80°
D			55°
E			75°
F			50°
V			35°
R		Round type	-
S		Square type	90°
T		Triangular type	60°
W		Trigon type	80°
A		Parallelogram type	85°
B			82°
K			55°
H		Hexagonal type	120°
O		Octagonal type	135°
P		Pentagonal type	108°
L		Rectangular type	90°
M		Diamond type	86°

Table 2: (2) Relief Angle

Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P*	11°
O	Others

★ mark indicates inserts that are sometimes used with a 10° relief angle.

Table 3: (3) Tolerance (mm)

Symbol	Tolerance of Corner Height	Inscribed Circle	Thickness
A	± 0.005	± 0.025	± 0.025
F	± 0.005	± 0.013	± 0.025
C	± 0.013	± 0.025	± 0.025
H	± 0.013	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.025	± 0.13
J*	± 0.005	±0.05 to ±0.15	± 0.025
K*	± 0.013	±0.05 to ±0.15	± 0.025
L*	± 0.025	±0.05 to ±0.15	± 0.025
M*	±0.08 to ±0.2	±0.05 to ±0.15	± 0.13
N*	±0.08 to ±0.2	±0.05 to ±0.15	± 0.025
U*	±0.13 to ±0.38	±0.08 to ±0.25	± 0.13

★ mark indicates inserts that generally have sintered side surfaces. Refer to the table below (reference) for details on M class precision.

Table 4: (4) Insert Hole

Symbol	Insert Hole	Hole Shape	Chipbreaker	Shape (Cross Section)	Symbol	Insert Hole	Hole Shape	Chipbreaker	Shape (Cross Section)
N	No	No	No		A	Yes	Cylindrical	No	
R			One Face		M			One Face	
F			Double-sided		G			Double-sided	
W	Yes	Straight hole + Single chamfer (40° to 60°)	No		B	Yes	Straight hole + Single chamfer (70° to 90°)	No	
T			One Face		H			One Face	
Q	Yes	Straight hole + Double chamfer (40° to 60°)	No		C	Yes	Straight hole + Double chamfer (70° to 90°)	No	
U			Double-sided		J			Double-sided	
					X	-	-	-	Special

(Reference) Breakdown of M-Class Tolerance by Shape and Size

● Tolerance of Corner Height (mm)

Inscribed Circle	Triangular type	Square type	80° Diamond type	55° Diamond type	35° Diamond type	Round type
6.35	± 0.08	± 0.08	± 0.08	± 0.11	± 0.16	-
9.525	± 0.08	± 0.08	± 0.08	± 0.11	± 0.16	-
12.70	± 0.13	± 0.13	± 0.13	± 0.15	-	-
15.875	± 0.15	± 0.15	± 0.15	± 0.18	-	-
19.05	± 0.15	± 0.15	± 0.15	± 0.18	-	-
25.40	± 0.18	± 0.18	± 0.18	-	-	-
31.75	-	± 0.20	-	-	-	-

● Inscribed Circle Tolerance (mm)

Inscribed Circle	Triangular type	Square type	80° Diamond type	55° Diamond type	35° Diamond type	Round type
6.35	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	-
9.525	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
12.70	± 0.08	± 0.08	± 0.08	± 0.08	-	± 0.08
15.875	± 0.10	± 0.10	± 0.10	± 0.10	-	± 0.10
19.05	± 0.10	± 0.10	± 0.10	± 0.10	-	± 0.10
25.40	± 0.13	± 0.13	± 0.13	-	-	± 0.13
31.75	-	± 0.15	-	-	-	± 0.15

Indexable Insert Identification Code

12 04 08 N - GE

(5) (6) (7) (8) (9)

- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Corner Radius — Refer to Table 7
- (8) Feed Direction — Refer to Table 8
- (9) Chipbreaker — Refer to Table 9

Picture of insert shown as example



Table 5: (5) Cutting Edge Length (Typical Examples)

Note: Cutting edge length indicated is measured without corner radii. (mm)

Shape	Symbol	Cutting Edge Length	Inscribed Circle	Shape	Symbol	Cutting Edge Length	Inscribed Circle	Shape	Symbol	Cutting Edge Length		Inscribed Circle	
										Negative	Positive	Negative	Positive
C 80° Diamond type	03	3.55	3.50	D 55° Diamond type	07	7.7	6.35	W Trigon type	03	3.8		5.56	
	04	4.37	4.30		09	9.7	7.94		04	4.3		6.35	
	06	6.4	6.35		11	11.6	9.525		05	5.4		7.94	
	08	8.0	7.94		15	15.5	12.70		06	6.5	3.2	9.525	3.97
	09	9.7	9.525		19	19.4	15.875		08	8.7	4.6	12.70	4.76
	12	12.9	12.70						10	10.9		15.875	
	16	16.1	15.875	V 35° Diamond type	08	8.3	4.76		11		4.3		6.35
	19	19.3	19.05		09	9.7	5.56		16		6.5		9.525
	25	25.8	25.4		11	11.1	6.35	R Round type	08	8.0		8.0	
					16	16.6	9.525		10	10.0		10.0	
					22	22.1	12.7		12	12.0		12.0	
S Square type	06	6.35	6.35	T Triangular type	06	6.9	3.97		12	12.70		12.70	
	S7	7.14	7.14		08	8.2	4.76		15	15.875		15.875	
	07	7.94	7.94		09	9.6	5.56		16	16.0		16.0	
	09	9.525	9.525		11	11.0	6.35		19	19.05		19.05	
	12	12.70	12.70		13	13.7	7.94		20	20.0		20.0	
	15	15.875	15.875		16	16.5	9.525		24	24.0		24.0	
	19	19.05	19.05		22	22.0	12.70		25	25.0		25.0	
	25	25.40	25.40		27	27.5	15.875		25	25.40		25.40	
	31	31.75	31.75		33	33.0	19.05		32	32.0		32.0	

Table 6: (6) Thickness

Symbol	Thickness (mm)
X1	*
01	1.59
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52

(*)
CC□T03X1 Insert Thickness: 1.40
CC□T04X1 Insert Thickness: 1.80

Table 7: (7) Corner Radius

Symbol	Corner Radius (mm)
00	Sharp Edged
003	0.03
008	0.08
01	0.1
015	0.15
018	0.18
02	0.2
035	0.35
04	0.4
08	0.8
10	1.0
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
M0	Round type (Metric)
00	Round type (Inch)
00	Round Insert (Imperial)

"M" after the corner radius code indicates negative tolerance.

Table 8: (8) Feed Direction

Symbol	Feed Direction
R	Right-Hand
L	Left-Hand
N	Neutral

Table 9: (9) Chipbreaker

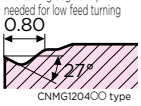
Symbol	Application	3D type (Bumpy type)	Standard	Handed type
F□	Fine Cutting to Finishing	FA, FL, FE, FF, FB, FC, FK, FP		FT, FX, FZ FYS,FY, FW
S□ L□	Light Cutting	SE, SEW, SI, SC, SF, SS, SU, SX LU, LUW, LB		SD SDW ST
G□ U□	General Machining	GE, GU, GUW UG, UP US, UX	GZ UZ	UM
M□	Roughing	MP, MU, MX, ME	MC	MM HM
H□	Heavy Cutting	HG, HP, HF	HU HW	

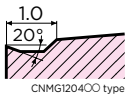
Other Specials	
Wide Chipbreaker	W
Double Positive Chipbreaker	GX
For Chamfering	C
For Round type Inserts	RD, RP, RX, RH
For Exotic Alloy Turning	EF, EG, EX, EM
For Aluminum Alloy Turning	AW, AG, AX, AY, LD, GD
For Hardened Steel Turning	FV, LV, GH
For Carburised Layer Removal	SV
For Stainless Steel Turning	EF, EG, EM

Chipbreaker Selection

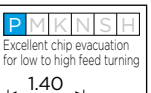
Negative type Finishing to Medium Cutting

Fine Cutting

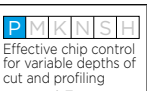
FB type — Provides excellent chip control and cutting edge sharpness needed for low feed turning


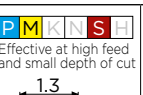
FA type — Curved faced chipbreaker is effective for fine cutting


FL type — Optimal chipbreaker for chip control on rolled steel


FE type — Excellent chip evacuation for low to high feed turning


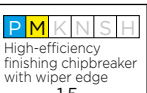
Finishing

LU type — Effective chip control for variable depths of cut and profiling


SU type — Effective at high feed and small depth of cut


SE type — Finishing chipbreaker reduces tool wear on rake face. Effective even for high-efficiency turning


EF type — Exotic alloy finishing chipbreaker with excellent chip evacuation


LUW type — High-efficiency finishing chipbreaker with wiper edge
Wiper Insert


SEW type — New high-feed finishing chipbreaker with wiper edge
Wiper Insert


FX type — Parallel chipbreaker with superior cutting edge sharpness
Sharp Edge


FY type — Wide chipbreaker with superior cutting edge sharpness
Sharp Edge


FT type — Arc-shaped ground type finishing chipbreaker


Light to Medium Cutting

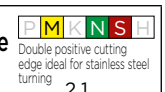
SJ type — Standard chipbreaker with excellent cutting edge strength


ST type — Arc-shaped ground type chipbreaker for light cutting

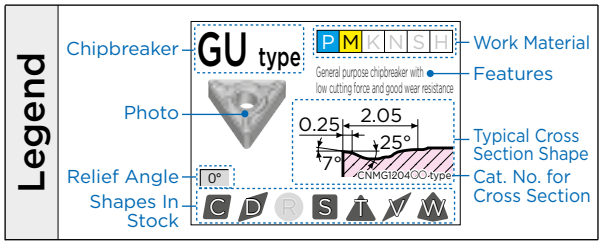

GX type — Double positive chipbreaker providing superior cutting edge sharpness
Sharp Edge Available


SX type — Enables profiling and step pull turning


EX type — Standard Chipbreaker for Exotic Alloys


UP type — Double positive cutting edge ideal for stainless steel turning


Legend

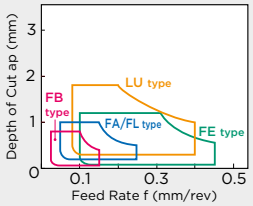


Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
BREAK MASTER (CBN/PCD) | For Chamfering

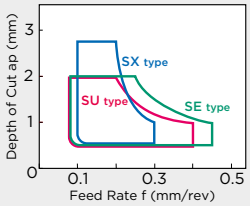
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range (Inscribed Circle of Insert up to ø12.7mm)

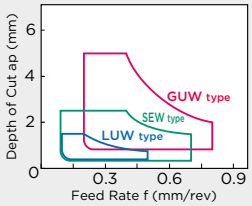
Fine Cutting to Finishing



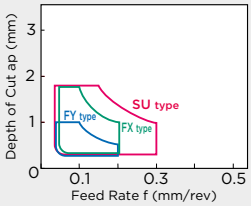
Finishing to Light Cutting



Wiper Insert



High-precision Cutting (Ground)

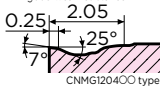


Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.). For details, refer to "Stock Items" in Chapter B.

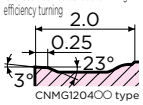
Chipbreaker Selection

Negative type Medium Cutting to Roughing

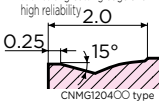
Medium Cutting

GU type — P M K N S H
General purpose chipbreaker with low cutting force and good wear resistance


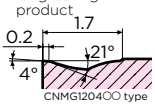
0° C D R S T V W

GE type — P M K N S H
General purpose chipbreaker with high rake face wear resistance even in high-efficiency turning


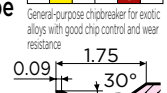
0° C D R S T V W

UX type — P M K N S H
General purpose chipbreaker with strong cutting edge and high reliability


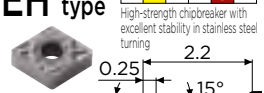
0° C D R S T V W

UG type — P M K N S H
Highly versatile, long-selling product


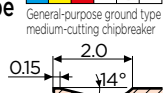
0° C D R S T V W

EG type — P M K N S H
General-purpose chipbreaker for exotic alloys with good chip control and wear resistance


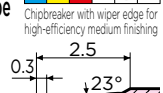
0° C D R S T V W

EH type (New) — P M K N S H
High-strength chipbreaker with excellent stability in stainless steel turning


4° C D R S T V W

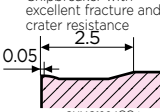
UM type — P M K N S H
General-purpose ground type medium-cutting chipbreaker


Sharp Edge Available
0° C D R S T V W

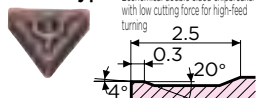
GUW type — P M K N S H
Chipbreaker with wiper edge for high-efficiency medium finishing


Wiper Insert
0° C D R S T V W

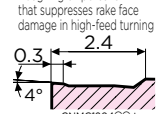
Medium to Roughing

EM type — P M K N S H
Chipbreaker with excellent fracture and crater resistance


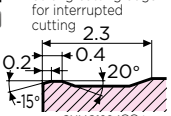
0° C D R S T V W

MU type — P M K N S H
Economical double-sided chipbreaker with low cutting force for high-feed turning


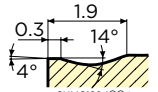
0° C D R S T V W

ME type — P M K N S H
Roughing chipbreaker that suppresses rake face damage in high-feed turning


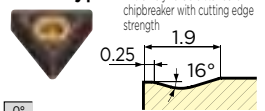
0° C D R S T V W

MX type — P M K N S H
Strong cutting edge for interrupted cutting


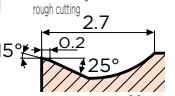
0° C D R S T V W

UZ type — P M K N S H
Standard chipbreaker with stable cutting performance


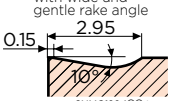
0° C D R S T V W

GZ type — P M K N S H
Extremely reliable standard chipbreaker with cutting edge strength


0° C D R S T V W

HM type — P M K N S H
Wide, M class, handed chipbreaker with low cutting force for medium to rough cutting


0° C D R S T V W

MM type — P M K N S H
Ground chipbreaker with wide and gentle rake angle


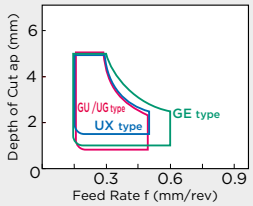
0° C D R S T V W

Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
BREAK MASTER (CBN/PCD) | For Chamfering

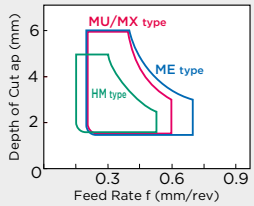
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range (Inscribed Circle of Insert up to ø12.7mm)

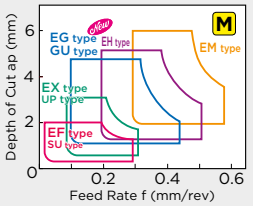
Medium Cutting



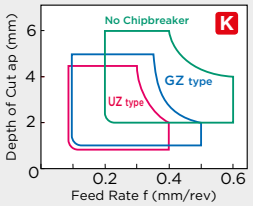
Roughing



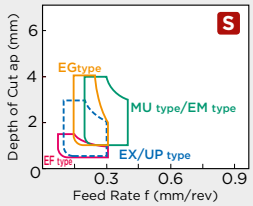
Stainless Steel



Cast Iron



Exotic Alloy



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.). For details, refer to "Stock Items" in Chapter B.

Chipbreaker Selection

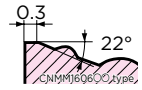
Negative type Roughing

Rough to Heavy Cutting

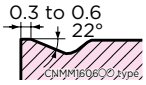
HG type — P M K N S H
Excellent chip control for heavy cutting



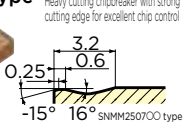
MP type — P M K N S H
Single-sided chipbreaker with low cutting force for roughing



HP type — P M K N S H
Strongest cutting edge for heavy cutting



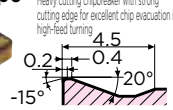
HU type — P M K N S H
Heavy cutting chipbreaker with strong cutting edge for excellent chip control



HW type — P M K N S H
Two-stepped chipbreaker with excellent chip evacuation for heavy cutting



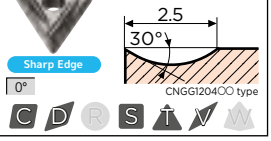
HF type — P M K N S H
Heavy cutting chipbreaker with strong cutting edge for excellent chip evacuation in high-feed turning



Negative type Aluminum Alloy Turning

Finishing

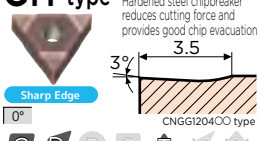
AX type — P M K N S H
Parallel Al chipbreaker with cutting edge sharpness



Negative type Hardened Steel Turning

Finishing

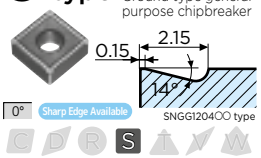
GH type — P M K N S H
Hardened steel chipbreaker reduces cutting force and provides good chip evacuation



Negative type Chamfering

Chamfering

C type — P M K N S H
Ground type general-purpose chipbreaker

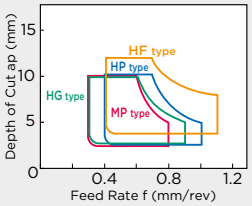


Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
BREAK MASTER (CBN/PCD) | For Chamfering

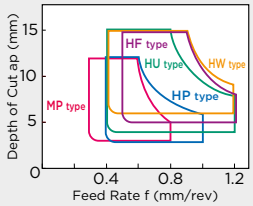
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

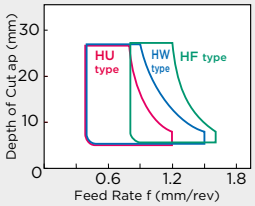
Rough to Heavy Cutting (Inscribed Circle ø15.875 to 19.05mm)



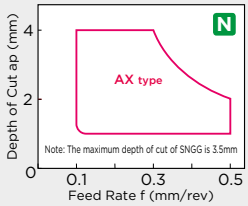
Rough to Heavy Cutting (Inscribed Circle ø25.4mm)



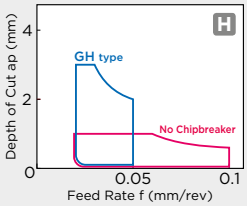
Rough to Heavy Cutting (Inscribed Circle ø31mm)



Aluminum Alloy



Hardened Steel

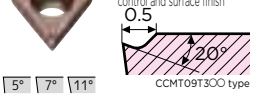


Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.). For details, refer to "Stock Items" in Chapter B.

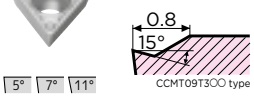
Chipbreaker Selection

Positive type M Class Finishing to Medium Cutting

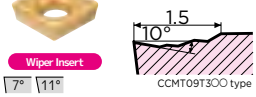
Finishing to Light Cutting

FB type — Finishing chipbreaker for mild steel turning with excellent chip control and surface finish
P M K N S H


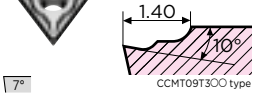
5° 7° 11° — CCMT09T3OO type
C D R S W

LU type — Chip control significantly improved in fine cutting
P M K N S H


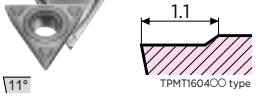
5° 7° 11° — CCMT09T3OO type
C D R S W

LUW type — High-performance finishing chipbreaker with wiper edge
P M K N S H


Wiper Insert
7° 11° — CCMT09T3OO type
C R W

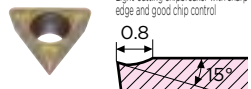
FP type — Provides good chip evacuation in fine cutting
P M K N S H


7° — CCMT09T3OO type
C D S W

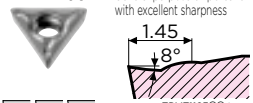
FK type — Finishing chipbreaker with sharp edge and good chip control
P M K N S H


11° — TPMT1604OO type
S W

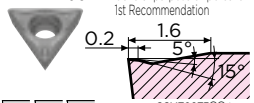
Light to Medium Cutting

LB type — Light-cutting chipbreaker with sharp edge and good chip control
P M K N S H


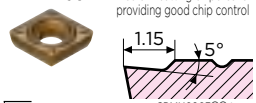
5° 7° 11° — CCMT09T3OO type
C D S W

SU type — General purpose chipbreaker with excellent sharpness
P M K N S H


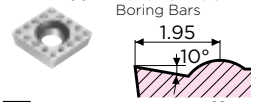
5° 7° 11° — TPMT1103OO type
C D S W

GU type — General-purpose chipbreaker: 1st Recommendation
P M K N S H


5° 7° 11° — CCMT09T3OO type
C D S W

SS type — Medium-cutting chipbreaker providing good chip control
P M K N S H


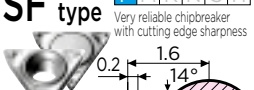
11° — CPMH0903OO type
C S W

US type — For Small Hole Boring Bars
P M K N S H


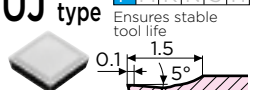
11° — CPMH0903OO type
C S W

MU type — Chipbreaker with low cutting force for stable tool life
P M K N S H


7° 11° — TPMT1604OO type
C D S W

SF type — Very reliable chipbreaker with cutting edge sharpness
P M K N S H


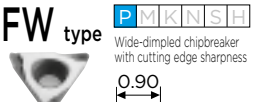
11° — TPMT1604OO type
S W

UJ type — Ensures stable tool life
P M K N S H


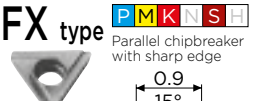
11° — TPMR1603OO type
S W

Positive type G Class Ground type

Finishing to Light Cutting

FW type — Wide-dimpled chipbreaker with cutting edge sharpness
P M K N S H


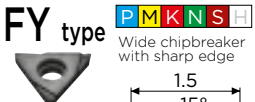
5° 11° — TPMT1102OO type
C D S W

FX type — Parallel chipbreaker with sharp edge
P M K N S H


Sharp Edge
5° 7° 11° — TPGT1103OO type
C D S W

FYS type — Fine cutting chipbreaker with sharp edge
P M K N S H


Sharp Edge
5° 7° — CCGT04X1OO type
C D W

FY type — Wide chipbreaker with sharp edge
P M K N S H


Sharp Edge
5° 7° 11° — TPGT1103OO type
C D W

W type — Wide type finishing chipbreaker
P M K N S H


5° 11° — TPGR1103OO type
S W

SD type — Stepped parallel ground breaker
P M K N S H


Sharp Edge Available
7° 11° — TPGT1103OO type
C D S W

SDW type — High-performance finishing chipbreaker with wiper edge. Parallel ground type chipbreaker
P M K N S H

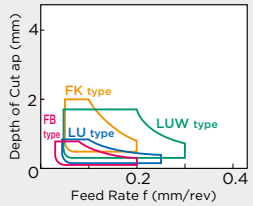

Wiper Insert
Sharp Edge Available
11° — TPGX1103OO type
S W

Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
BREAK MASTER (CBN/PCD) | For Chamfering

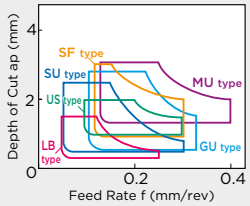
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

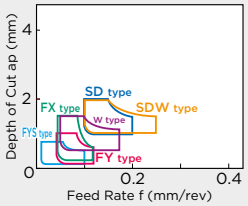
M Class Finishing to Light Cutting



M Class Light to Medium Cutting



G Class Ground type



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.). For details, refer to "Stock Items" in Chapter B.

Chipbreaker Selection

Positive type G Class

Finishing to Light Cutting

FF type — P M K N S H
Realises outstanding chip control in fine cutting conditions
Sharp Edge Available
5° 7°
0.45 16°
CCGT09T3OO type
C D R S

FC type — P M K N S H
Peripheral ground 3D chipbreaker with good chip control and cutting edge sharpness
Sharp Edge Available
7° 11°
0.9 15°
CCGT09T3OO type
C D R S

SL type (New) — P M K N S H
Sharp-edged chipbreaker with high machining quality for a wide range of applications from finishing to light cutting
Sharp Edge Available
7° 11°
0.5 15°
CCGT09T3OO type
C D R S

SI type — P M K N S H
Sharp-edged chipbreaker for a wide range of applications from finishing to light cutting
Sharp Edge Available
7° 11°
0.8 15°
CCGT09T3OO type
C D R S

SC type — P M K N S H
Two-step chipbreaker for light cutting
Sharp Edge Available
7°
1.0 6°
TCGT1103OO type
C D R S

Positive type Round type Inserts

Round type

RE type (New) — P M K N S H
For steel and heat-resistant alloys balancing chip evacuation and low resistance
7°
0.1 2.3 16° 43°
RCMT1204M0N type
C D R S

RX type — P M K N S H
Round, bumpy type insert with excellent chip control
7°
0.2 1.7 10° -5°
RCMT1606MON type
C D R S

RH type — P M K N S H
Highly reliable general-purpose chipbreaker providing good chip evacuation
7°
0.30 -15° 15°
RCMT1606OO type
C D R S

RP type — P M K N S H
Standard chipbreaker for profiling
7°
2.5 0.25 1.04 -15° 15°
RCMX1606M0N type
C D R S

RD type — P M K N S H
Standard parallel chipbreaker with cutting edge sharpness
Sharp Edge Available
11°
2.0
RCMT1604OO type
C D R S

Positive type Aluminum Alloy Turning

Finishing

AW type — P M K N S H
Finishing chipbreaker with excellent sharpness
Sharp Edge
7°
25°
VCGT1604OO type
C D R S

AG type — P M K N S H
Chipbreaker with mirror finish and anti-adhesion
7°
20°
CCGT09T3OO type
C D R S

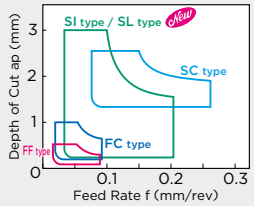
AY type — P M K N S H
Chipbreaker with high-quality ground edge and excellent surface finish
Sharp Edge
5° 7° 11°
2.5 15°
CCGT09T3OO type
C D R S

Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
BREAK MASTER (CBN/PCD) | For Chamfering

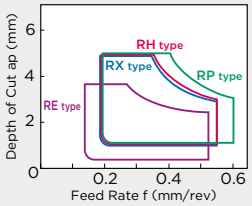
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

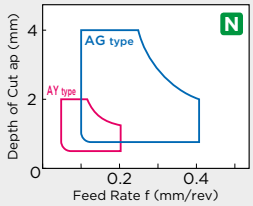
G Class Bumpy Chipbreaker



Round type Inserts (Inscribed Circle up to 12.7mm)



Aluminum Alloy



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.). For details, refer to "Stock Items" in Chapter B.

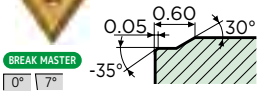
Chipbreaker Selection

SUMIBORON Insert CBN

Finishing to Light Cutting

LV type — P M K N S H

Dramatically improves chip control during hardened steel finishing



BREAK MASTER 0° 7°

C D R S T V W

FV type — P M K N S H

Dramatically improves chip control during hardened steel finishing



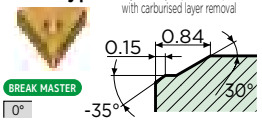
BREAK MASTER 0° 7°

C D R S T V W

Carburised Layer Removal

SV type — P M K N S H

Significantly improved chip control with carburised layer removal



BREAK MASTER 0°

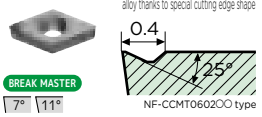
C D R S T V W

SUMIDIA Insert PCD

Finishing to Light Cutting

LD type — P M K N S H

Ideal chipbreaker for finishing of aluminum alloy thanks to special cutting edge shape



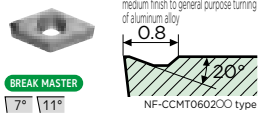
BREAK MASTER 7° 11°

NF-CCMT0602OO type

C D R S T V W

GD type — P M K N S H

Special cutting edge shape is ideal for medium finish to general purpose turning of aluminum alloy



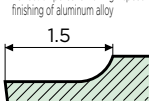
BREAK MASTER 7° 11°

NF-CCMT0602OO type

C D R S T V W

DM type — P M K N S H

Perfect chipbreaker for high-speed finishing of aluminum alloy



BREAK MASTER 7° 11°

NU-CCMT09T3OO type

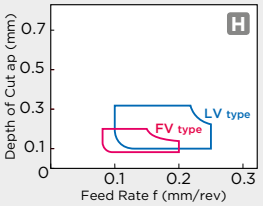
C D R S T V W

Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
BREAK MASTER (CBN/PCD) | For Chamfering

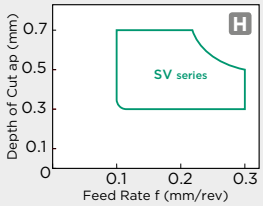
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

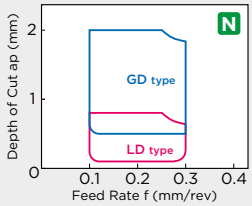
SUMIBORON (Hardened Steel) (Inscribed Circle up to 12.7mm)



SUMIBORON (Carburised Layer Removal) (Inscribed Circle up to 12.7mm)



SUMIDIA (Aluminum Alloy)



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.). For details, refer to "Stock Items" in Chapter B.

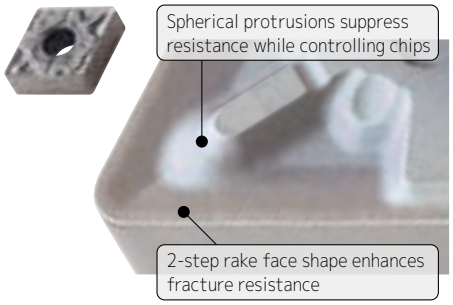
EH type / SL type / RE type

New EH type

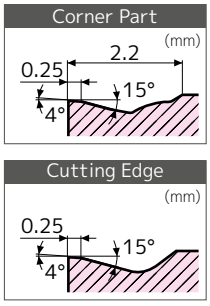
P Steel M Stainless Steel

1st recommendation for interrupted turning of stainless steel
Emphasising machining stability

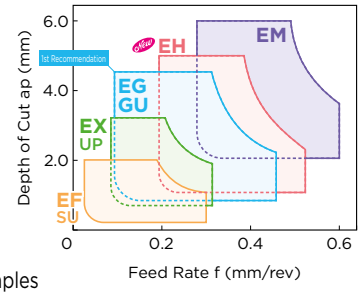
Features



Chipbreaker Cross Section (CNMG1204OO type)

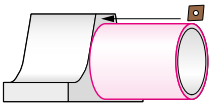


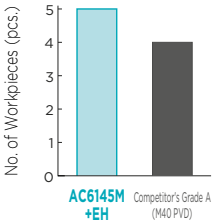
■ Application Range



■ Application Examples

X2CrNiMo17-12-2
Valve Turning





Fracture Suppressed

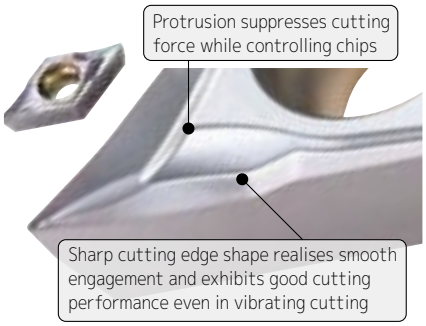
Tool: CNMG120408N-EH (AC6145M) Interrupted Machining
Cutting Conditions: vc = 110m/min f = 0.15mm/rev ap = 1.0mm Wet

New SL type

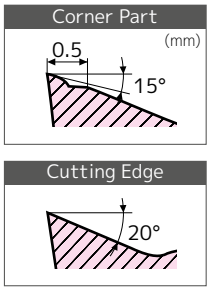
P Steel M Stainless Steel S Exotic Alloy

Exhibits excellent cutting edge sharpness over a wide range of cutting conditions
Emphasis on high machined surface quality

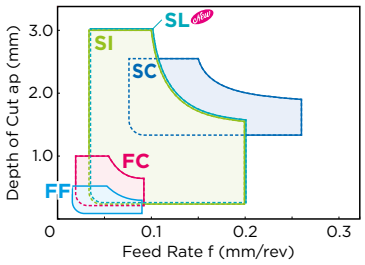
Features



Chipbreaker Cross Section (CCGT09T3OO type)

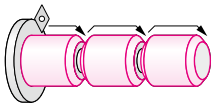


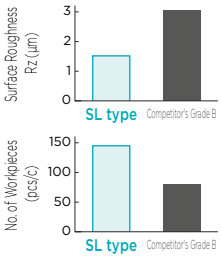
■ Application Range



■ Application Examples

X17CrNi16-2
Valve
Part Turning





Excellent cutting edge sharpness suppresses wear and improves machined surface quality

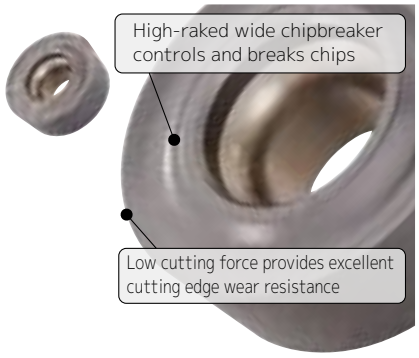
Tool: DCGT070202MN-SL (AC5025S)
Cutting Conditions: vc = 270m/min f = 0.04mm/rev ap = 0.25mm Wet

New RE type

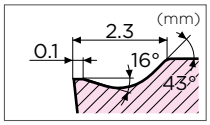
P Steel M Stainless Steel S Exotic Alloy

Round type chipbreaker with good chip breaking capability when turning heat-resistant alloys and steel

Features

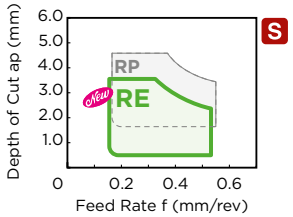


Chipbreaker Cross Section (RCMT1204M0N type)

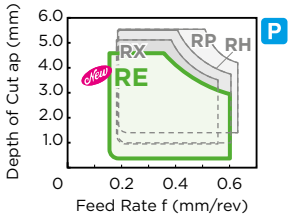


■ Application Range

● Exotic Alloys



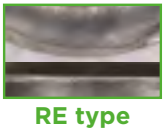
● Steel



■ Application Examples

Inconel 718 Aircraft Engine Part Turning

Minimal adhesion



RE type



Competitor's Grade C

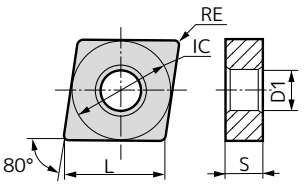
Low-resistance cutting edge design suppresses wear, extends tool life by 1.5x, and reduces machining noise

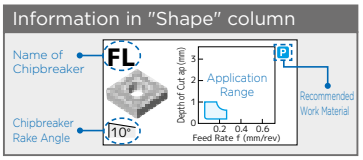
Tool: RCMT1606M0N-RE (AC5015S) Mill-scale Work
Cutting Conditions: vc = 50m/min f = 0.4mm/rev ap = 1.5 to 2.0mm Wet

MEMO

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

CN■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Applicable External Holders C11 | Applicable Boring Bars E23 to E27

Shape	Application Range	Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	CVD: AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Fine Cutting																																				
FB 27°		**CNMG 090304 NFB**	0.4	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	—
		CNMG 090308 NFB	0.8	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	—
FL 10°		**CNMG 090308 NFL**	0.8			★								★					—									—								—
FE 20°		**CNMG 090304 NFE**	0.4	★	★	★	★	▲		★	★	★	▲						—									—	★	★		★				
		CNMG 090308 NFE	0.8	★	★	★	★	▲		★	★	★	▲						—									—	★	★		★				
Finishing																																				
LU 10°		**CNMG 090304 NLU**	0.4	★	★	★		▲		★				★					—									—	★	★		★				
		CNMG 090308 NLU	0.8	★	★	★		▲		★				★					—									—	★	★		★				
SU 13°		**CNMG 090304 NSU**	0.4	★	★	★		▲						★					—									—								—
		CNMG 090308 NSU	0.8	★	★	★		▲						★					—									—								—
Medium Cutting																																				
GU 7°		**CNMG 090304 NGU**	0.4	★	★	★	★	▲							★	★	★		—									—								—
		CNMG 090308 NGU	0.8	★	★	★	★	▲							★	★	★		—									—								—
UX 0°		**CNMG 090304 NUX**	0.4				★												—									—								—
		CNMG 090308 NUX	0.8				★												—									—								—
UG 4°		**CNMG 090304 NUG**	0.4			★	★												—									—								—
		CNMG 090308 NUG	0.8			★	★												—									—								—

CN■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

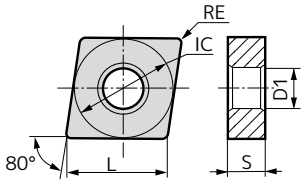
Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	CVD: AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing																																				
SU 13°		**CNMG 09T304 NSU**	0.4	★	★	★		▲											—									—								—
		CNMG 09T308 NSU	0.8	★	★	★		▲											—									—								—
Medium Cutting																																				
UG 4°		**CNMG 09T304 NUG**	0.4			★													—									—								—
		CNMG 09T308 NUG	0.8			★													—									—								—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
● Interrupted Cutting 1st Recommendation ○ Interrupted Cutting 2nd Recommendation

CN■■0904●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

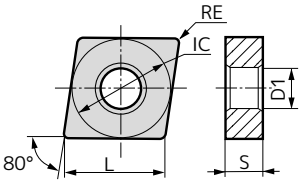
Applicable External Holders ☞ C11

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Fine Cutting	**FB**		**CNMG 090404 NFB**	0.4	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	
			CNMG 090408 NFB	0.8	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	
	FE		**CNMG 090404 NFE**	0.4	★	★	★	★	▲		★	★	★	▲						—							—	★	★		★				
			CNMG 090408 NFE	0.8	★	★	★	★	▲		★	★	★	▲						—							—	★	★		★				
Finishing	**SU**		**CNMG 090404 NSU**	0.4	★	★	★		▲											—							—	★		★	★				
			CNMG 090408 NSU	0.8	★	★	★		▲											—							—	★		★	★				
			CNMG 090412 NSU	1.2	★	★	★	★	▲											—							—	★		★	★				
	SEW →B127 Wiper		**CNMG 090404 NSE-W**	0.4	★	★	★	★	▲											—							—	—	—	—	—				
			CNMG 090408 NSE-W	0.8	★	★	★	★	▲											—							—	—	—	—	—				
	EF		**CNMG 090404 NEF**	0.4						★	★	★	★	▲						—	★	★	★				—	—	—	—	—				
			CNMG 090408 NEF	0.8						★	★	★	★	▲						—	★	★	★				—	—	—	—	—				
Medium Cutting	**GU**		**CNMG 090404 NGU**	0.4			★													—							—	★		★	★				
			CNMG 090408 NGU	0.8			★													—							—	★		★	★				
			CNMG 090412 NGU	1.2	★	★	★	★	▲							★	★	★		—							—	★		★	★				
	UG		**CNMG 090404 NUG**	0.4			★													—							—	—	—	—	—				
			CNMG 090408 NUG	0.8			★	★												—							—	—	—	—	—				
	EG		**CNMG 090408 NEG**	0.8						★	★	★	★	▲						—	★	★	★				—	—	—	—	—				
			CNMG 090412 NEG	1.2						★	★	★	★	▲						—	★	★	★				—	—	—	—	—				
Medium to Roughing	**GZ**		**CNMG 090408 NGZ**	0.8												★	★	★	▲	—							—	—	—	—	—				
			CNMG 090412 NGZ	1.2												★	★	★	▲	—							—	—	—	—	—				

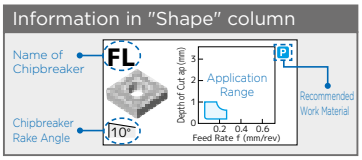
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80° Diamond type Negative Inserts

CN 80° Diamond type / Negative / With Hole



Information in "Shape" column



● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
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✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

CN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.9	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

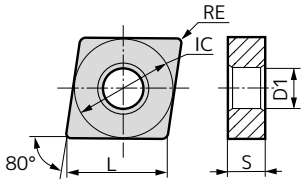
SUMIBORON (CBN) Inserts ☞L34 on
SUMIDIA (PCD) Inserts ☞M10
Applicable External Holders ☞C10 to C12
Applicable Boring Bars ☞E15, E25 to E27

					Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide			
					CVD					PVD		CVD					PVD								PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FB**		**CNMG 120402 NFB**	0.2	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—			—	—	—	—	★	★	★	★	—	—	—	—
			CNMG 120404 NFB	0.4	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—			—	—	—	—	★	★	★	★	—	—	—	—
			CNMG 120408 NFB	0.8	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—			—	—	—	—	★	★	★	★	—	—	—	—
	FA		**CNMG 120402 NFA**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
			CNMG 120404 NFA	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
			CNMG 120408 NFA	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	FL		**CNMG 120404 NFL**	0.4			★								★					—	★	★	★				★	—	—	★	★	★	★				
			CNMG 120408 NFL	0.8			★								★					—	★	★	★				★	—	—	★	★	★	★				
	FE		**CNMG 120402 NFE**	0.2	★	★	★	★	▲		★	★	★	▲						—								—	—	★	★	★	★				
			CNMG 120404 NFE	0.4	★	★	★	★	▲		★	★	★	▲						—								—	—	★	★	★	★				
			CNMG 120408 NFE	0.8	★	★	★	★	▲		★	★	★	▲						—								—	—	★	★	★	★				
			CNMG 120412 NFE	1.2	★	★	★	★	▲		★	★	★	▲						—								—	—	★	★	★	★				
Finishing	**LU**		**CNMG 120402 NLU**	0.2							★				★					—								—	—	★	★	★	★				
			CNMG 120404 NLU	0.4	★	★	★	★	▲		★				★					—								—	—	★	★	★	★				
			CNMG 120408 NLU	0.8	★	★	★	★	▲		★				★					—								—	—	★	★	★	★				
			CNMG 120412 NLU	1.2	★	★	★	★	▲		★				★					—								—	—	★	★		★				
			CNMG 120416 NLU	1.6																																	—
	LUW →B129 Wiper		**CNMG 120404 NLU-W**	0.4	★	★	★		▲	★	★				★					—								—	—	★	★		★				
			CNMG 120408 NLU-W	0.8	★	★	★		▲	★	★				★	★				—								—	—	★	★		★				
			CNMG 120412 NLU-W	1.2	★	★	★		▲		★				★					—								—	—	★	★		★				
	SU		**CNMG 120402 NSU**	0.2						★	★	★	★	▲	★					—	★	★	★	★	★		★	—	★	★	★	★	★				
			CNMG 120404 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			CNMG 120408 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			CNMG 120412 NSU	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
	SU		**CNGG 120402 NSU**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—		★	★	★	★				
			CNGG 120404 NSU	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—		★	★	★	★				
			CNGG 120408 NSU	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—		★	★	★	★				
	SE		**CNMG 120404 NSE**	0.4	★	★	★	★	▲											—								—		★	★	★	★				
			CNMG 120408 NSE	0.8	★	★	★	★	▲											—								—		★	★	★	★				
			CNMG 120412 NSE	1.2	★	★	★	★	▲											—								—		—	—	—	—				—
	SEW →B127 Wiper		**CNMG 120404 NSE-W**	0.4	★	★	★		▲											—								—		★	★		★				
			CNMG 120408 NSE-W	0.8	★	★	★		▲											—								—		★	★		★				
			CNMG 120412 NSE-W	1.2	★	★	★		▲											—								—		—	—		—				—
	EF		**CNMG 120404 NEF**	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★		★	★	—		—	—	—	—		★	★	—
			CNMG 120408 NEF	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★		★	★	—		—	—	—	—		★	★	—
			CNMG 120412 NEF	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★			★	—		—	—	—	—				—
	EF		**CNGG 120402 NEF**	0.2						—	—	—	—	—	★					—		★	★			★	★			—	—	—	—		★	★	—
			CNGG 120404 NEF	0.4						—	—	—	—	—	★					—		★	★			★	★			—	—	—	—		★	★	—
			CNGG 120408 NEF	0.8						—	—	—	—	—	★					—		★	★			★	★			—	—	—	—		★	★	—

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80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole



Grade Selection Guide ☞ A2
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CN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.9	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application

P	Steel	●	◔	●	✖	○			✪	✪		◔							✪			✪	●		●	✖	●	●			
M	Stainless Steel			○	✪		●	●	✖	✪	✪								✪			✪	●	✪							
K	Cast Iron	○	◔	✪					✖	✪	✪		●	●	✖	✪				✪			✪				●				
N	Non-Ferrous Metal																													●
S	Exotic Alloy																●	●	✖	●	●	◔	✪	✪						
H	Hardened Steel															●	○													

SUMIBORON (CBN) Inserts ☞ L34 on
SUMIDIA (PCD) Inserts ☞ M10

Applicable External Holders ☞ C10 to C12
Applicable Boring Bars ☞ E15, E25 to E27

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																					Coated Cermet		Cermet	Cemented Carbide			
					CVD							PVD			CVD					PVD								PVD					
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**SX**		CNMG 120404 NSX	0.4	★	★	★	★	▲										—										★	★		★				
			CNMG 120408 NSX	0.8	★	★	★	★	▲										—										★	★		★				
			CNMG 120412 NSX	1.2	★	★	★	★	▲										—										—	—		—				
	EX		CNMG 120404 NEX	0.4						★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	★	—	—	—	—				
			CNMG 120408 NEX	0.8						★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	★	—	—	—	—				
			CNMG 120412 NEX	1.2						★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	★	—	—	—	—				
			CNMG 120416 NEX	1.6								★	★						—										—	—	—	—				
	UP		CNMG 120404 NUP	0.4		★	★	★		★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	★	—	—	—	—	★			
			CNMG 120408 NUP	0.8		★	★	★		★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	★	—	—	—	—	★			
			CNMG 120412 NUP	1.2			★			★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	★	—	—	—	—	★			
Medium Cutting	**GU**		CNMG 120404 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★	★	★		★	—	★	★	★		★				
			CNMG 120408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★	★	★		★	—	★	★	★		★				
			CNMG 120412 NGU	1.2	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★	★	★		★	—	★								
			CNMG 120416 NGU	1.6	★	★	★	★	▲			★	★			★	★	★	—																	
	GE		CNMG 120404 NGE	0.4	★	★	★	★	▲										—										—	—		—				
			CNMG 120408 NGE	0.8	★	★	★	★	▲										—										—	—		—				
			CNMG 120412 NGE	1.2	★	★	★	★	▲										—										—	—		—				
			CNMG 120416 NGE	1.6	★	★	★	★	▲										—										—	—		—				
	GUW	→B127 Wiper	CNMG 120408 NGU-W	0.8	★	★	★		▲	★	★				★	★			—										—	—		—				
		→B127 Wiper	CNMG 120412 NGU-W	1.2	★	★	★		▲	★					★	★	★		—										—	—		—				
	UX		CNMG 120404 NUX	0.4	★	★	★	★	▲										—										—	—		—				
			CNMG 120408 NUX	0.8	★	★	★	★	▲										—										—	—		—				
			CNMG 120412 NUX	1.2	★	★	★	★	▲										—										—	—		—				
			CNMG 120416 NUX	1.6	★	★	★	★	▲										—										—	—		—				
	UG		CNMG 120404 NUG	0.4		★	★	★											—										—	—		—				
			CNMG 120408 NUG	0.8			★	★	★										—										—	—		—				
			CNMG 120412 NUG	1.2			★	★											—										—	—		—				
			CNMG 120416 NUG	1.6			★	★											—										—	—		—				
	EG		CNMG 120404 NEG	0.4	★	★	★	★	▲	★	★	★	★	▲					—	★	★	★	★	★					—	—	—	—		★	★	
			CNMG 120408 NEG	0.8	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	—	—	—	—	—		★	★	
			CNMG 120412 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	—	—	—	—	—		★	★	
			CNMA 120404	0.4												★	★	★	▲	—									—	—		—				
			CNMA 120408	0.8												★	★	★	▲	—	★	★	★			★			—	—		—				
			CNMA 120412	1.2												★	★	★	▲	—									—	—		—				
			CNMA 120416	1.6												★	★	★	▲	—									—	—		—				
		Sharp Edge	CNGA 120402	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★																
		Sharp Edge	CNGA 120404	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★																
		Sharp Edge	CNGA 120408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★																

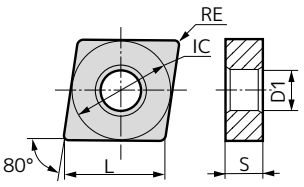
G-class insert without chipbreaker (CNGA) in AC503U grade has a sharp edge.

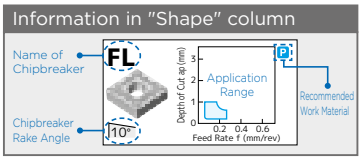
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CN 80° Diamond type / Negative / With Hole





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CN■■1204●●

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	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

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Applicable External Holders ☞C10 to C12
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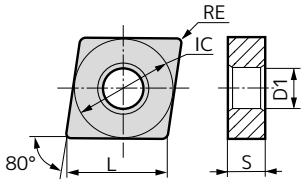
						Coated Carbide																	Coated Cermet		Cermet	Cemented Carbide			
						CVD				PVD			CVD					PVD						PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**MU**		**CNMG 120408 NMU**	0.8		★	★	★	★	▲	★	★				★						★	★	★			★	★	—	★	—	—	—	—				—
			CNMG 120412 NMU	1.2		★	★	★	★	▲		★				★						★	★	★			★	★	—	★	—	—	—	—				—
			CNMG 120416 NMU	1.6		★	★	★	★	▲	★											★	★	★				★	—	★	—	—	—	—				—
	EH		**CNMG 120404 NEH**	0.4									★	★															—								—
			CNMG 120408 NEH	0.8									★	★															—								—
			CNMG 120412 NEH	1.2									★	★															—								—
			CNMG 120416 NEH	1.6									★	★															—								—
	EM		**CNMG 120408 NEM**	0.8		★	★	★	★	▲	★	★	★	★	▲							★	★	★	★	★			—								—
			CNMG 120412 NEM	1.2		★	★	★	★	▲	★	★	★	★	▲							★	★	★	★	★			—								—
			CNMG 120416 NEM	1.6		★	★	★	★	▲	★	★	★	★	▲							★	★	★					—								—
	ME		**CNMG 120408 NME**	0.8		★	★	★	★	▲							★	★	★										—								—
			CNMG 120412 NME	1.2		★	★	★	★	▲							★	★	★										—								—
			CNMG 120416 NME	1.6		★	★	★	★	▲							★	★	★										—								—
	MX		**CNMG 120408 NMX**	0.8		★	★	★	★																				—								—
			CNMG 120412 NMX	1.2		★	★	★	★																				—								—
			CNMG 120416 NMX	1.6		★	★	★																					—								—
	UZ		**CNMG 120404 NUZ**	0.4				★									★	★	★	▲									—					★			—
			CNMG 120408 NUZ	0.8				★	★								★	★	★	▲		★	★	★			★	★	—					★			—
			CNMG 120412 NUZ	1.2				★	★								★	★	★	▲		★	★	★			★	★	—					★			—
			CNMG 120416 NUZ	1.6				★									★	★	★	▲									—								—
	GZ		**CNMG 120404 NGZ**	0.4													★	★	★	▲									—								—
			CNMG 120408 NGZ	0.8													★	★	★	▲									—								—
			CNMG 120412 NGZ	1.2													★	★	★	▲									—								—
			CNMG 120416 NGZ	1.6													★	★	★	▲									—								—
Roughing	**MP**		**CNMM 120408 NMP**	0.8		★	★	★	★	▲	★	★	★	★	▲	★						★	★	★			★		—								—
			CNMM 120412 NMP	1.2		★	★	★	★	▲	★	★	★	★	▲	★						★	★	★			★		—								—
			CNMM 120416 NMP	1.6		★	★	★	★	▲	★	★				★						★	★	★			★		—								—
Heavy Cutting	**HG**		**CNMM 120408 NHG**	0.8		★	★	★	★	▲						★													—								—
			CNMM 120412 NHG	1.2		★	★	★	★	▲						★													—								—
			CNMM 120416 NHG	1.6				★																					—								—
	HP		**CNMM 120408 NHP**	0.8				★	★							★													—								—
			CNMM 120412 NHP	1.2				★	★							★													—								—
			CNMM 120416 NHP	1.6				★	★							★													—								—

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

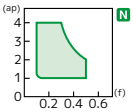
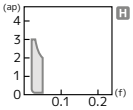
CN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.9	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application		Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide			
		CVD						PVD			CVD				PVD							PVD					
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○													✪				✪	●	◒		◒	✖	●	◒				
M	Stainless Steel			○	✪		●	◒	✖	✪	✪	✪							✪				✪	◒	●	✪								
K	Cast Iron	○	◔	✪					✪	✪	✪	◔	●	◒	✖	✪				✪				✪	◒				●						
N	Non-Ferrous Metal																																	◒
S	Exotic Alloy																●	◒	✖	●	◒	◔	✪	✪										
H	Hardened Steel																● ○																	

SUMIBORON (CBN) Inserts ☞ L34 on
SUMIDIA (PCD) Inserts ☞ M10

Applicable External Holders ☞ C10 to C12
Applicable Boring Bars ☞ E15, E25 to E27

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
For Aluminum	**AX**  30° Sharp Edge		**CNGG 120402 RAX**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CNGG 120402 LAX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CNGG 120404 RAX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CNGG 120404 LAX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CNGG 120408 RAX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CNGG 120408 LAX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
Light Cutting of Hardened Steel	**GH**  3° Sharp Edge		**CNGG 120402 NGH**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			CNGG 120404 NGH	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			CNGG 120408 NGH	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

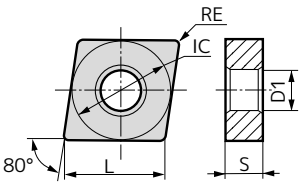
AX type and GH type chipbreakers have a sharp edge.

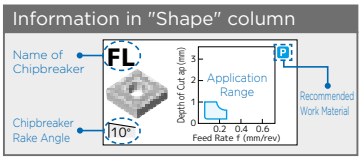
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Blank: Made-to-order item
— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◐ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

CN■■1606●●

Dimensions (mm)	Cutting Edge Length L	16.1	Thickness S	6.35
	Inscribed Circle IC	15.875	Hole Dia. D1	6.35

Applicable External Holders ☞C10 to C12

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

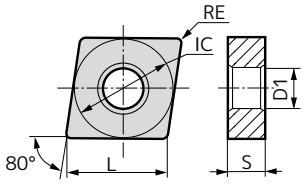
				Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide		
				CVD				PVD			CVD				PVD									PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**EX** 16°	(ap) 4 2 0 0.2 0.4 (f) M S	**CNMG 160612 NEX**	1.2								★	★							—	★	★	★			★	★	—								—
	UP 10°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**CNMG 160608 NUP**	0.8																—								—								—
			CNMG 160612 NUP	1.2						★					★					—								—								—
Medium Cutting	**GU** 7°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**CNMG 160608 NGU**	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—								—								—
			CNMG 160612 NGU	1.2	★	★	★	★	▲		★	★	★	▲	★	★	★	★		—								—								—
			CNMG 160616 NGU	1.6	★	★	★	★	▲		★	★	★	▲		★	★	★		—								—								—
	GE 3°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**CNMG 160608 NGE**	0.8	★	★	★	★	▲											—								—								—
			CNMG 160612 NGE	1.2	★	★	★	★	▲											—								—								—
			CNMG 160616 NGE	1.6	★	★	★	★	▲											—								—								—
	GUW 0° →B127 Wiper	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**CNMG 160612 NGUW**	1.2	★	★	★	★	▲											—								—								—
	UX 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P K	**CNMG 160608 NUX**	0.8	★	★	★	★	▲											—								—								—
			CNMG 160612 NUX	1.2	★	★	★	★	▲											—								—								—
			CNMG 160616 NUX	1.6	★	★	★	★	▲											—								—								—
	UG 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**CNMG 160608 NUG**	0.8				★												—								—								—
			CNMG 160612 NUG	1.2				★												—								—								—
			CNMG 160616 NUG	1.6			★	★												—								—								—
	EG 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**CNMG 160608 NEG**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★			★	★	—								—
			CNMG 160612 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—							★	★	—
			CNMG 160616 NEG	1.6	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★	★	★	★	—								—
			CNMA 160608	0.8												★	★	★	▲	—								—								—
			CNMA 160612	1.2												★	★	★	▲	—								—								—
			CNMA 160616	1.6												★	★	★	▲	—								—								—
Medium to Roughing	**MU** 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M S	**CNMG 160608 NMU**	0.8	★	★	★	★	▲		★				★					—	★	★	★			★	★	—								—
			CNMG 160612 NMU	1.2	★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—								—
			CNMG 160616 NMU	1.6	★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—								—
	EM 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**CNMG 160608 NEM**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—								—
			CNMG 160612 NEM	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—								—
			CNMG 160616 NEM	1.6	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—								—
	ME 4°	(ap) 8 6 4 2 0 0.4 0.8 (f) P	**CNMG 160608 NME**	0.8	★	★	★	★	▲						★	★	★			—								—								—
			CNMG 160612 NME	1.2	★	★	★	★	▲						★	★	★			—								—								—
			CNMG 160616 NME	1.6	★	★	★	★	▲						★	★	★			—								—								—

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Blank: Made-to-order item
— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole



Grade Selection Guide ☞ A2

Chipbreaker Selection ☞ B4 on

Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

CN■■1606●●

Dimensions (mm)	Cutting Edge Length L	16.1	Thickness S	6.35
	Inscribed Circle IC	15.875	Hole Dia. D1	6.35

Applicable External Holders ☞ C10 to C12

Recommended Application

		Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide			
		CVD						PVD			CVD				PVD							PVD							
	Shape	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	MX	★	★	★													—										—	—	—	—				—
	CNMG 160608 NMX	★	★	★													—										—	—	—	—				—
	CNMG 160612 NMX	0.8																																
	CNMG 160616 NMX	1.2	★	★	★	★											—										—	—	—	—				—
		1.6	★	★	★	★											—										—	—	—	—				—
	UZ				★	★											—										—	—	—	—				—
	CNMG 160608 NUZ	0.8			★	★							★	★	★	▲	—										—	—	—	—				—
	CNMG 160612 NUZ	1.2			★	★							★	★	★	▲	—										—	—	—	—				—
	CNMG 160616 NUZ	1.6																																
	GZ												★	★	★	▲	—										—	—	—	—				—
	CNMG 160608 NGZ	0.8											★	★	★	▲	—										—	—	—	—				—
	CNMG 160612 NGZ	1.2											★	★	★	▲	—										—	—	—	—				—
	CNMG 160616 NGZ	1.6																																
Roughing	MP				★	★		★				★					—	★	★	★			★				—	—	—	—				—
	CNMM 160608 NMP	0.8			★	★		★				★					—	★	★	★			★				—	—	—	—				—
	CNMM 160612 NMP	1.2	★	★	★	★	▲	★				★					—	★	★	★			★				—	—	—	—				—
	CNMM 160616 NMP	1.6	★	★	★	★	▲	★																										
	CNMM 160624 NMP	2.4		★																														
	MH																																	
	CNMM 160612 NMH	1.2	★	★	★																													
	CNMM 160616 NMH	1.6		★	★			★																										
Heavy Cutting	HG																																	
	CNMM 160612 NHG	1.2	★	★	★	★	▲																											
	CNMM 160616 NHG	1.6	★	★	★	★	▲					★																						
	CNMM 160624 NHG	2.4		★	★																													
	HP																																	
	CNMM 160608 NHP	0.8			★	★											—										—	—	—	—				—
	CNMM 160612 NHP	1.2			★	★											—										—	—	—	—				—
	CNMM 160616 NHP	1.6			★	★											—										—	—	—	—				—

★ mark: Global stocked item

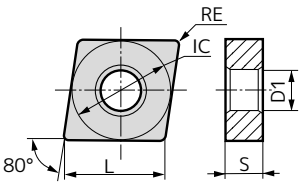
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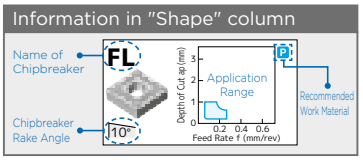
Blank: Made-to-order item

— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

CN■■1906●●

Dimensions (mm)	Cutting Edge Length L	19.3	Thickness S	6.35
	Inscribed Circle IC	19.05	Hole Dia. D1	7.94

Applicable External Holders ☞C10 to C12 Applicable Boring Bars ☞E27

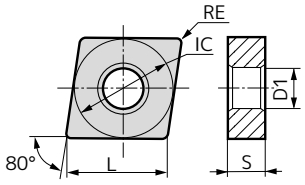
Recommended Application		Coated Carbide																					Coated Cermet	Cermet	Cemented Carbide		
		CVD					PVD			CVD					PVD								PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**EX**		**CNMG 190612 NEX**	1.2								★	★							—	★	★	★			★	★	—								—
	UP		**CNMG 190612 NUP**	1.2											★					—								—					★			—
Medium Cutting	**GE**		**CNMG 190612 NGE**	1.2	★	★	★	★	▲											—								—								—
			CNMG 190616 NGE	1.6	★	★	★	★	▲											—								—								—
	UX		**CNMG 190608 NUX**	0.8				★												—								—								—
			CNMG 190612 NUX	1.2	★	★	★	★	▲											—								—								—
			CNMG 190616 NUX	1.6	★	★	★	★	▲											—								—								—
	UG		**CNMG 190608 NUG**	0.8				★												—								—								—
			CNMG 190612 NUG	1.2			★	★												—								—								—
			CNMG 190616 NUG	1.6			★	★												—								—								—
			CNMG 190624 NUG	2.4																—								—								—
	EG		**CNMG 190612 NEG**	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—							★	★	—
			CNMG 190616 NEG	1.6	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—							★	★	—
			CNMA 190608	0.8																—								—								—
			CNMA 190612	1.2												★	★	★	▲	—								—								—
			CNMA 190616	1.6												★	★	★	▲	—								—								—
Medium to Roughing	**MU**		**CNMG 190608 NMU**	0.8				★												—								—								—
			CNMG 190612 NMU	1.2	★	★	★	★	▲		★				★					—	★	★	★			★	★	—									—
			CNMG 190616 NMU	1.6	★	★	★	★	▲		★				★					—	★	★	★			★	★	—									—
			CNMG 190624 NMU	2.4	★	★	★	★	▲											—	★	★	★			★	★	—									—
	EH		**CNMG 190612 NEH**	1.2								★	★							—								—								—
			CNMG 190616 NEH	1.6								★	★							—								—								—
	EM		**CNMG 190612 NEM**	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—									—
			CNMG 190616 NEM	1.6	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—									—
			CNMG 190624 NEM	2.4	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—									—
	ME		**CNMG 190612 NME**	1.2	★	★	★	★	▲							★	★	★		—								—								—
			CNMG 190616 NME	1.6	★	★	★	★	▲							★	★	★		—								—								—
			CNMG 190624 NME	2.4	★	★	★	★	▲							★	★	★		—								—								—
	MX		**CNMG 190612 NMX**	1.2	★	★	★	★												—								—								—
			CNMG 190616 NMX	1.6	★	★	★	★												—								—								—

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

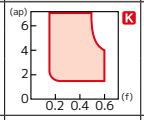
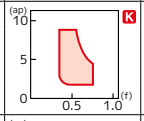
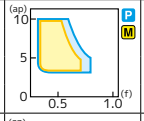
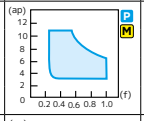
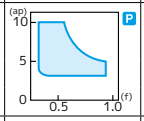
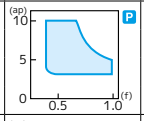
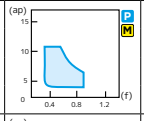
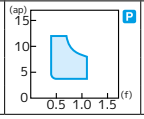
CN■■1906●●

Dimensions (mm)	Cutting Edge Length L	19.3	Thickness S	6.35
	Inscribed Circle IC	19.05	Hole Dia. D1	7.94

Recommended Application

		Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide		
		CVD				PVD				CVD				PVD								PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			⛭	⛭	⛭	◔															●	✖	●	●				
M	Stainless Steel			○	⛭		●	●	✖	⛭	⛭									⛭				⛭	●	⛭							
K	Cast Iron	○	◔	⛭					✖	⛭	⛭		●	●	✖	⛭			⛭				⛭		●				●				
N	Non-Ferrous Metal																																●
S	Exotic Alloy																●	●	✖	●	●	◔	⛭	⛭									
H	Hardened Steel																●	○															

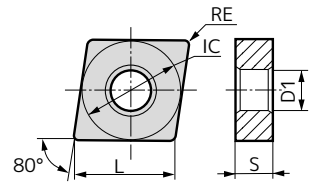
Applicable External Holders ☞ C10 to C12 | Applicable Boring Bars ☞ E27

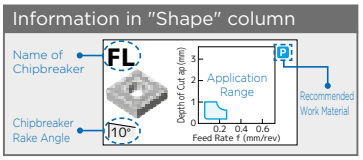
	Shape	Application Range	ISO Cat. No.	Corner Radius RE																														
Medium to Roughing	**UZ**		**CNMG 190608 NUZ**	0.8			★	★							★	★	★	▲	—							—	—	—	—				—
			CNMG 190612 NUZ	1.2			★	★							★	★	★	▲	—							—	—	—	—				—
			CNMG 190616 NUZ	1.6			★	★							★	★	★	▲	—							—	—	—	—				—
	GZ		**CNMG 190612 NGZ**	1.2											★	★	★	▲	—							—	—	—	—				—
			CNMG 190616 NGZ	1.6											★	★	★	▲	—							—	—	—	—				—
Roughing	**MP**		**CNMM 190608 NMP**	0.8			★	★			★				★				—	★	★	★			★			—	—	—	—				—
			CNMM 190612 NMP	1.2	★	★	★	★	▲	★	★				★				—	★	★	★			★			—	—	—	—				—
			CNMM 190616 NMP	1.6	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★			—	—	—	—				—
			CNMM 190624 NMP	2.4	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★			—	—	—	—				—
Roughing	**MH**		**CNMM 190616 NMH**	1.6	★		★		★										—									—	—	—	—				—
			CNMM 190624 NMH	2.4		★	★												—									—	—	—	—				—
Heavy Cutting	**HG**		**CNMM 190612 NHG**	1.2	★	★	★	★	▲						★				—									—	—	—	—				—
			CNMM 190616 NHG	1.6	★	★	★	★	▲						★				—									—	—	—	—				—
			CNMM 190624 NHG	2.4	★	★	★	★	▲						★				—									—	—	—	—				—
	HP		**CNMM 190608 NHP**	0.8			★	★							★				—									—	—	—	—				—
			CNMM 190612 NHP	1.2			★	★							★				—									—	—	—	—				—
			CNMM 190616 NHP	1.6			★	★							★				—									—	—	—	—				—
			CNMM 190624 NHP	2.4			★	★							★				—									—	—	—	—				—
	HU		**CNMM 190616 NHU**	1.6											★				—									—	—	—	—				—
	HF		**CNMM 190616 NHF**	1.6			★	★											—									—	—	—	—				—
			CNMM 190624 NHF	2.4			★	★											—									—	—	—	—				—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

80° Diamond type Negative Inserts

CN 80° Diamond type Negative With Hole



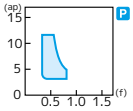


● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

CN■■2507●●

Dimensions (mm)				
Cutting Edge Length L	25.8	Thickness S	7.94	
Inscribed Circle IC	25.4	Hole Dia. D1	9.12	

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

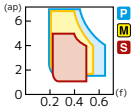
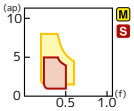
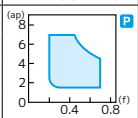
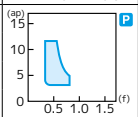
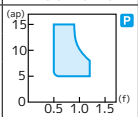
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD				PVD								PVD						
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Roughing	**MP**		**CNMM 250724 NMP**	2.4			★													—								—	—	—	—				—

CN■■2509●●

Dimensions (mm)				
Cutting Edge Length L	25.8	Thickness S	9.52	
Inscribed Circle IC	25.4	Hole Dia. D1	9.12	

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Applicable External Holders ☞C10

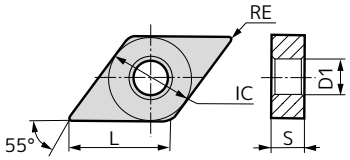
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD				PVD								PVD						
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**MU**		**CNMG 250924 NMU**	2.4	★	★	★	★	▲											—	★	★	★			★	★	—	—	—	—	—				—
	EM		**CNMG 250924 NEM**	2.4	★	★	★	★	▲		★	★	★	▲						—	★	★	★					—	—	—	—	—				—
	ME		**CNMG 250924 NME**	2.4	★	★	★	★	▲							★	★	★		—								—	—	—	—	—				—
Roughing	**MP**		**CNMM 250924 NMP**	2.4			★													—								—	—	—	—	—				—
Heavy Cutting	**HF**		**CNMM 250924 NHF** **CNMM 250932 NHF**	2.4 3.2			★ ★ ★ ★													— —								— —	— —	— —	— —	— —				— —

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

DN■■1104●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L55
Applicable External Holders C16
Applicable Boring Bars E34, E35

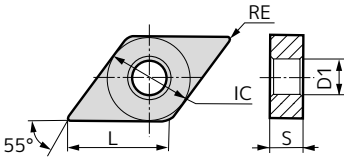
					Coated Carbide																					Coated Cermet	Cermet	Cemented Carbide			
					CVD					PVD				CVD					PVD								PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FB** 27°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 110404 NFB**	0.4	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	
			DNMG 110408 NFB	0.8	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	
	FE 20°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 110404 NFE**	0.4	★	★	★	★	▲		★	★	★	▲						—							—			★	★		★				
			DNMG 110408 NFE	0.8	★	★	★	★	▲		★	★	★	▲						—							—			★	★		★				
			DNMG 110412 NFE	1.2	★	★	★	★	▲		★	★	★	▲						—							—			★	★		★				
Finishing	**LU** 10°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 110404 NLU**	0.4	★	★	★		▲		★				★					—							—			★			★				
			DNMG 110408 NLU	0.8	★	★	★		▲		★				★					—							—			★			★				
	SU 13°	(ap) 2 1 0 0.2 0.4 (f) P M S	**DNMG 110404 NSU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—		★				★	★	—			★							
			DNMG 110408 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—						★	★	—			★							
			DNMG 110412 NSU	1.2	★	★	★	★	▲	★	★	★	★	▲						—							—			★							
	SE 5° → B127 Wiper	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**DNMG 110408 NSE**	0.8	★	★	★	★	▲											—							—			—	—	—	—				—
	SEW 5°	(ap) 4 2 0 0.2 0.5 0.8 (f) P	**DNMX 110404 NSEW**	0.4	★	★	★	★	▲											—							—			—	—	—	—				—
			DNMX 110408 NSEW	0.8	★	★	★	★	▲											—							—			—	—	—	—				—
			DNMX 110412 NSEW	1.2	★	★	★	★	▲											—							—			—	—	—	—				—
	EF 20°	(ap) 2 1 0 0.2 0.4 (f) M S	**DNMG 110404 NEF**	0.4	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—			—	—	—	—				—
			DNMG 110408 NEF	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—			—	—	—	—				—
			DNMG 110412 NEF	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—			—	—	—	—				—
Medium Cutting	**GU** 7°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**DNMG 110404 NGU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—								—			★			★				
			DNMG 110408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—								—			★			★				
			DNMG 110412 NGU	1.2	★	★	★	★	▲	★	★	★	★	▲		★	★	★		—								—			★							
	GE 3°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**DNMG 110408 NGE**	0.8	★	★	★	★	▲											—							—			—	—	—	—				—
			DNMG 110412 NGE	1.2	★	★	★	★	▲											—							—			—	—	—	—				—
	UX 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P K	**DNMG 110408 NUX**	0.8	★	★	★	★	▲											—							—			—	—	—	—				—
	UG 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**DNMG 110404 NUG**	0.4			★	★												—							—			—	—	—	—				—
			DNMG 110408 NUG	0.8			★	★												—							—			—	—	—	—				—
	EG 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M	**DNMG 110408 NEG**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—			—	—	—	—				—
			DNMG 110412 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—			—	—	—	—				—

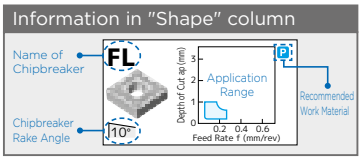
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

DN■■1104●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel ● ○ ✖ ✖; M Stainless Steel ○ ○ ✖ ✖; K Cast Iron ○ ○ ✖ ✖; N Non-Ferrous Metal ✖; S Exotic Alloy ● ○ ✖ ✖; H Hardened Steel ● ○ ✖ ✖

SUMIBORON (CBN) Inserts L55

Applicable External Holders C16 | Applicable Boring Bars E34, E35

					Corner Radius RE	Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide			
						CVD					PVD			CVD					PVD							PVD							
						AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	**EX** 16°	(ap) 4 2 0 0.2 0.4 0.6 (f) M S	**DNMG 110404 NEX**								★					★						★					★									
			DNMG 110408 NEX													★							★					★									
	UM 0° Sharp Edge	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**DNGG 110404 RUM**																													★	★	★			
			DNGG 110404 LUM																													★	★	★			
			DNGG 110408 RUM																													★	★				
			DNGG 110408 LUM																													★	★	★			
			DNGA 110404																																		
			DNGA 110408																																		
Medium to Roughing	**GZ** 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	**DNMG 110408 NGZ**														★	★	★	▲																	
			DNMG 110412 NGZ														★	★	★	▲																	

UM type grade G10E cutting edge has sharp edge specifications.

DN■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.5	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel ● ○ ✖ ✖; M Stainless Steel ○ ○ ✖ ✖; K Cast Iron ○ ○ ✖ ✖; N Non-Ferrous Metal ✖; S Exotic Alloy ● ○ ✖ ✖; H Hardened Steel ● ○ ✖ ✖

SUMIBORON (CBN) Inserts L55 on | SUMIDIA (PCD) Inserts M13

SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E33 to E35

					Corner Radius RE	Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide			
						CVD					PVD			CVD					PVD							PVD							
						AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FB** 27°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 150404 NFB**												▲																★	★	★	★				
			DNMG 150408 NFB												▲																★	★	★	★				
	FA 20°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 150404 NFA**																												★	★	★	★			
			DNMG 150408 NFA																												★	★	★	★			
	FL 10°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 150404 NFL**				★								★															★	★	★	★				
			DNMG 150408 NFL				★								★															★	★	★	★				
			DNMG 150412 NFL				★								★															★	★	★	★				
	FE 20°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 150402 NFE**			★	★	★	★	▲		★	★	★	▲																★	★	★	★				
			DNMG 150404 NFE			★	★	★	★	▲		★	★	★	▲																★	★	★	★				
			DNMG 150408 NFE			★	★	★	★	▲		★	★	★	▲																★	★	★	★				
			DNMG 150412 NFE			★	★	★	★	▲		★	★	★	▲																★	★	★	★				
Finishing	**LU** 10°	(ap) 2 1 0 0.2 0.4 (f) P	**DNMG 150402 NLU**			★	★	★		▲		★				★															★	★	★	★				
			DNMG 150404 NLU			★	★	★	★	▲		★				★															★	★	★	★				
			DNMG 150408 NLU			★	★	★	★	▲		★				★															★	★	★	★				
			DNMG 150412 NLU			★	★	★	★	▲		★				★															★	★		★				

★ mark: Global stocked item

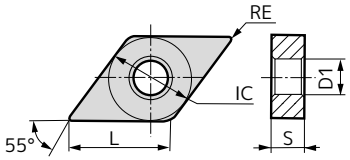
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole



Grade Selection Guide ☞ A2

Chipbreaker Selection ☞ B4 on

Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

DN■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.5	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts ☞ L55 on | SUMIDIA (PCD) Inserts ☞ M13 | SUMIDIA BINDERLESS Inserts ☞ M31

Applicable External Holders ☞ C14 to C16 | Applicable Boring Bars ☞ E15, E33 to E35

						Coated Carbide																Coated Cermet		Cermet	Cemented Carbide			
						CVD					PVD			CVD					PVD						PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**SU**		DNMG 150402 NSU	0.2							★	★	★	★	▲	★					—	★	★	★	★	★		★	—	★	★	★	★	★				
			DNMG 150404 NSU	0.4		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			DNMG 150408 NSU	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			DNMG 150412 NSU	1.2		★	★	★		▲	★	★	★	★	▲	★					—				★	★			—		★	★	★	★				
	SU		DNGG 150402 NSU	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★			★	★	★	★				
			DNGG 150404 NSU	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★			★	★	★	★				
			DNGG 150408 NSU	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★			★	★	★	★				
	SE		DNMG 150404 NSE	0.4		★	★	★	★	▲											—								—	★	★	★	★				
			DNMG 150408 NSE	0.8		★	★	★	★	▲											—								—	★	★	★	★				
			DNMG 150412 NSE	1.2		★	★	★	★	▲											—								—	★	★	★	★				
			DNMG 150416 NSE	1.6																	—								—	—	—	—	—				—
	SEW →B127 Wiper		DNMX 150404 NSEW	0.4		★	★	★		▲											—								—	★	★		★				
			DNMX 150408 NSEW	0.8		★	★	★		▲											—								—	★	★		★				
			DNMX 150412 NSEW	1.2		★	★	★		▲											—								—	—	—	—	—				—
	EF		DNMG 150404 NEF	0.4		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★		★	★	—		—	—	—	—	★	★	—	
			DNMG 150408 NEF	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★		★	★	—		—	—	—	—	★	★	—	
			DNMG 150412 NEF	1.2		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—		—	—	—	—	★	★	—	
	EF		DNGG 150404 NEF	0.4		—	—	—	—	—	—	—	—	—	—	★					—		★	★	★		★	★			—	—	—	—	★	★	—	
			DNGG 150408 NEF	0.8		—	—	—	—	—	—	—	—	—	—	★					—		★	★	★		★	★			—	—	—	—	★	★	—	
	FY		DNGG 150402 RFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150402 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150404 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150404 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150408 RFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150408 LFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
	FX		DNGG 150402 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150402 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150404 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150404 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150408 RFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
			DNGG 150408 LFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★			—	—	—	—				
Light to Medium Cutting	**SX**		DNMG 150404 NSX	0.4		★	★	★	★	▲											—								—	★	★		★				
			DNMG 150408 NSX	0.8		★	★	★	★	▲											—								—	★	★		★				
			DNMG 150412 NSX	1.2		★	★	★	★	▲											—								—	—	—	—	—				—
	EX		DNMG 150404 NEX	0.4							★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	—	—	—	—				
			DNMG 150408 NEX	0.8							★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	—	—	—	—				
			DNMG 150412 NEX	1.2							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				
	UP		DNMG 150404 NUP	0.4							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—	★			
			DNMG 150408 NUP	0.8							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—	★			
			DNMG 150412 NUP	1.2							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—	★			
			DNMG 150416 NUP	1.6																	—								—	—	—	—	—				—

FY type and FX type chipbreakers have a sharp edge.

★ mark: Global stocked item

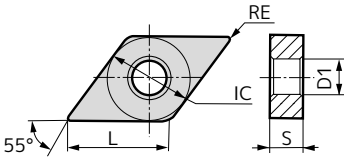
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

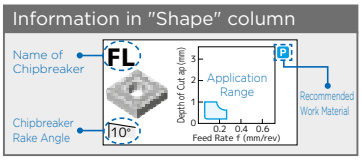
Blank: Made-to-order item

— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

DN■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.5	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L55 on | SUMIDIA (PCD) Inserts M13 | SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E33 to E35

						Coated Carbide																Coated Cermet	Cermet	Cemented Carbide		
						CVD					PVD			CVD				PVD					PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	**GU** 7°		**DNMG 150404 NGU**	0.4		★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★				★	—	★	★	★		★				
			DNMG 150408 NGU	0.8		★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★				★	—	★	★	★		★				
			DNMG 150412 NGU	1.2		★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★				★	—	★	★	★		★				
			DNMG 150416 NGU	1.6				★		▲			★	★	▲		★	★	★	—								—									
	GE 3°		**DNMG 150404 NGE**	0.4		★	★	★	★	▲										—								—									
			DNMG 150408 NGE	0.8		★	★	★	★	▲										—								—									
			DNMG 150412 NGE	1.2		★	★	★	★	▲										—								—									
			DNMG 150416 NGE	1.6				★												—								—									
	UX 0°		**DNMG 150404 NUX**	0.4		★	★	★	★	▲										—								—									
			DNMG 150408 NUX	0.8		★	★	★	★	▲										—								—									
			DNMG 150412 NUX	1.2		★	★	★	★	▲										—								—									
	UG 4°		**DNMG 150404 NUG**	0.4					★											—								—									
			DNMG 150408 NUG	0.8				★	★											—								—									
			DNMG 150412 NUG	1.2				★	★											—								—									
			DNMG 150416 NUG	1.6																—								—									
	EG 0°		**DNMG 150404 NEG**	0.4		★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—							★	★	—
			DNMG 150408 NEG	0.8		★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—							★	★	—
			DNMG 150412 NEG	1.2		★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—							★	★	—
	UM 0°		**DNMG 150404 RUM**	0.4																—								—		★		★					
			DNMG 150404 LUM	0.4																—								—		★		★					
			DNMG 150408 RUM	0.8																—								—		★		★					
			DNMG 150408 LUM	0.8																—								—		★		★					
	UM 0° Sharp Edge		**DNGG 150404 RUM**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			DNGG 150404 LUM	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			DNGG 150408 RUM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			DNGG 150408 LUM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			DNGG 150412 RUM	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			DNGG 150412 LUM	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			DNMA 150404	0.4													★	★	★	▲	—								—									
			DNMA 150408	0.8													★	★	★	▲	—								—									
			DNMA 150412	1.2													★	★	★	▲	—								—									
	Sharp Edge		**DNGA 150402**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	★																	
			DNGA 150404	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★			★						★		★			
			DNGA 150408	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	★												★		★			
			DNGA 150412	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
Medium to Roughing	**MU** 4°		**DNMG 150408 NMU**	0.8		★	★	★	★	▲		★				★				—	★	★	★			★	★	—	★								
			DNMG 150412 NMU	1.2		★	★	★	★	▲		★				★				—	★	★	★			★	★	—	★								
			DNMG 150416 NMU	1.6				★	★											—	★	★	★				★	—	★								

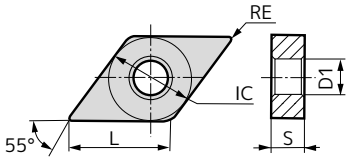
G-class insert (DNGG) with UM type chipbreaker in ST10P and G10E grades has a sharp edge.
G-class insert without chipbreaker (DNGA) has a sharp edge. (Excluding T1000A grade)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

DN■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.5	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L55 on
SUMIDIA (PCD) Inserts M13
SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E15, E33 to E35

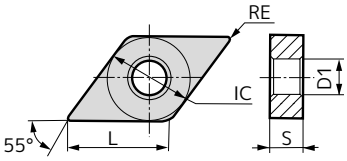
						Coated Carbide																		Coated Cermet		Cermet	Cemented Carbide			
						CVD					PVD		CVD				PVD							PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**EH**	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M 4°	DNMG 150404 NEH	0.4									★	★							—																—
			DNMG 150408 NEH	0.8									★	★							—																—
			DNMG 150412 NEH	1.2									★	★							—																—
	EM	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S 0°	DNMG 150408 NEM	0.8		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★	★												—
			DNMG 150412 NEM	1.2		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★	★												—
			DNMG 150416 NEM	1.6				★	★		★	★	★	★	▲						—	★	★	★														—
	ME	(ap) 8 6 4 2 0 0.4 0.8 (f) P 4°	DNMG 150408 NME	0.8		★	★	★	★	▲							★	★	★		—																—
			DNMG 150412 NME	1.2		★	★	★	★	▲							★	★	★		—																—
			DNMG 150416 NME	1.6				★									★	★	★		—																—
	MX	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P -15°	DNMG 150408 NMX	0.8		★	★	★	★												—																—
			DNMG 150412 NMX	1.2		★	★	★	★												—																—
			DNMG 150416 NMX	1.6																	—																—
	UZ	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K 4°	DNMG 150404 NUZ	0.4				★									★	★	★	▲	—														★			—
			DNMG 150408 NUZ	0.8				★	★								★	★	★	▲	—	★	★	★			★	★							★			—
			DNMG 150412 NUZ	1.2				★	★								★	★	★	▲	—	★	★	★			★	★							★			—
	GZ	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K 0°	DNMG 150404 NGZ	0.4													★	★	★	▲	—																—
			DNMG 150408 NGZ	0.8													★	★	★	▲	—																—
			DNMG 150412 NGZ	1.2													★	★	★	▲	—																—
	HM	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M K 15°	DNMG 150404 RHM	0.4		★	★	★	★	▲	★	★			▲	★					—																—
			DNMG 150404 LHM	0.4				★			★	★			▲	★					—																—
			DNMG 150408 RHM	0.8		★	★	★	★	▲	★	★			▲	★					—																—
			DNMG 150408 LHM	0.8				★			★	★			▲	★					—																—
Roughing	**MP**	(ap) 6 4 2 0 0.4 0.8 (f) P 0°	DNMM 150404 NMP	0.4				★	★												—																—
			DNMM 150408 NMP	0.8		★	★	★	★	▲											—																—
			DNMM 150412 NMP	1.2		★	★	★	★	▲											—																—
			DNMM 150416 NMP	1.6		★	★	★		▲											—																—
Heavy Cutting	**HP**	(ap) 6 4 2 0 0.4 0.8 (f) P 0°	DNMM 150404 NHP	0.4				★	★												—																—
			DNMM 150408 NHP	0.8				★	★												—																—
			DNMM 150412 NHP	1.2				★	★												—																—
			DNMM 150416 NHP	1.6				★													—																—
For Aluminum	**AX**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N 30° Sharp Edge	DNGG 150402 RAX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG 150402 LAX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG 150404 RAX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG 150404 LAX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG 150408 RAX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG 150408 LAX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
Light Cutting of Hardened Steel	**GH**	(ap) 4 3 2 1 0 0.1 0.2 (f) H 3° Sharp Edge	DNGG 150402 NGH	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DNGG 150404 NGH	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DNGG 150408 NGH	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

AX type and GH type chipbreakers have a sharp edge.

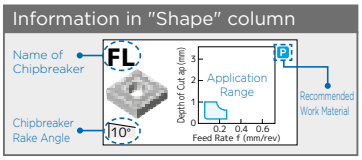
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole



Information in "Shape" column

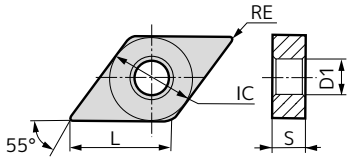


● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

Recommended Application		
P	Steel	● ◔ ● ✖ ○ ● ● ✖ ✖ ✖ ◔ ● ● ✖ ✖ ✖ ● ✖ ● ● ●

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

DN■■1506●●

Dimensions (mm)	Cutting Edge Length L	15.5	Thickness S	6.35
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

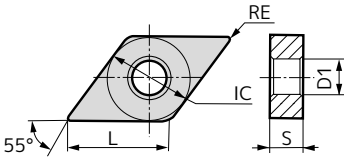
SUMIBORON (CBN) Inserts ☞ L61
Applicable External Holders ☞ C14, C16
Applicable Boring Bars ☞ E34

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting	**GU**		DNMG 150604 NGU	0.4	★	★	★	★	▲	★	★			★	★	★	★	★	—									—								
			DNMG 150608 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—									—								
			DNMG 150612 NGU	1.2	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—									—								
			DNMG 150616 NGU	1.6			★									★	★	★	—									—								
	GE		DNMG 150604 NGE	0.4	★	★	★	★	▲										—									—								
			DNMG 150608 NGE	0.8	★	★	★	★	▲										—									—								
			DNMG 150612 NGE	1.2	★	★	★	★	▲										—									—								
			DNMG 150616 NGE	1.6	★	★	★	★	▲										—									—								
	UX		DNMG 150604 NUX	0.4	★	★	★	★	▲										—									—								
			DNMG 150608 NUX	0.8	★	★	★	★	▲										—									—								
			DNMG 150612 NUX	1.2	★	★	★	★	▲										—									—								
			DNMG 150616 NUX	1.6			★												—									—								
	UG		DNMG 150604 NUG	0.4			★												—									—								
			DNMG 150608 NUG	0.8			★	★											—									—								
			DNMG 150612 NUG	1.2			★												—									—								
			DNMG 150616 NUG	1.6			★												—									—								
	EG		DNMG 150604 NEG	0.4	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★		—					★	★		
			DNMG 150608 NEG	0.8	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★	★	★	★	★		—					★	★		
			DNMG 150612 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★		—					★	★		
			DNMA 150608	0.8												★	★	★	▲	—								—								
			DNMA 150612	1.2												★	★	★	▲	—								—								
Medium to Roughing	**MU**		DNMG 150608 NMU	0.8	★	★	★	★	▲	★	★				★				—									—								
			DNMG 150612 NMU	1.2	★	★	★	★	▲		★				★				—									—								
			DNMG 150616 NMU	1.6			★								★				—									—								
	EH		DNMG 150608 NEH	0.8								★	★						—									—								
			DNMG 150612 NEH	1.2								★	★						—									—								
	EM		DNMG 150608 NEM	0.8	★	★	★	★	▲	★	★	★	★	▲					—	★	★	★	★	★				—								
			DNMG 150612 NEM	1.2	★	★	★	★	▲	★	★	★	★	▲					—	★	★	★						—								
			DNMG 150616 NEM	1.6			★												—									—								
	ME		DNMG 150608 NME	0.8	★	★	★	★	▲						★	★	★		—									—								
			DNMG 150612 NME	1.2	★	★	★	★	▲						★	★	★		—									—								
			DNMG 150616 NME	1.6	★	★	★	★	▲						★	★	★		—									—								
	MX		DNMG 150608 NMX	0.8	★	★	★												—									—								
			DNMG 150612 NMX	1.2	★	★	★												—									—								
			DNMG 150616 NMX	1.6															—									—								
Roughing	**HM**		DNMG 150604 RHM	0.4	★														—									—								
			DNMG 150608 RHM	0.8	★														—									—								

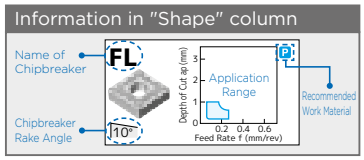
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

55° Diamond type Negative Inserts

DN 55° Diamond type Negative With Hole



Information in "Shape" column



● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

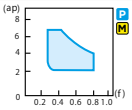
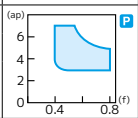
DN■■1506●●

Dimensions (mm)	Cutting Edge Length L	15.5	Thickness S	6.35
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

SUMIBORON (CBN) Inserts L61

Applicable External Holders C14, C16 — Applicable Boring Bars E34

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																						Coated Cermet	Cermet	Cemented Carbide		
					CVD					PVD			CVD				PVD										PVD				
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**UZ**		**DNMG 150608 NUZ**	0.8			★									★	★	★	▲	—								—	—	—	—				—
			DNMG 150612 NUZ	1.2			★									★	★	★	▲	—								—	—	—	—				—
	GZ		**DNMG 150608 NGZ**	0.8												★	★	★	▲	—								—	—	—	—				—
			DNMG 150612 NGZ	1.2												★	★	★	▲	—								—	—	—	—				—
Roughing	**MP**		**DNMM 150604 NMP**	0.4			★	★												—								—	—	—	—				—
			DNMM 150608 NMP	0.8	★	★	★	★	▲						★					—								—	—	—	—				—
			DNMM 150612 NMP	1.2	★	★	★	★	▲						★					—								—	—	—	—				—
			DNMM 150616 NMP	1.6	★	★	★		▲						★					—								—	—	—	—				—
Heavy Roughing	**HG**		**DNMM 150608 NHG**	0.8					★						★					—								—	—	—	—				—
			DNMM 150612 NHG	1.2					★						★					—								—	—	—	—				—
			DNMM 150616 NHG	1.6			★													—								—	—	—	—				—
Heavy Cutting	**HP**		**DNMM 150604 NHP**	0.4			★													—								—	—	—	—				—
			DNMM 150608 NHP	0.8			★	★												—								—	—	—	—				—
			DNMM 150612 NHP	1.2			★	★												—								—	—	—	—				—
			DNMM 150616 NHP	1.6			★													—								—	—	—	—				—

DN■■1906●●

Dimensions (mm)	Cutting Edge Length L	19.4	Thickness S	6.35
	Inscribed Circle IC	15.875	Hole Dia. D1	6.35

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																						Coated Cermet	Cermet	Cemented Carbide		
					CVD					PVD			CVD				PVD										PVD				
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	**UG**		**DNMG 190608 NUG**	0.8																—								—	—	—	—				—
			DNMG 190612 NUG	1.2																—								—	—	—	—				—
Medium to Roughing	**UZ**		**DNMG 190608 NUZ**	0.8																—								—	—	—	—				—
			DNMG 190612 NUZ	1.2																—								—	—	—	—				—
			DNMG 190616 NUZ	1.6																—								—	—	—	—				—

★ mark: Global stocked item

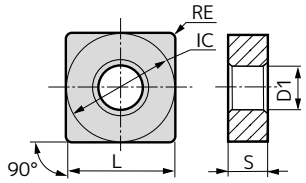
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole



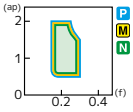
Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

SN■■S702●●

Dimensions (mm)	Cutting Edge Length L	7.14	Thickness S	2.38
	Inscribed Circle IC	7.14	Hole Dia. D1	2.97

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

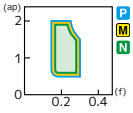
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Light Cutting	GX		SNGG S70204 RGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	15° Sharp Edge		SNGG S70204 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGG S70208 RGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGG S70208 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★
For Chamfering	C	*Corner radius is not available as the insert is for chamfering.	SNGG S70200 C	(0.8)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
	0° Sharp Edge																																			

GX type chipbreaker in G10E and H1 grades has a sharp edge.
C type chipbreaker in G10E grade has a sharp edge.

SN■■07T2●●

Dimensions (mm)	Cutting Edge Length L	7.94	Thickness S	2.78
	Inscribed Circle IC	7.94	Hole Dia. D1	3.15

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Light Cutting	GX		SNGG 07T204 RGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	15° Sharp Edge		SNGG 07T204 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGG 07T208 RGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGG 07T208 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
For Chamfering	C	*Corner radius is not available as the insert is for chamfering.	SNGG 07T200 C	(0.8)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
	0° Sharp Edge																																			

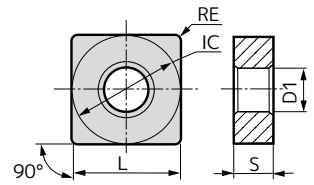
GX type chipbreaker in G10E grade has a sharp edge.
C type chipbreaker in G10E grade has a sharp edge.

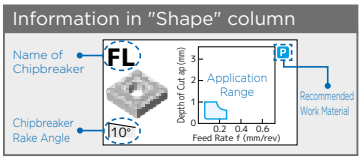
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

SN■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Applicable External Holders ☞C24 to C28

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide			
				CVD				PVD			CVD				PVD											PVD								
				AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	**ST** 0° Sharp Edge	**SNGG 090304 RST**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★	★				
		SNGG 090304 LST	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★	★				
		SNGG 090308 RST	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★	★				
		SNGG 090308 LST	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★	★				
	GX 15° Sharp Edge	**SNGG 090304 RGX**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
		SNGG 090304 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
		SNGG 090308 RGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
		SNGG 090308 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
Medium Cutting	**GU** 7°	**SNMG 090304 NGU**	0.4			★									★	★	★		—								—		—	—	—				—
		SNMG 090308 NGU	0.8	★	★	★	★	▲							★	★	★		—								—		★		—	★				—
	UX 0°	**SNMG 090308 NUX**	0.8				★												—								—		—	—	—	—				—
	UG 4° Sharp Edge	**SNMG 090308 NUG**	0.8			★	★												—								—								
		SNMA 090304	0.4																—								—								
		SNMA 090308	0.8																—								—								
	Sharp Edge	**SNGA 090304**	0.4	—	—	—	—	—	—	—	—	—	—	—																		★				★
		SNGA 090308	0.8	—	—	—	—	—	—	—	—	—	—	—																		★				
Medium to Roughing	**UZ** 4°	**SNMG 090312 NUZ**	1.2																—								—		—	—	—	—				—
For Chamfering	**C** 0° Sharp Edge	**SNGG 090300 C**	(0.8)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
	SJ 0°	**SNMG 090304 NSJ**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—

*Corner radius is not available as the insert is for chamfering.

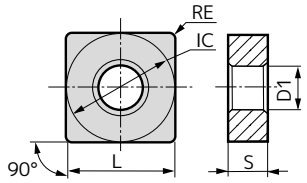
ST type chipbreaker in ST10P, ST20E and G10E grades has a sharp cutting edge.
GX type chipbreaker in G10E and H1 grades has a sharp edge.
G-class insert without chipbreaker (SNGA) in G10E and H1 grades has a sharp edge.
C type chipbreaker in G10E grade has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L71 on
SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E39 to E41

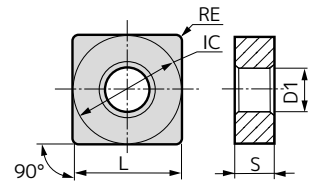
						Coated Carbide																				Coated Cermet		Cermet	Cemented Carbide			
						CVD					PVD			CVD					PVD								PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FB** 27°		**SNMG 120404 NFB**	0.4		—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			SNMG 120408 NFB	0.8		—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	FL 10°		**SNMG 120408 NFL**	0.8				★								★					—								—	★	★		★				
	FE 20°		**SNMG 120404 NFE**	0.4		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
			SNMG 120408 NFE	0.8		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
			SNMG 120412 NFE	1.2		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
Finishing	**LU** 10°		**SNMG 120408 NLU**	0.8		★	★	★		▲		★				★					—								—	★	★		★				
			SNMG 120412 NLU	1.2		★	★	★		▲		★				★					—								—	★	★		★				
	SU 13°	P M S	**SNMG 120408 NSU**	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—	★	★	★	★	★				
			SNMG 120412 NSU	1.2		—															—			★			★	★	—		★		★				
	SE 5°		**SNMG 120408 NSE**	0.8		★	★	★	★	▲											—								—	—	—	—	—				—
			SNMG 120412 NSE	1.2		★	★	★	★	▲											—								—	—	—	—	—				—
	EF 20°	M S	**SNMG 120404 NEF**	0.4		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—	—	—	—	—				—
			SNMG 120408 NEF	0.8		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—	—	—	—	—				—
For Chamfering	**SJ** 0°		**SNMG 120404 NSJ**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	—	—
Light Cutting	**GX** 15° Sharp Edge	P M N	**SNGG 120404 RGX**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			SNGG 120404 LGX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			SNGG 120408 RGX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			SNGG 120408 LGX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
			SNGG 120412 RGX	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			SNGG 120412 LGX	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
Light to Medium Cutting	**SX** 3°		**SNMG 120404 NSX**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	
			SNMG 120408 NSX	0.8		★	★	★	★	▲											—								—	★	★		★				
			SNMG 120412 NSX	1.2		★	★	★	★	▲											—								—	—	—	—	—				—
	EX 16°	M S	**SNMG 120404 NEX**	0.4							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—
			SNMG 120408 NEX	0.8							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—
			SNMG 120412 NEX	1.2							★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—

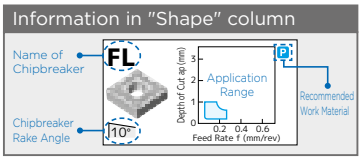
GX type chipbreaker in G10E and H1 grades has a sharp edge.

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Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◐ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation
✲ Interrupted Cutting 2nd Recommendation

SN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L71 on

SUMIDIA BINDERLESS Inserts M31

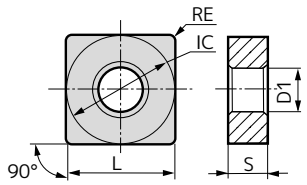
Applicable External Holders C22to C28 Applicable Boring Bars E39 to E41

					Coated Carbide																				Coated Cermet		Cermet	Cemented Carbide		
					CVD					PVD			CVD				PVD								PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**UP** 10°		SNMG 120404 NUP	0.4						★	★	★	★	▲	★					—						★		—	—	—	—	★			—
			SNMG 120408 NUP	0.8			★			★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—	★			—
			SNMG 120412 NUP	1.2						★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—	★			—
	GU 7°		SNMG 120404 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—	★	★	★				★	—	★	★	★		★				
			SNMG 120408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—	★	★	★				★	—	★	★	★		★				
			SNMG 120412 NGU	1.2	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—	★	★	★				★	—	★								
			SNMG 120416 NGU	1.6	★	★	★	★	▲							★	★	★		—								—									
	GE 3°		SNMG 120408 NGE	0.8	★	★	★	★	▲											—								—	—	—	—						—
			SNMG 120412 NGE	1.2	★	★	★	★	▲											—								—	—	—	—						—
			SNMG 120416 NGE	1.6	★	★	★	★	▲											—								—	—	—	—						—
	UX 0°		SNMG 120404 NUX	0.4				★												—								—	—	—	—						—
			SNMG 120408 NUX	0.8	★	★	★	★	▲											—								—	—	—	—						—
			SNMG 120412 NUX	1.2	★	★	★	★	▲											—								—	—	—	—						—
			SNMG 120416 NUX	1.6	★	★	★	★	▲											—								—	—	—	—						—
	UG 4°		SNMG 120408 NUG	0.8			★	★												—								—									
			SNMG 120412 NUG	1.2			★	★												—								—									
			SNMG 120416 NUG	1.6				★												—								—	—	—	—						—
	EG 0°		SNMG 120404 NEG	0.4	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—	—	—	—				★	★	—
			SNMG 120408 NEG	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—	—	—	—				★	★	—
			SNMG 120412 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	—	—	—				★	★	—
Medium Cutting	**UM** 0°		SNMG 120404 RUM	0.4																—								—				★					—
			SNMG 120404 LUM	0.4																—								—				★					—
			SNMG 120408 RUM	0.8																—								—				★					—
			SNMG 120408 LUM	0.8																—								—				★					—
			SNMG 120412 RUM	1.2																—								—				★					—
			SNMG 120412 LUM	1.2																—								—				★					—
			SNMG 120416 RUM	1.6																—								—				★					—
			SNMG 120416 LUM	1.6																—								—				★					—
	UM 0° Sharp Edge		SNGG 120404 RUM	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			SNGG 120404 LUM	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			SNGG 120408 RUM	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★			★						★	★	★	★			
			SNGG 120408 LUM	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★			★						★	★	★	★			
			SNGG 120412 RUM	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			SNGG 120412 LUM	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			SNGG 120416 RUM	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			SNGG 120416 LUM	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
	Sharp Edge		SNMA 120404	0.4											★	★	★	▲		—								—									—
			SNMA 120408	0.8											★	★	★	▲		—								—					★				★
			SNMA 120412	1.2											★	★	★	▲		—								—									—
			SNMA 120416	1.6											★	★	★	▲		—								—									—
			SNMA 120420	2.0											★	★	★	▲		—								—									—
	Sharp Edge		SNGA 120404	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★														★				
			SNGA 120408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★														★				★
			SNGA 120412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★		★				

G-class insert (SNGG) with UM type chipbreaker has a sharp edge. (Excluding T1000A and T1500A grades)
M-class insert without chipbreaker (SNMA) in G10E and H1 grades has a sharp edge.
G-class insert without chipbreaker (SNGA) in AC503U, G10E and H1 grades has a sharp edge.

Square type Negative Inserts

SN Square type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

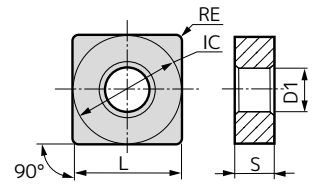
SUMIBORON (CBN) Inserts L71 on
SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C22 to C28
Applicable Boring Bars E39 to E41

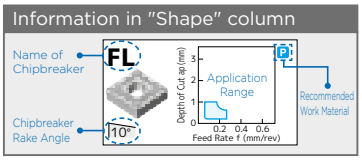
						Coated Carbide																			Coated Cermet		Cermet		Cemented Carbide			
						CVD						PVD			CVD				PVD								PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**MU**		SNMG 120408 NMU	0.8		★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—	★	—	—	—				—
			SNMG 120412 NMU	1.2		★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—	★	—	—	—				—
			SNMG 120416 NMU	1.6		★	★	★	★	▲						★					—																—
	EH		SNMG 120404 NEH	0.4									★	★							—																—
			SNMG 120408 NEH	0.8									★	★							—																—
			SNMG 120412 NEH	1.2									★	★							—																—
	EM		SNMG 120408 NEM	0.8		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★													—
			SNMG 120412 NEM	1.2		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★													—
	ME		SNMG 120408 NME	0.8		★	★	★	★	▲						★	★	★			—																—
			SNMG 120412 NME	1.2		★	★	★	★	▲						★	★	★			—																—
			SNMG 120416 NME	1.6		★	★	★	★	▲						★	★	★			—																—
	MX		SNMG 120408 NMX	0.8		★	★	★	★												—																—
			SNMG 120412 NMX	1.2		★	★	★	★												—																—
			SNMG 120416 NMX	1.6		★	★	★													—																—
	UZ		SNMG 120408 NUZ	0.8				★	★							★	★	★	▲		—	★	★	★			★	★	—		—	—	—	★			—
			SNMG 120412 NUZ	1.2				★	★							★	★	★	▲		—	★	★	★			★	★	—		—	—	—	★			—
			SNMG 120416 NUZ	1.6				★	★							★	★	★	▲		—													★			—
	GZ		SNMG 120408 NGZ	0.8												★	★	★	▲		—																—
			SNMG 120412 NGZ	1.2												★	★	★	▲		—																—
			SNMG 120416 NGZ	1.6												★	★	★	▲		—																—
	HM		SNMG 120408 RHM	0.8		★	★	★	★	▲	★	★			▲	★					—																—
			SNMG 120408 LHM	0.8		★	★	★	★	▲	★	★			▲	★					—																—
	MM		SNGG 120408 RMM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	—
			SNGG 120408 LMM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	—
Roughing	**MP**		SNMM 120408 NMP	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★										—
			SNMM 120412 NMP	1.2		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★										—
			SNMM 120416 NMP	1.6		★	★	★	★	▲		★				★					—	★	★	★			★										—
			SNMM 120420 NMP	2.0				★													—																—
Heavy Cutting	**HG**		SNMM 120408 NHG	0.8		★	★	★	★	▲						★					—																—
			SNMM 120412 NHG	1.2		★	★	★	★	▲						★					—																—
			SNMM 120416 NHG	1.6		★	★	★	★	▲						★					—																—
	HP		SNMM 120408 NHP	0.8				★	★							★					—																—
			SNMM 120412 NHP	1.2				★	★							★					—																—
			SNMM 120416 NHP	1.6				★	★							★					—																—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation
✱ Interrupted Cutting 2nd Recommendation

SN■■1204●●

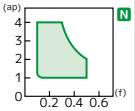
Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application

		Coated Carbide																					Coated Cermet	Cermet	Cemented Carbide			
		CVD							PVD			CVD				PVD								PVD				
	Shape	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
For Chamfering	C 0° Sharp Edge	SNGG 120400 C																																
For Aluminum	AX 30° Sharp Edge	SNGG 120404 RAX																																
		SNGG 120404 LAX																																
		SNGG 120408 RAX																																
		SNGG 120408 LAX																																

	Corner Radius RE
For Chamfering	(0.8)
For Aluminum	0.4
	0.4
	0.8
	0.8

*Corner radius is not available as the insert is for chamfering.



SUMIBORON (CBN) Inserts L71 on
SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C22 to C28
Applicable Boring Bars E39 to E41

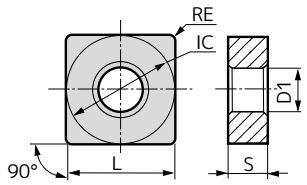
C type chipbreaker in G10E grade has a sharp edge.
AX type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SN■■1506●●

Dimensions (mm)	Cutting Edge Length L	15.875	Thickness S	6.35
	Inscribed Circle IC	15.875	Hole Dia. D1	6.35

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

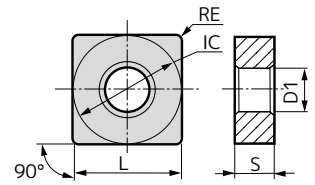
Applicable External Holders C22 to C26

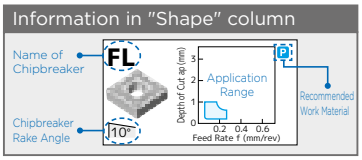
					Coated Carbide																					Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD				CVD				PVD									PVD						
	Shape	Application Range	ISO Cat. No	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**EX** 16°	(ap) 4 2 0 0.2 0.4 (f) M S	**SNMG 150612 NEX**	1.2								★	★							—	★	★	★			★	★	—		—	—	—				—
Medium Cutting	**GU** 7°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**SNMG 150608 NGU**	0.8	★	★	★	★	▲		★	★	★	▲		★	★	★		—								—		—	—	—	—				—
			SNMG 150612 NGU	1.2	★	★	★	★	▲		★	★	★	▲		★	★	★		—								—		—	—	—	—				—
			SNMG 150616 NGU	1.6	★	★	★	★	▲		★	★	★	▲		★	★	★		—								—		—	—	—	—				—
	GE 3°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**SNMG 150608 NGE**	0.8	★	★	★	★	▲											—								—		—	—	—	—				—
			SNMG 150612 NGE	1.2	★	★	★	★	▲											—								—		—	—	—	—				—
			SNMG 150616 NGE	1.6	★	★	★	★	▲											—								—		—	—	—	—				—
	UG 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**SNMG 150612 NUG**	1.2				★												—								—		—	—	—	—				—
	EG 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**SNMG 150608 NEG**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★			★	★	—		—	—	—	—				—
			SNMG 150612 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—		—	—	—	—		★	★	—
			SNMG 150616 NEG	1.6	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★	★	★	★	—		—	—	—	—				—
			SNMA 150612	1.2												★	★	★	▲	—								—		—	—	—	—				—
			SNMA 150616	1.6												★	★	★	▲	—								—		—	—	—	—				—
Medium to Roughing	**MU** 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M S	**SNMG 150608 NMU**	0.8	★	★	★	★	▲											—	★	★	★			★	★	—		—	—	—	—				—
			SNMG 150612 NMU	1.2	★	★	★	★	▲		★			★						—	★	★	★			★	★	—		—	—	—	—				—
			SNMG 150616 NMU	1.6	★	★	★	★	▲		★			★						—	★	★	★			★	★	—		—	—	—	—				—
	EM 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**SNMG 150608 NEM**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
			SNMG 150612 NEM	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
			SNMG 150616 NEM	1.6	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
	ME 4°	(ap) 8 6 4 2 0 0.4 0.8 (f) P	**SNMG 150608 NME**	0.8	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
			SNMG 150612 NME	1.2	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
			SNMG 150616 NME	1.6	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
	MX -15°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**SNMG 150612 NMX**	1.2	★	★	★													—								—		—	—	—	—				—
			SNMG 150616 NMX	1.6	★	★	★													—								—		—	—	—	—				—
	UZ 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**SNMG 150612 NUZ**	1.2			★	★												—								—		—	—	—	—				—
			SNMG 150616 NUZ	1.6			★	★												—								—		—	—	—	—				—
	GZ 0°	(ap) 10 5 0 0.5 1.0 (f) K	**SNMG 150612 NGZ**	1.2												★	★	★	▲	—								—		—	—	—	—				—
			SNMG 150616 NGZ	1.6												★	★	★	▲	—								—		—	—	—	—				—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

SN■■1506●●

Dimensions (mm)	Cutting Edge Length L	15.875	Thickness S	6.35
	Inscribed Circle IC	15.875	Hole Dia. D1	6.35

Applicable External Holders ☞C22 to C26

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

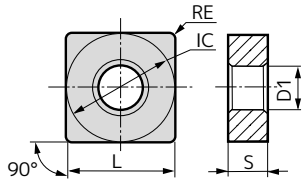
						Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
						CVD					PVD			CVD					PVD										PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**HM**		**SNMG 150608 RHM**	0.8							★	★			▲						—								—		—	—				—
			SNMG 150608 LHM	0.8							★	★			▲						—								—		—	—				—
Heavy Cutting	**MP**		**SNMM 150612 NMP**	1.2		★	★	★		▲		★				★					—								—		—	—				—
			SNMM 150616 NMP	1.6		★	★	★		▲		★				★					—								—		—	—				—
	HG		**SNMM 150612 NHG**	1.2												★					—								—		—	—				—
			SNMM 150616 NHG	1.6		★	★	★		▲						★					—								—		—	—				—
Heavy Roughing	**HP**		**SNMM 150612 NHP**	1.2					★																											

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SN■■1906●●

Dimensions (mm)	Cutting Edge Length L	19.05	Thickness S	6.35
	Inscribed Circle IC	19.05	Hole Dia. D1	7.94

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Applicable External Holders C22 to C26
Applicable Boring Bars E40

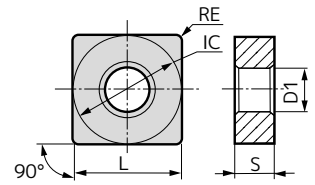
						Coated Carbide																		Coated Cermet		Cermet		Cemented Carbide		
						CVD					PVD			CVD				PVD							PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**EX**	(ap) 3 2 1 0 0.2 0.4 (f) M S	**SNMG 190612 NEX**	1.2									★	★						—	★	★	★			★	★	—		—	—	—	—				—
	16°																																				
Medium Cutting	**UX**	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P K	**SNMG 190612 NUX**	1.2		★	★	★	★	▲											—								—		—	—	—	—				—
	0°		**SNMG 190616 NUX**	1.6		★	★	★	★	▲											—								—		—	—	—	—				—
	UG	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**SNMG 190612 NUG**	1.2					★											—								—		—	—	—	—				—
	4°		**SNMG 190616 NUG**	1.6					★											—								—		—	—	—	—				—
	EG	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M	**SNMG 190612 NEG**	1.2		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—		—	—	—	—		★	★	—
	0°		**SNMG 190616 NEG**	1.6		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—		—	—	—	—		★	★	—
			SNMA 190612	1.2													★	★	★	▲	—								—		—	—	—	—				—
			SNMA 190616	1.6													★	★	★	▲	—								—		—	—	—	—				—
	MU	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M S	**SNMG 190612 NMU**	1.2		★	★	★	★	▲		★				★					—	★	★	★			★	★	—		—	—	—	—				—
	4°		**SNMG 190616 NMU**	1.6		★	★	★	★	▲		★				★					—	★	★	★			★	★	—		—	—	—	—				—
			SNMG 190624 NMU	2.4		★	★	★	★	▲											—	★	★	★			★	★	—		—	—	—	—				—
	EH	(ap) 10 5 0 0.5 1.0 (f) M	**SNMG 190612 NEH**	1.2									★	★							—								—		—	—	—	—				—
	4°		**SNMG 190616 NEH**	1.6									★	★							—								—		—	—	—	—				—
	EM	(ap) 10 5 0 0.5 1.0 (f) M S	**SNMG 190612 NEM**	1.2		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
	0°		**SNMG 190616 NEM**	1.6		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
			SNMG 190624 NEM	2.4		★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
Medium to Roughing	**ME**	(ap) 8 6 4 2 0 0.4 0.8 (f) P	**SNMG 190612 NME**	1.2		★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
	4°		**SNMG 190616 NME**	1.6		★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
			SNMG 190624 NME	2.4		★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
	MX	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**SNMG 190612 NMX**	1.2		★	★	★	★												—								—		—	—	—	—				—
	-15°		**SNMG 190616 NMX**	1.6		★	★	★	★												—								—		—	—	—	—				—
	UZ	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	**SNMG 190608 NUZ**	0.8																	—								—		—	—	—	—				—
	4°		**SNMG 190612 NUZ**	1.2					★	★							★	★	★	▲	—								—		—	—	—	—				—
			SNMG 190616 NUZ	1.6					★	★							★	★	★	▲	—								—		—	—	—	—				—
	GZ	(ap) 10 5 0 0.5 1.0 (f) K	**SNMG 190612 NGZ**	1.2													★	★	★	▲	—								—		—	—	—	—				—
	0°		**SNMG 190616 NGZ**	1.6													★	★	★	▲	—								—		—	—	—	—				—

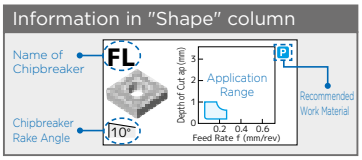
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

SN■■1906●●

Dimensions (mm)	Cutting Edge Length L	19.05	Thickness S	6.35
	Inscribed Circle IC	19.05	Hole Dia. D1	7.94

Applicable External Holders ☞C22 to C26 Applicable Boring Bars ☞E40

Recommended Application

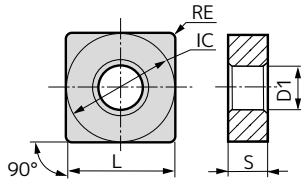
		Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD					PVD										
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Heavy Cutting	**MP**		**SNMM 190612 NMP**	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★		—		—	—	—	—				—
			SNMM 190616 NMP	1.6	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★		—		—	—	—	—				—
			SNMM 190624 NMP	2.4	★	★														—								—		—	—	—	—				—
	MH		**SNMM 190616 NMH**	1.6							★									—								—		—	—	—	—				—
	HG		**SNMM 190612 NHG**	1.2	★	★	★	★	▲						★					—								—		—	—	—	—				—
			SNMM 190616 NHG	1.6	★	★	★	★	▲						★					—								—		—	—	—	—				—
			SNMM 190624 NHG	2.4	★	★	★	★	▲						★					—								—		—	—	—	—				—
	HP		**SNMM 190612 NHP**	1.2			★	★							★					—								—		—	—	—	—				—
			SNMM 190616 NHP	1.6			★	★							★					—								—		—	—	—	—				—
			SNMM 190624 NHP	2.4		★		★												—								—		—	—	—	—				—
	HU		**SNMM 190616 NHU**	1.2											★					—								—		—	—	—	—				—
	HF		**SNMM 190616 NHF**	1.6			★	★												—								—		—	—	—	—				—
			SNMM 190624 NHF	2.4			★	★												—								—		—	—	—	—				—

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Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SN■■2507●●

Dimensions (mm)	Cutting Edge Length L	25.4	Thickness S	7.94
	Inscribed Circle IC	25.4	Hole Dia. D1	9.12

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

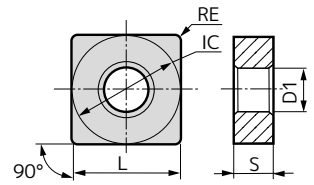
Applicable External Holders ☞ C22 to C24, C26

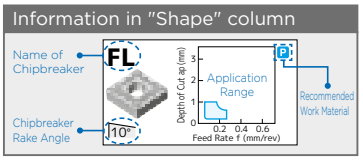
					Coated Carbide																					Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD					PVD									PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	**UG**		**SNMG 250724 NUG**	2.4																—									—	—	—	—				—
Heavy Cutting	**MP**		**SNMM 250724 NMP**	2.4	★	★	★	★	▲		★				★					—									—	—	—	—				—
	MH		**SNMM 250724 NMH**	2.4			★	★												—									—	—	—	—				—
	HP		**SNMM 250724 NHP**	2.4	★	★	★	★	▲						★					—									—	—	—	—				—
	HU		**SNMM 250724 NHU**	2.4	★	★	★		▲						★					—									—	—	—	—				—
	HW		**SNMM 250724 NHW**	2.4	★	★	★		▲						★					—									—	—	—	—				—
	HF		**SNMM 250724 NHF** **SNMM 250732 NHF**	2.4 3.2			★ ★	★ ★							★					— —									— —	— —	— —	— —				— —

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Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole





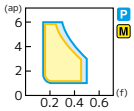
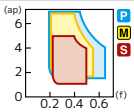
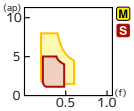
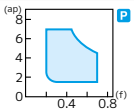
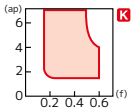
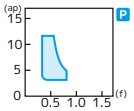
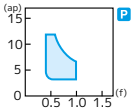
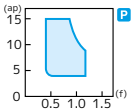
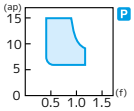
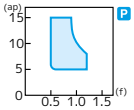
● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✲ Interrupted Cutting 2nd Recommendation

SN■■2509●●

Dimensions (mm)	Cutting Edge Length L	25.4	Thickness S	9.52
	Inscribed Circle IC	25.4	Hole Dia. D1	9.12

Applicable External Holders ☞C22, C23

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

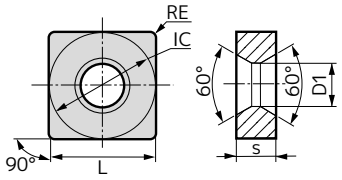
Shape		Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD				CVD					PVD								PVD						
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	**UG**		**SNMG 250924 NUG**	2.4				★												—								—								—
Medium to Roughing	**MU**		**SNMG 250924 NMU**	2.4	★	★	★	★	▲											—	★	★	★			★	★	—									—
	EM		**SNMG 250924 NEM**	2.4	★	★	★	★	▲		★	★	★	▲						—	★	★	★					—									—
	ME		**SNMG 250924 NME**	2.4	★	★	★	★	▲							★	★	★		—								—									—
	UZ		**SNMG 250924 NUZ**	2.4																—								—									—
Heavy Cutting	**MP**		**SNMM 250924 NMP**	2.4	★	★	★		▲		★				★					—								—									—
	HP		**SNMM 250924 NHP**	2.4	★	★	★		▲						★					—								—									—
	HU		**SNMM 250924 NHU**	2.4	★	★	★		▲						★					—								—									—
	HW		**SNMM 250924 NHW**	2.4	★	★	★		▲						★					—								—									—
	HF		**SNMM 250924 NHF** **SNMM 250932 NHF**	2.4 3.2			★ ★	★ ★							★					— —								— —									— —

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SN■■3109●●

Dimensions (mm)	Cutting Edge Length L	31.75	Thickness S	9.52
	Inscribed Circle IC	31.75	Hole Dia. D1	8.8

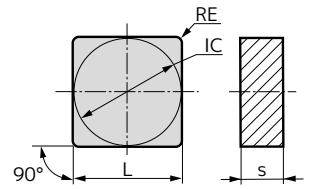
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

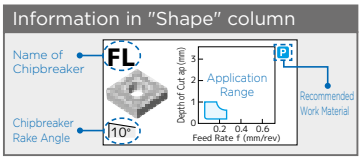
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD					PVD										PVD						
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Heavy Cutting	**MP**		**SNMM 310924 NMP**	2.4	★	★	★		▲		★				★				—								—								—
	HP		**SNMM 310924 NHP**	2.4	★	★	★		▲						★				—								—								—
	HU		**SNMM 310924 NHU**	2.4	★	★	★		▲						★				—								—								—
	HW		**SNMM 310924 NHW**	2.4	★	★	★		▲						★				—								—								—
	HF		**SNMM 310924 NHF**	2.4			★	★											—								—								—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type / Negative / Without Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

SN■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.18
	Inscribed Circle IC	9.525		

SUMIBORON (CBN) Inserts L74, L75 — Applicable External Holders L124

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
					Coated Carbide																								Coated Cermet		Cermet		Cemented Carbide		
					CVD							PVD			CVD					PVD									PVD							
Medium Cutting			**SNGN 090304**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 090308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 090312	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

SN■■1203●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	3.18
	Inscribed Circle IC	12.7		

SUMIBORON (CBN) Inserts L76 — Applicable External Holders L124

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
					Coated Carbide																								Coated Cermet		Cermet		Cemented Carbide		
					CVD							PVD			CVD					PVD									PVD							
Medium Cutting			**SNGN 120304**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 120308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 120312	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

SN■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7		

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
					Coated Carbide																								Coated Cermet		Cermet		Cemented Carbide		
					CVD							PVD			CVD					PVD									PVD							
Medium Cutting	Sharp Edge		**SNMN 120404**	0.4																—								—	—			—				—
			SNMN 120408	0.8											★	★	★	▲		—	★	★	★			★		—	—			★	★	★		
			SNMN 120412	1.2											★	★	★	▲		—	★	★	★			★		—	★				★			
			SNMN 120416	1.6											★	★	★	▲		—	★	★	★			★		—	—							
			SNMN 120420	2.0																—								—	★							
			SNMN 120424	2.4																—								—	★							
	Sharp Edge		**SNGN 120404**	0.4	—	—	—	—	—	—	—	—	—	—	—																					
			SNGN 120408	0.8	—	—	—	—	—	—	—	—	—	—	—																	★	★	★		
			SNGN 120412	1.2	—	—	—	—	—	—	—	—	—	—	—																					
			SNGN 120416	1.6	—	—	—	—	—	—	—	—	—	—	—																					

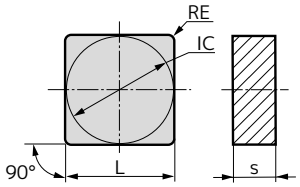
M-class insert without chipbreaker (SNMN) in AC530U and G10E grades has a sharp edge.
G-class insert without chipbreaker (SNGN) in G10E grade has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Negative Inserts

SN Square type Negative Without Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

SN■■1207●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	7.94
	Inscribed Circle IC	12.7		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting			**SNGN 120708**	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 120712	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 120716	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 120720	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

SN■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.875	Thickness S	4.76
	Inscribed Circle IC	15.875		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting	 Sharp Edge		**SNMN 150408**	0.8																—								—						★			
			**SNGN 150408**	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 150412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 150416	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

M-class insert without chipbreaker (SNMN) in G10E grade has a sharp edge.

SN■■1904●●

Dimensions (mm)	Cutting Edge Length L	19.05	Thickness S	4.76
	Inscribed Circle IC	19.05		

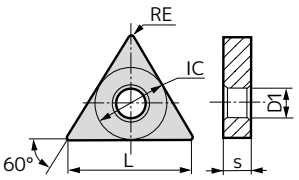
Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

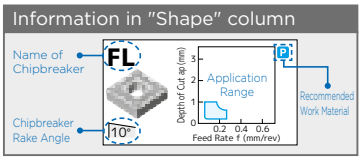
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting	 Sharp Edge		**SNMN 190412**	1.2																—								—						★			
			**SNGN 190402**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 190404	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 190408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 190412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SNGN 190416	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

M-class insert without chipbreaker (SNMN) in G10E grade has a sharp edge.

Triangular type Negative Inserts

TN Triangular type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

TN■■0902●●

Dimensions (mm)	Cutting Edge Length L	9.6	Thickness S	2.38
	Inscribed Circle IC	5.56	Hole Dia. D1	2.57

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Light Cutting	GX 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P M N	TNGG 090204 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★
			TNGG 090208 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★

GX type chipbreaker in G10E and H1 grades has a sharp edge.

TN■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	2.26

Applicable External Holders ☞C34 to C36

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FT 0°	(ap) 2 1 0 0.2 0.4 (f) P	TNGG 110302 RFT	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					
			TNGG 110302 LFT	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					
			TNGG 110304 RFT	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					
			TNGG 110304 LFT	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					
			TNGG 110308 RFT	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							
			TNGG 110308 LFT	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							
Light Cutting	GX 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P M N	TNGG 110302 RGX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					
			TNGG 110302 LGX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					
			TNGG 110304 RGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★			
			TNGG 110304 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★			
			TNGG 110308 RGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							
			TNGG 110308 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							
Medium Cutting			TNMA 110304	0.4																—								—		—	—	—	—				—
			TNMA 110308	0.8																—								—		—	—	—	—				—
	Sharp Edge		TNGA 110302	0.2	—	—	—	—	—	—	—	—	—	—	—																		★			
			TNGA 110304	0.4	—	—	—	—	—	—	—	—	—	—	—																		★			★
			TNGA 110308	0.8	—	—	—	—	—	—	—	—	—	—	—																	★	★			

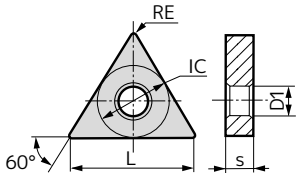
GX type chipbreaker in G10E grade has a sharp edge.
G-class insert without chipbreaker (TNGA) in G10E and H1 grades has a sharp edge.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TN■■11T2●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	2.78
	Inscribed Circle IC	6.35	Hole Dia. D1	2.76

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	PVD: AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	GX (15° Sharp Edge)	(ap) 2 / 1 / 0 / 0.2 / 0.4 (f); P M N	TNGG 11T204 RGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			TNGG 11T204 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
			TNGG 11T208 RGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			TNGG 11T208 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
Medium Cutting	Sharp Edge		TNGA 11T204	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	★

GX type chipbreaker in G10E and H1 grades has a sharp edge.
G-class insert without chipbreaker (TNGA) in H1 grade has a sharp edge.

TN■■1303●●

Dimensions (mm)	Cutting Edge Length L	13.7	Thickness S	3.18
	Inscribed Circle IC	7.94	Hole Dia. D1	3.15

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	PVD: AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	GX (15° Sharp Edge)	(ap) 2 / 1 / 0 / 0.2 / 0.4 (f); P M N	TNGG 130304 RGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			TNGG 130304 LGX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
			TNGG 130308 RGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			TNGG 130308 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★

GX type chipbreaker in G10E and H1 grades has a sharp edge.

TN■■1603●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Applicable External Holders ☞ C34 to C36

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

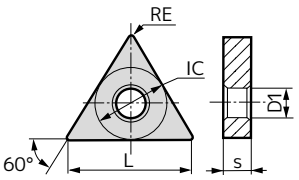
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	PVD: AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	ST (0° Sharp Edge)	(ap) 2 / 1 / 0 / 0.2 / 0.4 (f); P	TNGG 160302 RST	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			TNGG 160302 LST	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			TNGG 160304 RST	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			TNGG 160304 LST	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			TNGG 160308 RST	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
			TNGG 160308 LST	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
Light to Medium Cutting	SX (3°)	(ap) 2 / 1 / 0 / 0.2 / 0.4 (f); P	TNMG 160304 NSX	0.4	★	★	★		▲											—								—									
			TNMG 160308 NSX	0.8	★	★	★	★	▲											—								—									

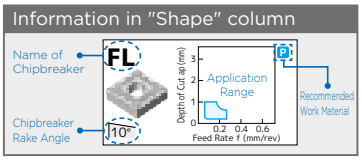
ST type chipbreaker in ST10P and ST20E grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

TN■■1603●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Applicable External Holders ☞C34 to C36

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Cemented Carbide			
		CVD							PVD			CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◔	●	✖	○			✪	✪		◔								✪				✪	●		●	✖	●	●				
M Stainless Steel				○	✪		●	●	✖	✪	✪	◔								✪				✪	●	✪							
K Cast Iron		○	◔	✪					✖	✪	✪		●	●	✖	✪			✪				✪		●				●				
N Non-Ferrous Metal																																	●
S Exotic Alloy																	●	●	●	✖	●	●	◔	✪	✪								
H Hardened Steel																	●	○															
Medium Cutting	TNMA 160304	0.4																															
	TNMA 160308	0.8																															
	TNMA 160312	1.2																															
	TNGA 160302	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	TNGA 160304	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★
	TNGA 160308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—
	TNGA 160312	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sharp Edge

G-class insert without chipbreaker (TNGA) in G10E and H1 grades has a sharp edge.

TN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

SUMIBORON (CBN) Inserts ☞L82 on
SUMIDIA (PCD) Inserts ☞M18
Applicable External Holders ☞C31 to C37, D29, D45
Applicable Boring Bars ☞E15, H9 to E51

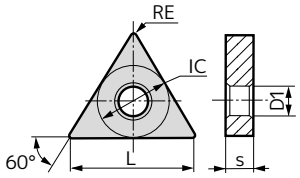
Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Cemented Carbide			
		CVD							PVD			CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◔	●	✖	○			✪	✪		◔								✪				✪	●		●	✖	●	●				
M Stainless Steel				○	✪		●	●	✖	✪	✪	◔								✪				✪	●	✪							
K Cast Iron		○	◔	✪					✖	✪	✪		●	●	✖	✪			✪				✪		●				●				
N Non-Ferrous Metal																																	●
S Exotic Alloy																	●	●	●	✖	●	●	◔	✪	✪								
H Hardened Steel																	●	○															
Fine Cutting	FB 27° TNMG 160402 NFB	0.2	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	TNMG 160404 NFB	0.4	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	TNMG 160408 NFB	0.8	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	FA 20° TNMG 160402 NFA	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★				
	TNMG 160404 NFA	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★				
	TNMG 160408 NFA	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★				
	FL 10° TNMG 160404 NFL	0.4			★							★					—								—		★	★	★	★				
	TNMG 160408 NFL	0.8			★							★					—								—		★	★	★	★				
	FE 20° TNMG 160402 NFE	0.2	★	★	★	★	▲		★	★	★	▲					—								—		★	★	★	★				
	TNMG 160404 NFE	0.4	★	★	★	★	▲		★	★	★	▲					—								—		★	★	★	★				
	TNMG 160408 NFE	0.8	★	★	★	★	▲		★	★	★	▲					—								—		★	★	★	★				
	TNMG 160412 NFE	1.2	★	★	★	★	▲		★	★	★	▲					—								—		★	★	★	★				
Finishing	LU 10° TNMG 160402 NLU	0.2						★				★					—								—		★	★	★	★				
	TNMG 160404 NLU	0.4	★	★	★	★	▲	★				★					—								—		★	★	★	★				
	TNMG 160408 NLU	0.8	★	★	★	★	▲	★				★					—								—		★	★	★	★				
	TNMG 160412 NLU	1.2	★	★	★	★	▲	★				★					—								—		★	★		★				
	SU 13° TNMG 160402 NSU	0.2						★	★	★	▲	★					—	★	★	★	★	★		★	—	★	★	★	★	★				
	TNMG 160404 NSU	0.4	★	★	★	★	▲	★	★	★	▲	★					—	★	★	★			★	★	—	★	★	★	★	★				
	TNMG 160408 NSU	0.8	★	★	★	★	▲	★	★	★	▲	★					—	★	★	★			★	★	—	★	★	★	★	★				
	TNMG 160412 NSU	1.2	★	★	★		▲	★	★	★	▲	★					—	★	★	★			★	★	—	★	★	★	★	★				

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts ☞ L82 on
SUMIDIA (PCD) Inserts ☞ M18
Applicable External Holders ☞ C31 to C37, D29, D45
Applicable Boring Bars ☞ E15, H9 to E51

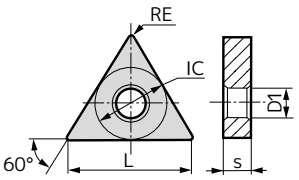
						Coated Carbide																		Coated Cermet	Cermet	Cemented Carbide			
						CVD					PVD			CVD				PVD							PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**SU**		**TNGG 160402 NSU**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★			★	★	★	★				
	13°		**TNGG 160404 NSU**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★			★	★	★	★				
			TNGG 160408 NSU	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★			★	★	★	★				
	SE		**TNMG 160404 NSE**	0.4		★	★	★	★	▲											—							—		★	★	★	★				
	5°		**TNMG 160408 NSE**	0.8		★	★	★	★	▲											—							—		★	★	★	★				
			TNMG 160412 NSE	1.2		★	★	★	★	▲											—							—		—	—	—	—				—
	EF		**TNMG 160404 NEF**	0.4		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—		—	—	—	—		★	★	—
	20°		**TNMG 160408 NEF**	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—		—	—	—	—		★	★	—
	FY		**TNGG 160401 RFY**	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★		★	★	—	—	—	
			TNGG 160401 LFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★		★	★	—	—	—	
			TNGG 160402 RFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160402 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160404 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160404 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160408 RFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★		★	★				
			TNGG 160408 LFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★		★	★				
			TNGG 160412 RFY	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★			★	—	—	—	
	15° Sharp Edge		**TNGG 160412 LFY**	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★			★	—	—	—	
	FX		**TNGG 160402 RFX**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160402 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160404 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160404 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	★	★	★	★				
			TNGG 160408 RFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★								
	14° Sharp Edge		**TNGG 160408 LFX**	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★								
Light Cutting	**ST**		**TNGG 160402 RST**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TNGG 160402 LST	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TNGG 160404 RST	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TNGG 160404 LST	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TNGG 160408 RST	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TNGG 160408 LST	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TNGG 160412 RST	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★				
	0°		**TNGG 160412 LST**	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★				
	GX		**TNGG 160404 RGX**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			TNGG 160404 LGX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
			TNGG 160408 RGX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			TNGG 160408 LGX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			★
			TNGG 160412 RGX	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
	15° Sharp Edge		**TNGG 160412 LGX**	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
Light to Medium Cutting	**SX**		**TNMG 160404 NSX**	0.4		★	★	★	★	▲											—							—		★	★		★				
	3°		**TNMG 160408 NSX**	0.8		★	★	★	★	▲											—							—		★	★		★				
			TNMG 160412 NSX	1.2																	—							—		—	—	—	—				—
			TNMG 160416 NSX	1.6																	—							—		—	—	—	—				—

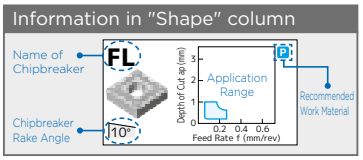
FY type and FX type chipbreakers have a sharp edge.
GX type chipbreaker in G10E and H1 grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L82 on | SUMIDIA (PCD) Inserts M18

Applicable External Holders C31 to C37, D29, D45 | Applicable Boring Bars E15, H9 to E51

						Coated Carbide																Coated Cermet		Cermet		Cemented Carbide			
						CVD				PVD			CVD				PVD							PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**EX**	(ap) 3 2 1 0 0.2 0.4 (f) M S	**TNMG 160404 NEX**	0.4							★	★	★	★	▲	★				—	★	★	★			★	★	—	★	—	—	—	—				—
	16°		**TNMG 160408 NEX**	0.8							★	★	★	★	▲	★				—	★	★	★			★	★	—	★	—	—	—	—				—
			TNMG 160412 NEX	1.2							★	★	★	★	▲	★				—	★	★	★			★	★	—	★	—	—	—	—				—
	UP	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) M S	**TNMG 160404 NUP**	0.4				★	★		★	★	★	★	▲	★				—	★	★	★			★	★	—	★	—	—	—	—	★			—
	10°		**TNMG 160408 NUP**	0.8				★			★	★	★	★	▲	★				—	★	★	★			★	★	—	★	—	—	—	—	★			—
			TNMG 160412 NUP	1.2							★	★	★	★	▲	★				—	★	★	★			★	★	—	★	—	—	—	—				—
Medium Cutting	**GU**	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**TNMG 160404 NGU**	0.4		★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★				★	—	★	★	★		★				—
	7°		**TNMG 160408 NGU**	0.8		★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★				★	—	★	★	★		★				—
			TNMG 160412 NGU	1.2		★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—	★	★	★				★	—	★	—	—	—	—				—
			TNMG 160416 NGU	1.6		★	★	★	★	▲							★	★	★	—								—		—	—	—	—				—
	GE	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**TNMG 160404 NGE**	0.4		★	★	★	★	▲										—								—		—	—	—	—				—
	3°		**TNMG 160408 NGE**	0.8		★	★	★	★	▲										—								—		—	—	—	—				—
			TNMG 160412 NGE	1.2		★	★	★	★	▲										—								—		—	—	—	—				—
	UX	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P K	**TNMG 160404 NUX**	0.4		★	★	★	★	▲										—								—		—	—	—	—				—
	0°		**TNMG 160408 NUX**	0.8		★	★	★	★	▲										—								—		—	—	—	—				—
			TNMG 160412 NUX	1.2		★	★	★	★	▲										—								—		—	—	—	—				—
	UG	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**TNMG 160404 NUG**	0.4				★	★											—								—		—	—	—	—				—
	4°		**TNMG 160408 NUG**	0.8				★	★											—								—		—	—	—	—				—
			TNMG 160412 NUG	1.2				★	★											—								—		—	—	—	—				—
			TNMG 160416 NUG	1.6				★	★											—								—		—	—	—	—				—
	EG	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**TNMG 160404 NEG**	0.4		★	★	★	★	▲	★	★	★	★	▲					—	★	★	★					—		—	—	—	—				—
	0°		**TNMG 160408 NEG**	0.8		★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—		—	—	—	—		★	★	—
			TNMG 160412 NEG	1.2		★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—		—	—	—	—		★	★	—
	UM	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P M K	**TNMG 160404 RUM**	0.4																—								—	★	★	★	★				—
			TNMG 160404 LUM	0.4																—								—	★	★	★	★				—
	0°		**TNMG 160408 RUM**	0.8		★														—								—	★	★	★	★				—
			TNMG 160408 LUM	0.8																—								—	★	★	★	★				—
	UM	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TNGG 160402 RUM**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★			—
			TNGG 160402 LUM	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★			—
			TNGG 160404 RUM	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★			★
			TNGG 160404 LUM	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★			★
			TNGG 160408 RUM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★			★
			TNGG 160408 LUM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★			★
			TNGG 160412 RUM	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★				
			TNGG 160412 LUM	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★				
			TNGG 160416 RUM	1.6		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
	0° Sharp Edge		**TNGG 160416 LUM**	1.6		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
			TNMA 160404	0.4													★	★	★	▲	—	★	★	★			★		—						★			
			TNMA 160408	0.8													★	★	★	▲	—	★	★	★			★		—						★			★
			TNMA 160412	1.2													★	★	★	▲	—								—						★			
			TNMA 160416	1.6													★	★	★	▲	—								—									—
	Sharp Edge		**TNMA 160420**	2.0													★	★	★	▲	—								—									—

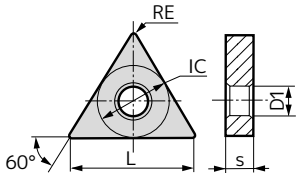
G-class insert (TNGG) with UM type chipbreaker has a sharp edge. (Excluding T1500Z, T2500Z, T1000A, and T1500A grades)
M-class insert without chipbreaker (TNMA) in G10E and H1 grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L82 on
SUMIDIA (PCD) Inserts M18
Applicable External Holders C31 to C37, D29, D45
Applicable Boring Bars E15, H9 to E51

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting	Sharp Edge		TNGA 160402	0.2	—	—	—	—	—	—	—	—	—	—	—					★														★			
			TNGA 160404	0.4	—	—	—	—	—	—	—	—	—	—	—					★		★	★			★						★		★			★
			TNGA 160408	0.8	—	—	—	—	—	—	—	—	—	—	—					★												★	★	★				★
			TNGA 160412	1.2	—	—	—	—	—	—	—	—	—	—	—																			★			
			TNGA 160416	1.6	—	—	—	—	—	—	—	—	—	—	—																						
Medium to Roughing	MU 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M S	TNMG 160408 NMU	0.8	★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—	★	—	—	—	—				—
			TNMG 160412 NMU	1.2	★	★	★	★	▲		★				★					—	★	★	★			★	★	—	★	—	—	—	—				—
	EH 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M	TNMG 160404 NEH	0.4								★	★							—								—									—
			TNMG 160408 NEH	0.8								★	★							—								—									—
			TNMG 160412 NEH	1.2								★	★							—								—									—
	EM 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	TNMG 160408 NEM	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
			TNMG 160412 NEM	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
	ME 4°	(ap) 8 6 4 2 0 0.4 0.8 (f) P	TNMG 160408 NME	0.8	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
			TNMG 160412 NME	1.2	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
	MX -15°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	TNMG 160408 NMX	0.8	★	★	★	★												—								—		—	—	—	—				—
			TNMG 160412 NMX	1.2	★	★	★	★												—								—		—	—	—	—				—
	UZ 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	TNMG 160404 NUZ	0.4			★									★	★	★	▲	—								—		—	—	—	—				—
			TNMG 160408 NUZ	0.8			★	★								★	★	★	▲	—								—		—	—	—	—				—
			TNMG 160412 NUZ	1.2			★	★								★	★	★	▲	—								—		—	—	—	—				—
			TNMG 160416 NUZ	1.6			★									★	★	★	▲	—								—		—	—	—	—				—
			TNMG 160420 NUZ	2.0			★									★	★	★	▲	—								—		—	—	—	—				—
	GZ 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	TNMG 160404 NGZ	0.4												★	★	★	▲	—								—		—	—	—	—				—
			TNMG 160408 NGZ	0.8												★	★	★	▲	—								—		—	—	—	—				—
			TNMG 160412 NGZ	1.2												★	★	★	▲	—								—		—	—	—	—				—
	HM 15°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M K	TNMG 160404 RHM	0.4	★	★	★	★	▲	★	★			▲	★					—	★	★	★			★		—		—	—	—	—				—
			TNMG 160404 LHM	0.4	★	★	★	★	▲	★	★			▲	★					—	★	★	★			★		—		—	—	—	—				—
			TNMG 160408 RHM	0.8	★	★	★	★	▲	★	★			▲	★					—	★	★	★			★		—		—	—	—	—				—
			TNMG 160408 LHM	0.8	★	★	★	★	▲	★	★			▲	★					—	★	★	★			★		—		—	—	—	—				—
	MM 10°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	TNGG 160404 RMM	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			TNGG 160404 LMM	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			TNGG 160408 RMM	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			TNGG 160408 LMM	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		

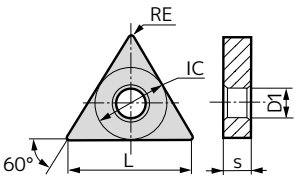
G-class insert without chipbreaker (TNGA) has a sharp edge. (Excluding T1000A and T1500A grades)

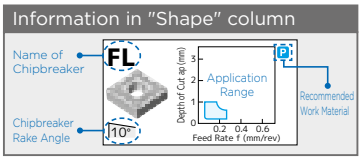
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✪ Interrupted Cutting 2nd Recommendation

TN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L82 on
SUMIDIA (PCD) Inserts M18
Applicable External Holders C31 to C37, D29, D45
Applicable Boring Bars E15, H9 to E51

						Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
						CVD					PVD			CVD					PVD										PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Heavy Cutting	**MP**		**TNMM 160404 NMP**	0.4				★																												
			TNMM 160408 NMP	0.8				★	★							★																				
			TNMM 160412 NMP	1.2				★	★																											
			TNMM 160416 NMP	1.6																																
	HP		**TNMM 160408 NHP**	0.8				★	★																											
			TNMM 160412 NHP	1.2				★	★																											
For Aluminum	**AX**		**TNGG 160402 RAX**	0.2																																★
			TNGG 160402 LAX	0.2																																★
			TNGG 160404 RAX	0.4																																★
			TNGG 160404 LAX	0.4																																★
			TNGG 160408 RAX	0.8																																★
			TNGG 160408 LAX	0.8																																★
Light Cutting of Hardened Steel	**GH**		**TNGG 160402 NGH**	0.2																	★														
			TNGG 160404 NGH	0.4																	★														
			TNGG 160408 NGH	0.8																	★														

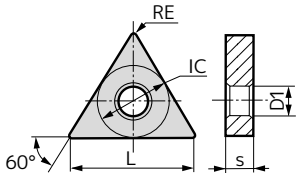
AX type and GH type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

TN■■2204●●

Dimensions (mm)	Cutting Edge Length L	22.0	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L87
Applicable External Holders C32 to C37
Applicable Boring Bars E51

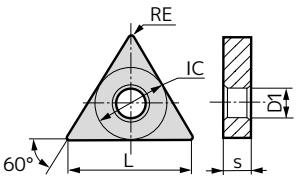
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	**SE** 5°	P	TNMG 220404 NSE	0.4	★	★	★	★	▲											—										—	—	—	—				—
			TNMG 220408 NSE	0.8	★	★	★	★	▲											—										—	—	—	—				—
			TNMG 220412 NSE	1.2	★	★	★	★	▲											—										—	—	—	—				—
Light Cutting	**GX** 15° Sharp Edge	P M N	TNGG 220408 LGX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
Light to Medium Cutting	**SX** 3°	P	TNMG 220404 NSX	0.4	★	★	★	★	▲											—										—	—	—	—				—
			TNMG 220408 NSX	0.8	★	★	★	★	▲											—										—	—	—	—				—
			TNMG 220412 NSX	1.2	★	★	★	★	▲											—										—	—	—	—				—
	UP 10°	M S	TNMG 220408 NUP	0.8								★	★							—	★	★	★			★	★			—	—	—	—	★			—
			TNMG 220412 NUP	1.2								★	★							—										—	—	—	—				—
Medium Cutting	**GU** 7°	P M	TNMG 220404 NGU	0.4			★									★	★	★		—										—	—	—	—				—
			TNMG 220408 NGU	0.8	★	★	★	★	▲			★	★		★	★	★	★		—										—	—	—	—				—
			TNMG 220412 NGU	1.2	★	★	★	★	▲			★	★			★	★	★		—										—	—	—	—				—
	GE 3°	P	TNMG 220408 NGE	0.8	★	★	★	★	▲											—										—	—	—	—				—
			TNMG 220412 NGE	1.2	★	★	★	★	▲											—										—	—	—	—				—
	UX 0°	P K	TNMG 220408 NUX	0.8	★	★	★	★	▲											—										—	—	—	—				—
			TNMG 220412 NUX	1.2	★	★	★	★	▲											—										—	—	—	—				—
	UG 4°	P M	TNMG 220408 NUG	0.8			★	★												—										—	—	—	—				—
			TNMG 220412 NUG	1.2			★	★												—										—	—	—	—				—
			TNMG 220416 NUG	1.6																—										—	—	—	—				—
	UM 0°	P M K	TNMG 220404 RUM	0.4																—										—	—	—	★				
			TNMG 220404 LUM	0.4																—										—	—	—	★				
			TNMG 220408 RUM	0.8																—										—	—	—	★				
			TNMG 220408 LUM	0.8																—										—	—	—	★				
	UM 0° Sharp Edge	P	TNGG 220404 RUM	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			TNGG 220404 LUM	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			TNGG 220408 RUM	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
			TNGG 220408 LUM	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	★			
	Sharp Edge		TNMA 220404	0.4																—																	
			TNMA 220408	0.8												★	★	★	▲	—														★			
			TNMA 220412	1.2												★	★	★	▲	—										—	—	—	—	★			—
			TNMA 220416	1.6												★	★	★	▲	—										—	—	—	—				—
			TNMA 220420	2.0																—										—	—	—	—				—

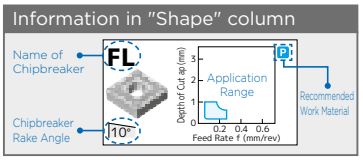
GX type chipbreaker in G10E grade has a sharp edge.
G-class insert (TNGG) with UM type chipbreaker has a sharp edge. (Excluding T1000A and T1500A grades)
M-class insert without chipbreaker (TNMA) in G10E grade has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

TN■■2204●●

Dimensions (mm)	Cutting Edge Length L	22.0	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts ☞L87

Applicable External Holders ☞C32 to C37 Applicable Boring Bars ☞E51

						Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide		
						CVD					PVD			CVD				PVD									PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	Sharp Edge		TNGA 220404	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
			TNGA 220408	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★
			TNGA 220412	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGA 220416	1.6		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Medium to Roughing	**MU** 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M S	TNMG 220408 NMU	0.8		★	★	★	★	▲	★		★	★		★				—	★	★	★			★	★	—		—	—	—	—				—
			TNMG 220412 NMU	1.2		★	★	★	★	▲			★	★		★				—								—		—	—	—	—				—
			TNMG 220416 NMU	1.6		★	★	★	★	▲						★				—								—		—	—	—	—				—
	ME 4°	(ap) 8 6 4 2 0 0.4 0.8 (f) P	TNMG 220408 NME	0.8		★	★	★	★	▲							★	★	★										—		—	—	—	—				—
			TNMG 220412 NME	1.2		★	★	★	★	▲							★	★	★										—		—	—	—	—				—
			TNMG 220416 NME	1.6		★	★	★	★	▲							★	★	★										—		—	—	—	—				—
	MX -15°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	TNMG 220408 NMX	0.8		★	★	★	★												—								—		—	—	—	—				—
			TNMG 220412 NMX	1.2		★	★	★	★												—								—		—	—	—	—				—
	UZ 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	TNMG 220408 NUZ	0.8				★	★								★	★	★	▲	—								—		—	—	—	—	★			—
			TNMG 220412 NUZ	1.2				★	★								★	★	★	▲	—								—		—	—	—	—				—
			TNMG 220416 NUZ	1.6				★	★								★	★	★	▲	—								—		—	—	—	—				—
			TNMG 220420 NUZ	2.0																	—								—		—	—	—	—				—
	GZ 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	TNMG 220408 NGZ	0.8													★	★	★	▲	—								—		—	—	—	—				—
			TNMG 220412 NGZ	1.2													★	★	★	▲	—								—		—	—	—	—				—
			TNMG 220416 NGZ	1.6													★	★	★	▲	—								—		—	—	—	—				—
	HM 15°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M K	TNMG 220404 RHM	0.4		★	★	★	★	▲						★					—								—		—	—	—	—				—
			TNMG 220404 LHM	0.4		★	★	★	★	▲						★					—								—		—	—	—	—				—
			TNMG 220408 RHM	0.8		★	★	★	★	▲						★					—								—		—	—	—	—				—
			TNMG 220408 LHM	0.8		★	★	★	★	▲						★					—								—		—	—	—	—				—
	MM 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	TNGG 220404 RMM	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220404 LMM	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220408 RMM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220408 LMM	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220412 RMM	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220412 LMM	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220416 RMM	1.6		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TNGG 220416 LMM	1.6		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Heavy Cutting	**MP** 0°	(ap) 6 4 2 0 0.4 0.8 (f) P	TNMM 220408 NMP	0.8				★	★												—								—		—	—	—	—				—
			TNMM 220412 NMP	1.2				★	★							★					—								—		—	—	—	—				—
			TNMM 220416 NMP	1.6				★	★												—								—		—	—	—	—				—
	HG 0°	(ap) 6 4 2 0 0.4 0.8 (f) P	TNMM 220408 NHG	0.8				★	★												—								—		—	—	—	—				—
			TNMM 220412 NHG	1.2				★	★												—								—		—	—	—	—				—
			TNMM 220416 NHG	1.6				★	★							★					—								—		—	—	—	—				—
	HP 0°	(ap) 6 4 2 0 0.4 0.8 (f) P	TNMM 220408 NHP	0.8				★	★												—								—		—	—	—	—				—
			TNMM 220412 NHP	1.2				★	★												—								—		—	—	—	—				—
			TNMM 220416 NHP	1.6				★													—								—		—	—	—	—				—

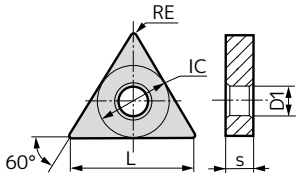
G-class insert without chipbreaker (TNGA) in G10E and H1 grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type Negative With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

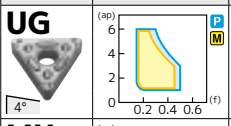
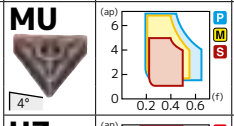
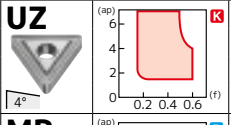
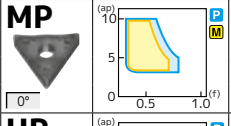
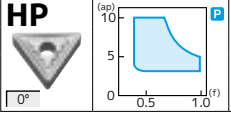
Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TN■■2706●●

Dimensions (mm)	Cutting Edge Length L	27.5	Thickness S	6.35
	Inscribed Circle IC	15.875	Hole Dia. D1	6.35

Applicable External Holders ☞ C32, C33

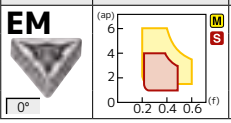
Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium Cutting	**UG**		**TNMG 270608 NUG**	0.8																—										—	—	—	—				—
			TNMG 270612 NUG	1.2																—										—	—	—	—				—
			TNMG 270616 NUG	1.6																—										—	—	—	—				—
Medium to Roughing	**MU**		**TNMG 270612 NMU**	1.2			★	★												—										—	—	—	—				—
			TNMG 270616 NMU	1.6			★													—										—	—	—	—				—
	UZ		**TNMG 270608 NUZ**	0.8			★													—										—	—	—	—				—
			TNMG 270612 NUZ	1.2			★													—										—	—	—	—				—
			TNMG 270616 NUZ	1.6			★	★												—										—	—	—	—				—
Rough to Heavy Cutting	**MP**		**TNMM 270612 NMP**	1.2			★													—										—	—	—	—				—
			TNMM 270616 NMP	1.6			★													—										—	—	—	—				—
Heavy Cutting	**HP**		**TNMM 270612 NHP**	1.2			★	★												—										—	—	—	—				—
			TNMM 270616 NHP	1.6			★	★												—										—	—	—	—				—

TN■■3309●●

Dimensions (mm)	Cutting Edge Length L	33.0	Thickness S	9.52
	Inscribed Circle IC	19.05	Hole Dia. D1	7.93

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

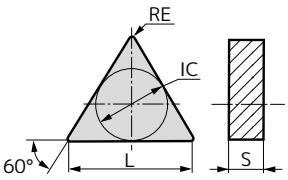
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium to Roughing	**EM**		**TNMG 330924 NEM**	2.4			★	★			★	★	★	▲						—	★	★	★						—	—	—	—				—

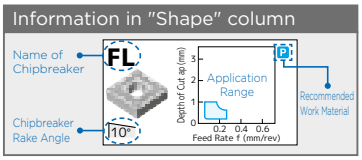
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type / Negative / Without Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

TN■■1603●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.18
	Inscribed Circle IC	9.525		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	PVD: AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting			**TNMN 160304**	0.4																																
			TNMN 160308	0.8																																
Medium Cutting			**TNGN 160304**	0.4	—	—	—	—	—	—	—	—	—	—	—	—					—								—								
			TNGN 160308	0.8	—	—	—	—	—	—	—	—	—	—	—	—					—								—								
			TNGN 160312	1.2	—	—	—	—	—	—	—	—	—	—	—	—					—								—								

TN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525		

SUMIBORON (CBN) Inserts ☞L90
Applicable External Holders ☞L126

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	PVD: AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting	Sharp Edge		**TNMN 160404**	0.4																														★			
			TNMN 160408	0.8												★	★	★	▲																★			
			TNMN 160412	1.2												★	★	★	▲																			
			TNMN 160416	1.6												★	★	★	▲																			
Medium Cutting	Sharp Edge		**TNGN 160404**	0.4	—	—	—	—	—	—	—	—	—	—	—					—								—							★			
			TNGN 160408	0.8	—	—	—	—	—	—	—	—	—	—	—					—								—							★			
			TNGN 160412	1.2	—	—	—	—	—	—	—	—	—	—	—					—								—										

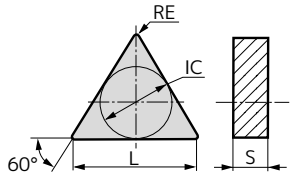
M-class insert without chipbreaker (TNMN) in G10E grade has a sharp edge.
G-class insert without chipbreaker (TNGN) has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Negative Inserts

TN Triangular type / Negative / Without Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TN■■1607●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	7.94
	Inscribed Circle IC	9.525		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium Cutting			**TNGN 160712**	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TN■■2204●●

Dimensions (mm)	Cutting Edge Length L	22.0	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

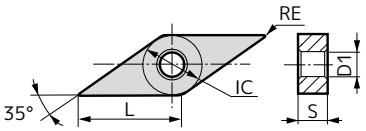
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium Cutting			**TNMN 220408**	0.8																—								—									
			TNGN 220404	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			TNGN 220408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			TNGN 220412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			TNGN 220416	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	

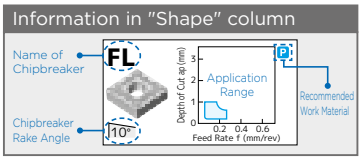
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

35° Diamond type Negative Inserts

VN 35° Diamond type / Negative / With Hole





VN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L107 on
SUMIDIA (PCD) Inserts M25
SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C40, C41

						Coated Carbide																			Coated Cermet		Cermet	Cemented Carbide		
						CVD				PVD			CVD				PVD								PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FB**		**VNMG 160404 NFB**	0.4		—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			VNMG 160408 NFB	0.8		—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	FA		**VNMG 160404 NFA**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			VNMG 160408 NFA	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	FL		**VNMG 160404 NFL**	0.4				★								★					—								—	★	★	★	★				
			VNMG 160408 NFL	0.8				★								★					—								—	★	★	★	★				
			VNMG 160412 NFL	1.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	FE		**VNMG 160402 NFE**	0.2		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
			VNMG 160404 NFE	0.4		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
			VNMG 160408 NFE	0.8		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
			VNMG 160412 NFE	1.2		★	★	★	★	▲		★	★	★	▲						—								—	★	★	★	★				
Finishing	**LU**		**VNMG 160402 NLU**	0.2								★				★					—								—	★	★	★	★				
			VNMG 160404 NLU	0.4		★	★	★		▲		★				★					—								—	★	★	★	★				
			VNMG 160408 NLU	0.8		★	★	★		▲		★				★					—								—	★	★	★	★				
			VNMG 160412 NLU	1.2		★	★			▲											—								—	—	—	—	—				—
	SU		**VNMG 160402 NSU**	0.2							★	★	★	★	▲	★					—	★	★	★				★	—	★	★	★	★	★				
			VNMG 160404 NSU	0.4		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			VNMG 160408 NSU	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
	SU		**VNGG 160402 NSU**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★				
			VNGG 160404 NSU	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★				
			VNGG 160408 NSU	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★				
	SE		**VNMG 160404 NSE**	0.4		★	★	★	★	▲											—								—	★	★	★	★				
			VNMG 160408 NSE	0.8		★	★	★	★	▲											—								—	★	★	★	★				
	EF		**VNMG 160402 NEF**	0.2		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—	—	—	—	—		★	★	—
			VNMG 160404 NEF	0.4		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★		★	★	—	—	—	—	—		★	★	—
			VNMG 160408 NEF	0.8		★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★		★	★	—	—	—	—	—		★	★	—
	EF		**VNGG 160402 NEF**	0.2		—	—	—	—	—		—	—	—	—	★					—		★	★	★		★	★		—	—	—	—		★	★	—
			VNGG 160404 NEF	0.4		—	—	—	—	—		—	—	—	—	★					—		★	★	★		★	★		—	—	—	—		★	★	—
	FY		**VNGG 160402 RFY**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	—	—	—	—				
			VNGG 160402 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	—	—	—	—				
			VNGG 160404 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	—	—	—	—				
			VNGG 160404 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	—	—	—	—				
			VNGG 160408 RFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	—	—	—	—				
			VNGG 160408 LFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	—	—	—	—				

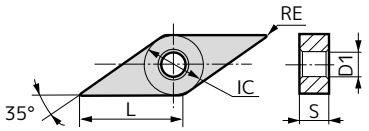
FY type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

35° Diamond type Negative Inserts

VN 35° Diamond type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

VN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L107 on | SUMIDIA (PCD) Inserts M25 | SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C40, C41

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD				CVD					PVD								PVD					
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FX** 14° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**VNGG 160402 RFX**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—
			VNGG 160402 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—
			VNGG 160404 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—
			VNGG 160404 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—
			VNGG 160408 RFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—
			VNGG 160408 LFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—
Light to Medium Cutting	**SX** 3°	(ap) 2 1 0 0.2 0.4 (f) P	**VNMG 160404 NSX**	0.4	★	★	★	★	▲						—					—							—	★	★		★				
			VNMG 160408 NSX	0.8	★	★	★	★	▲						—					—							—	★	★		★				
			VNMG 160412 NSX	1.2											—					—							—	—	—	—	—				—
	EX 16°	(ap) 3 2 1 0 0.2 0.4 (f) M S	**VNMG 160404 NEX**	0.4						★	★	★	★	★	—					—	★	★	★	★	★	★	—	★	—	—	—	—				—
			VNMG 160408 NEX	0.8						★	★	★	★	★	—					—	★	★	★	★	★	★	—	★	—	—	—	—				—
	UP 10°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) M S	**VNMG 160404 NUP**	0.4			★	★		★	★	★	★	★	—					—						★	—		—	—	—	—	★			—
			VNMG 160408 NUP	0.8			★			★	★	★	★	★	—					—						★	—		—	—	—	—	★			—
Medium Cutting	**GU** 7°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**VNMG 160404 NGU**	0.4	★	★	★	★	▲	★	★	★	★	★	★	★	★	★		—	★	★	★				★	—	★	★	★		★			
			VNMG 160408 NGU	0.8	★	★	★	★	▲	★	★	★	★	★	★	★	★	★		—	★	★	★				★	—	★	★	★		★			
			VNMG 160412 NGU	1.2	★	★	★	★	▲			★	★	★		★	★	★		—	★	★	★				★	—	★							
	GE 3°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**VNMG 160404 NGE**	0.4	★	★	★	★	▲						—					—							—		—	—	—	—				—
			VNMG 160408 NGE	0.8	★	★	★	★	▲						—					—							—		—	—	—	—				—
			VNMG 160412 NGE	1.2	★	★	★	★	▲						—					—							—		—	—	—	—				—
	UX 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P K	**VNMG 160404 NUX**	0.4	★	★	★	★	▲						—					—							—		—	—	—	—				—
			VNMG 160408 NUX	0.8	★	★	★	★	▲						—					—							—		—	—	—	—				—
			VNMG 160412 NUX	1.2	★	★	★	★	▲						—					—							—		—	—	—	—				—
	UG 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**VNMG 160404 NUG**	0.4			★	★							—					—							—									
			VNMG 160408 NUG	0.8			★	★							—					—							—									
			VNMG 160412 NUG	1.2					★						—					—							—									
	EG 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**VNMG 160404 NEG**	0.4	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★	★			—	—	—	—	—				—
			VNMG 160408 NEG	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	—	—	—	—		★	★	—
			VNMG 160412 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—	—	—	—	—				—
			VNMA 160404	0.4												★	★	★	▲	—								—	—	—	—	—				—
			VNMA 160408	0.8												★	★	★	▲	—								—	—	—	—	—				—
			VNMA 160412	1.2												★	★	★	▲	—								—	—	—	—	—				—
	Sharp Edge		**VNGA 160404**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			VNGA 160408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

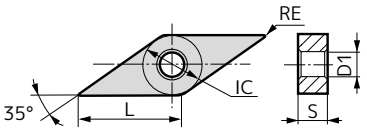
FX type chipbreaker has a sharp edge.
G-class insert without chipbreaker (VNGA) has a sharp edge.

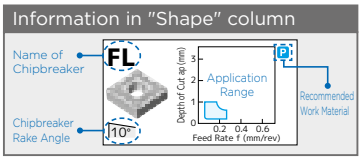
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

35° Diamond type Negative Inserts

VN 35° Diamond type Negative With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
● Interrupted Cutting 1st Recommendation ○ Interrupted Cutting 2nd Recommendation

VN■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

SUMIBORON (CBN) Inserts L107 on
SUMIDIA (PCD) Inserts M25
SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C40, C41

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium to Roughing	**UZ**		**VNMG 160404 NUZ**	0.4			★	★								★	★	★	▲	—	★	★	★			★	★	—	—	—	—	—	★			—
			VNMG 160408 NUZ	0.8			★	★								★	★	★	▲	—	★	★	★			★	★	—	—	—	—	—	★			—
			VNMG 160412 NUZ	1.2			★	★								★	★	★	▲	—	★	★	★			★	★	—	—	—	—	—	★			—
	GZ		**VNMG 160404 NGZ**	0.4												★	★	★	▲	—								—								—
			VNMG 160408 NGZ	0.8												★	★	★	▲	—								—								—
			VNMG 160412 NGZ	1.2												★	★	★	▲	—								—								—
For Aluminum	**AX**		**VNGG 160402 RAX**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG 160402 LAX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG 160404 RAX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG 160404 LAX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG 160408 RAX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG 160408 LAX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

AX type chipbreaker has a sharp edge.

VN■■2204●●

Dimensions (mm)	Cutting Edge Length L	22.1	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

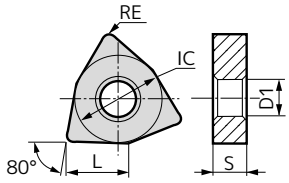
Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium to Roughing	**UZ**		**VNMG 220408 NUZ**	0.8																—								—								—
			VNMG 220412 NUZ	1.2																—								—								—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Trigon type Negative Inserts

WN Trigon type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

WN■■06T3●●

Dimensions (mm)	Cutting Edge Length L	6.5	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	**SU**		**WNMG 06T304 NSU**	0.4			★													—										—	—	—	—				—
			WNMG 06T308 NSU	0.8			★													—										—	—	—	—				—
Medium Cutting	**UG**		**WNMG 06T304 NUG**	0.4			★													—										—	—	—	—				—
			WNMG 06T308 NUG	0.8			★													—										—	—	—	—				—

WN■■0604●●

Dimensions (mm)	Cutting Edge Length L	6.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Applicable External Holders C45 | Applicable Boring Bars E66, E67

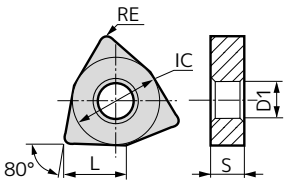
Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

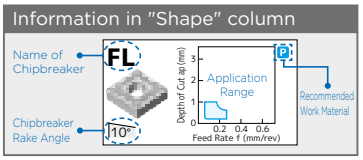
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Fine Cutting	**FB**		**WNMG 060404 NFB**	0.4	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	—
			WNMG 060408 NFB	0.8	—	—	—	—	—	—	—			▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	—	—
	FE		**WNMG 060404 NFE**	0.4	★	★	★	★	▲		★	★	★	▲						—								—	★	★		★				
			WNMG 060408 NFE	0.8	★	★	★	★	▲		★	★	★	▲						—								—	★	★		★				
Finishing	**LU**		**WNMG 060404 NLU**	0.4	★	★	★	★	▲			★	★	▲						—								—	★	★						
			WNMG 060408 NLU	0.8	★	★	★	★	▲			★	★	▲						—								—	★	★						
			WNMG 060412 NLU	1.2	★	★	★	★	▲			★	★	▲						—								—	★							
	LUW →B127 Wiper		**WNMG 060404 NLUW**	0.4	★	★	★		▲		★	★	★	▲	★					—								—	★	★		★				
			WNMG 060408 NLUW	0.8	★	★	★		▲		★	★	★	▲	★					—								—	★	★		★				
	SU		**WNMG 060404 NSU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—						★	★	—	★	★						—
			WNMG 060408 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—			★				★	—	★	★						—
			WNMG 060412 NSU	1.2	★	★	★	★	▲	★	★	★	★	▲						—								—	★							
	SEW →B127 Wiper		**WNMG 060404 NSEW**	0.4	★	★	★	★	▲											—								—								
			WNMG 060408 NSEW	0.8	★	★	★	★	▲											—								—								
	EF		**WNMG 060404 NEF**	0.4	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—								—
			WNMG 060408 NEF	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—								—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Trigon type Negative Inserts

WN Trigon type Negative With Hole





WN■■0604●●

Dimensions (mm)	Cutting Edge Length L	6.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

Applicable External Holders C45 | Applicable Boring Bars E66, E67

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

Recommended Application

P	Steel	● ◔ ● ✖ ○ ✖ ✖ ✖ ✖ ◔ ● ● ✖ ✖ ✖ ✖ ✖ ✖ ● ✖ ● ●
M	Stainless Steel	◔ ○ ✖ ● ● ✖ ✖ ✖ ◔ ✖ ✖ ✖ ✖ ✖ ✖ ✖ ✖ ✖ ●
K	Cast Iron	○ ◔ ✖ ✖ ✖ ✖ ✖ ● ● ✖ ✖ ✖ ✖ ✖ ✖ ●
N	Non-Ferrous Metal	●
S	Exotic Alloy	● ● ✖ ● ● ◔ ✖ ✖
H	Hardened Steel	● ○

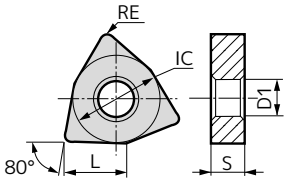
					Coated Carbide																		Coated Cermet		Cermet		Cemented Carbide							
					CVD					PVD				CVD					PVD								PVD								
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	**GU** 7°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**WNMG 060404 NGU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—								—		★	★						
			WNMG 060408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—								—		★	★						
			WNMG 060412 NGU	1.2	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★	—								—		★							
	GE 3°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P	**WNMG 060408 NGE**	0.8	★	★	★	★	▲										—								—		—	—	—	—				—
			WNMG 060412 NGE	1.2	★	★	★	★	▲										—								—		—	—	—	—				—
	GUW 0° →B127 Wiper	(ap) 6 4 2 0 0.4 0.8 (f) P	**WNMG 060408 NGUW**	0.8	★	★	★	★	▲										—								—		—	—	—	—				—
	UG 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M	**WNMG 060404 NUG**	0.4			★												—								—		—	—	—	—				—
			WNMG 060408 NUG	0.8			★												—								—		—	—	—	—				—
	EG 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**WNMG 060408 NEG**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—		—	—	—	—				—
			WNMG 060412 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★				★	—		—	—	—	—				—
	EX 16°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M S	**WNMG 060404 NEX**	0.4											★					—								—		—	—	—	—				—
			WNMG 060408 NEX	0.8						★					★					—		★				★	★	—		—	—	—	—				—
Medium to Roughing	**MU** 4°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) P M S	**WNMG 060408 NMU**	0.8	★		★			★					★					—						★	★	—		—	—	—	—				—
			WNMG 060412 NMU	1.2			★								★					—								—		—	—	—	—				—
	ME 4°	(ap) 8 6 4 2 0 0.4 0.8 (f) P	**WNMG 060408 NME**	0.8	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
			WNMG 060412 NME	1.2	★	★	★	★	▲							★	★	★		—								—		—	—	—	—				—
	GZ 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) K	**WNMG 060408 NGZ**	0.8												★	★	★	▲	—								—		—	—	—	—				—
			WNMG 060412 NGZ	1.2												★	★	★	▲	—								—		—	—	—	—				—

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Trigon type Negative Inserts

WN Trigon type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

WN■■0804●●

Dimensions (mm)	Cutting Edge Length L	8.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L118, L119

Applicable External Holders C44, C45 **Applicable Boring Bars E66, E67**

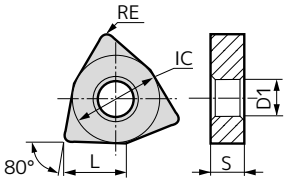
					Coated Carbide																						Coated Cermet	Cermet	Cemented Carbide		
					CVD				PVD			CVD				PVD										PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FB** 27°		**WNMG 080402 NFB**	0.2	—	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			WNMG 080404 NFB	0.4	—	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			WNMG 080408 NFB	0.8	—	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	FA 20°		**WNMG 080402 NFA**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			WNMG 080404 NFA	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			WNMG 080408 NFA	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	FL 10°		**WNMG 080404 NFL**	0.4			★							★					—								—	★	★	★	★				
			WNMG 080408 NFL	0.8			★							★					—								—	★	★	★	★				
	FE 20°		**WNMG 080402 NFE**	0.2	★	★	★	★	▲		★	★	★	▲					—								—	★	★	★	★				
			WNMG 080404 NFE	0.4	★	★	★	★	▲		★	★	★	▲					—								—	★	★	★	★				
			WNMG 080408 NFE	0.8	★	★	★	★	▲		★	★	★	▲					—								—	★	★	★	★				
			WNMG 080412 NFE	1.2	★	★	★	★	▲		★	★	★	▲					—								—	★	★	★	★				
Finishing	**LU** 10°		**WNMG 080404 NLU**	0.4	★	★	★	★	▲		★			★					—								—	★	★	★	★				
			WNMG 080408 NLU	0.8	★	★	★	★	▲		★			★					—								—	★	★	★	★				
			WNMG 080412 NLU	1.2	★	★	★	★	▲		★			★					—								—	★	★		★				
	LUW 10° →B127 Wiper		**WNMG 080404 NLUW**	0.4	★	★	★		▲		★			★					—								—	★	★		★				
			WNMG 080408 NLUW	0.8	★	★	★		▲		★			★	★	★			—								—	★	★		★				
			WNMG 080412 NLUW	1.2	★	★	★		▲		★			★					—								—	★	★		★				
	SU 13°		**WNMG 080404 NSU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—	★	★	★	★	★				
			WNMG 080408 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—	★	★	★	★	★				
			WNMG 080412 NSU	1.2	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—	★	★	★	★	★				
	SU 13°		**WNGG 080404 NSU**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★	★	★	★				
	SE 5°		**WNMG 080404 NSE**	0.4	★	★	★	★	▲										—								—	★	★	★	★				
			WNMG 080408 NSE	0.8	★	★	★	★	▲										—								—	★	★	★	★				
			WNMG 080412 NSE	1.2	★	★	★	★	▲										—								—	—	—	—	—				—
	SEW 5° →B127 Wiper		**WNMG 080404 NSEW**	0.4	★	★	★		▲										—								—	★	★		★				
			WNMG 080408 NSEW	0.8	★	★	★		▲										—								—	★	★		★				
			WNMG 080412 NSEW	1.2	★	★	★		▲										—								—	—	—	—	—				—
	EF 20°		**WNMG 080404 NEF**	0.4	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★			★	★	—	—	—	—	—			★	★	—
			WNMG 080408 NEF	0.8	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★	★	★	★	★	—	—	—	—	—			★	★	—

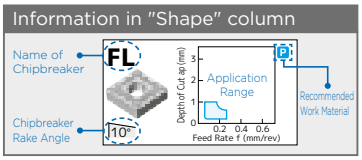
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Trigon type Negative Inserts

WN Trigon type Negative With Hole





WN■■0804●●

Dimensions (mm)	Cutting Edge Length L	8.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

SUMIBORON (CBN) Inserts L118, L119

Applicable External Holders C44, C45 Applicable Boring Bars E66, E67

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

Recommended Application

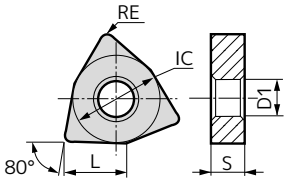
		Coated Carbide																					Coated Cermet		Cermet	Cemented Carbide			
		CVD					PVD				CVD					PVD							PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	**SX** 3°		**WNMG 080404 NSX**	0.4	★	★	★	★	▲																		—								
			WNMG 080408 NSX	0.8	★	★	★	★	▲																		—								
			WNMG 080412 NSX	1.2	★	★	★	★	▲																		—								
	EX 16°		**WNMG 080404 NEX**	0.4						★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—
			WNMG 080408 NEX	0.8						★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	—	—	—	—				—
			WNMG 080412 NEX	1.2						★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—
	UP 10°		**WNMG 080408 NUP**	0.8		★	★			★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—
			WNMG 080412 NUP	1.2		★	★			★	★	★	★	▲	★					—	★	★	★			★	★	—	★	—	—	—	—				—
Medium Cutting	**GU** 7°		**WNMG 080404 NGU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—	★	★	★				★	—	★	★	★		★				—
			WNMG 080408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—	★	★	★				★	—	★	★	★		★				—
			WNMG 080412 NGU	1.2	★	★	★	★	▲	★	★	★	★	▲	★	★	★	★		—	★	★	★				★	—	★								—
	GE 3°		**WNMG 080404 NGE**	0.4	★	★	★	★	▲											—								—		—	—	—	—				—
			WNMG 080408 NGE	0.8	★	★	★	★	▲											—								—		—	—	—	—				—
			WNMG 080412 NGE	1.2	★	★	★	★	▲											—								—		—	—	—	—				—
			WNMG 080416 NGE	1.6	★	★	★	★	▲											—								—		—	—	—	—				—
	GUW 0° →B127 Wiper		**WNMG 080408 NGUW**	0.8	★	★	★		▲						★					—								—		—	—	—	—				—
			WNMG 080412 NGUW	1.2	★	★	★		▲											—								—		—	—	—	—				—
	UX 0°		**WNMG 080404 NUX**	0.4	★	★	★	★	▲											—								—		—	—	—	—				—
			WNMG 080408 NUX	0.8	★	★	★	★	▲											—								—		—	—	—	—				—
			WNMG 080412 NUX	1.2	★	★	★	★	▲											—								—		—	—	—	—				—
	UG 4°		**WNMG 080404 NUG**	0.4			★	★												—								—		—	—	—	—				—
			WNMG 080408 NUG	0.8			★	★												—								—		—	—	—	—				—
			WNMG 080412 NUG	1.2		★	★	★												—								—		—	—	—	—				—
	EG 0°		**WNMG 080404 NEG**	0.4	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
			WNMG 080408 NEG	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—		—	—	—	—		★	★	—
			WNMG 080412 NEG	1.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—		—	—	—	—		★	★	—
			WNMA 080408	0.8												★	★	★	▲	—								—		—	—	—	—				—
			WNMA 080412	1.2												★	★	★	▲	—								—		—	—	—	—				—
			WNMA 080416	1.6												★	★	★	▲	—								—		—	—	—	—				—

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Trigon type Negative Inserts

WN Trigon type Negative With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

WN■■0804●●

Dimensions (mm)	Cutting Edge Length L	8.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.16

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

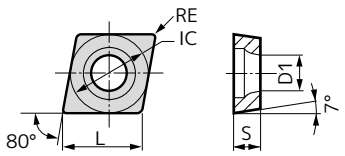
SUMIBORON (CBN) Inserts L118, L119
Applicable External Holders C44, C45
Applicable Boring Bars E66, E67

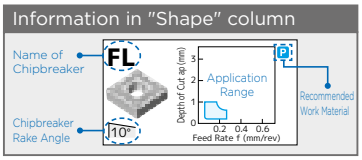
					Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD				PVD								PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**MU**		**WNMG 080408 NMU**	0.8	★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—	★	—	—	—	—				—
			WNMG 080412 NMU	1.2	★	★	★	★	▲	★	★				★					—	★	★	★			★	★	—	★	—	—	—	—				—
			WNMG 080416 NMU	1.6	★	★	★		▲											—								—		—	—	—	—				—
	EH		**WNMG 080404 NEH**	0.4								★	★							—								—		—	—	—	—				—
			WNMG 080408 NEH	0.8								★	★							—								—		—	—	—	—				—
			WNMG 080412 NEH	1.2								★	★							—								—		—	—	—	—				—
			WNMG 080416 NEH	1.6								★	★							—								—		—	—	—	—				—
	EM		**WNMG 080408 NEM**	0.8	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★	★	★			—		—	—	—	—				—
			WNMG 080412 NEM	1.2	★	★	★	★	▲	★	★	★	★	▲						—	★	★	★					—		—	—	—	—				—
	ME		**WNMG 080408 NME**	0.8	★	★	★	★	▲						★	★	★			—								—		—	—	—	—				—
			WNMG 080412 NME	1.2	★	★	★	★	▲						★	★	★			—								—		—	—	—	—				—
			WNMG 080416 NME	1.6	★	★	★	★	▲						★	★	★			—								—		—	—	—	—				—
	MX		**WNMG 080408 NMX**	0.8	★	★	★	★												—								—		—	—	—	—				—
			WNMG 080412 NMX	1.2	★	★	★	★												—								—		—	—	—	—				—
	UZ		**WNMG 080404 NUZ**	0.4			★								★	★	★	▲		—	★	★	★			★	★	—		—	—	—	—				—
			WNMG 080408 NUZ	0.8			★	★							★	★	★	▲		—	★	★	★			★	★	—		—	—	—	—				—
			WNMG 080412 NUZ	1.2			★	★							★	★	★	▲		—	★	★	★			★	★	—		—	—	—	—				—
	GZ		**WNMG 080404 NGZ**	0.4											★	★	★	▲		—								—		—	—	—	—				—
			WNMG 080408 NGZ	0.8											★	★	★	▲		—								—		—	—	—	—				—
			WNMG 080412 NGZ	1.2											★	★	★	▲		—								—		—	—	—	—				—
Heavy Roughing	**MP**		**WNMM 080408 NMP**	0.8		★		★							★					—								—		—	—	—	—				—
			WNMM 080412 NMP	1.2											★					—								—		—	—	—	—				—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

CC■■03X1●●

Dimensions (mm)	Cutting Edge Length L	3.55	Thickness S	1.4
	Inscribed Circle IC	3.5	Hole Dia. D1	1.9

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L43 SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E18, E22

Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
FYS		**CCGT 03X1003 RFYS**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X1003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X101 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X101 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X102 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X102 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X104 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
		CCGT 03X104 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
FYS		**CCET 03X1003 RFYS**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X1003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X101 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X101 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X102 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X102 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X104 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		CCET 03X104 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
FY		**CCGT 03X101 RFY**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★		★		★	★				
		CCGT 03X101 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★		★		★	★				
		CCGT 03X102 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★		★		★	★				
		CCGT 03X102 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★		★		★	★				
		CCGT 03X104 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★		★		★	★				
		CCGT 03X104 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★		★		★	★				
FY		**CCET 03X1003 RFY**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★		★			★				
		CCET 03X1003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★			★				
		CCET 03X101 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★		★			★				
		CCET 03X101 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★			★				
		CCET 03X102 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★		★			★				
		CCET 03X102 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★			★				
		CCET 03X104 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★		★			★				
		CCET 03X104 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★			★				

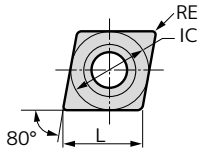
Finishing

FYS type and FY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

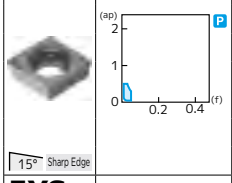
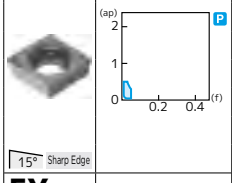
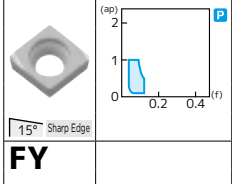
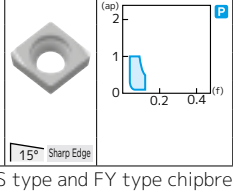
Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

CC■■04X1●●

Dimensions (mm)	Cutting Edge Length L	4.37	Thickness S	1.8
	Inscribed Circle IC	4.3	Hole Dia. D1	2.3

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L44
SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E18, E22

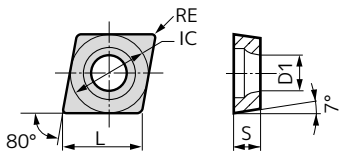
Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet (PVD) T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing																																				
FYS		**CCGT 04X1003 RFYS**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X1003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X101 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X101 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X102 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X102 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X104 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
		CCGT 04X104 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★										
FYS		**CCET 04X1003 RFYS**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X1003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X101 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X101 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X102 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X102 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X104 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
		CCET 04X104 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★										
FY		**CCGT 04X101 RFY**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		★		★	★					
		CCGT 04X101 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		★		★	★					
		CCGT 04X102 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		★		★	★					
		CCGT 04X102 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		★		★	★					
		CCGT 04X104 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		★		★	★					
		CCGT 04X104 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		★		★	★					
FY		**CCET 04X1003 RFY**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★		★	★					
		CCET 04X1003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★	★	★	★					
		CCET 04X101 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★		★	★					
		CCET 04X101 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★	★	★	★					
		CCET 04X102 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★		★	★					
		CCET 04X102 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★	★	★	★					
		CCET 04X104 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★		★	★					
		CCET 04X104 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★		★	★	★	★					

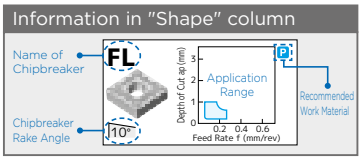
FYS type and FY type chipbreakers have a sharp edge.

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80° Diamond type Positive Inserts

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● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

CC■■0602●●

Dimensions (mm)	Cutting Edge Length L	6.4	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L45, L46 | SUMIDIA (PCD) Inserts M11 | SUMIDIA BINDERLESS Inserts M31

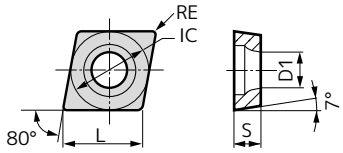
Applicable External Holders C13, D28, D30, D31, D42 | Applicable Boring Bars E18 to E22

						Coated Carbide																Coated Cermet	Cermet	Cemented Carbide		
						CVD					PVD			CVD					PVD					PVD			
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FF**		**CCGT 060201 MNFF**	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	—	—	—	—
			CCGT 060202 MNFF	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	—	—	—	—
			CCGT 060204 MNFF	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	—	—	—	—
	FB		**CCMT 060202 NFB**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—
			CCMT 060204 NFB	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—
	LU		**CCMT 060202 NLU**	0.2		★	★	★		▲	★	★	★	★	▲	★					—								—	★	★	★	★	★			
			CCMT 060204 NLU	0.4		★	★	★		▲	★	★	★	★	▲	★					—								—	★	★	★	★	★			
	FP		**CCMT 060202 NFP**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★		★	★	—	—	—
			CCMT 060204 NFP	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★		★	★	—	—	—
			CCMT 060208 NFP	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	—	—
	FC		**CCGT 060201 MNFC**	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—
			CCGT 060202 MNFC	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—
			CCGT 060204 MNFC	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—
Finishing	**FX**		**CCGT 0602003 RFX**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★			★	★			
			CCGT 0602003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★			★	★			
			CCGT 060201 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★			
			CCGT 060201 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★			
			CCGT 060202 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★			
			CCGT 060202 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★			
			CCGT 060204 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★				★			
			CCGT 060204 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★			
	FX		**CCET 0602003 RFX**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 0602003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060201 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060201 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060202 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060202 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060204 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060204 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
	FY		**CCET 0602003 RFY**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 0602003 LFY	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 0602008 RFY	0.08		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
			CCET 0602008 LFY	0.08		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
			CCET 060201 RFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★				★	★			
			CCET 060201 LFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★				★	★			
			CCET 0602018 RFY	0.18		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
			CCET 0602018 LFY	0.18		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
			CCET 060202 RFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★				★	★			
			CCET 060202 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★				★	★			
			CCET 060204 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 060204 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								

A "<" next to the corner radius RE indicates negative tolerance.
FF type and FC type chipbreakers in AC5015S, AC5025S and AC1030U have a sharp edge.
FX type and FY type chipbreakers have a sharp edge.

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

CC■■0602●●

Dimensions (mm)	Cutting Edge Length L	6.4	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel / M Stainless Steel / K Cast Iron / N Non-Ferrous Metal / S Exotic Alloy / H Hardened Steel

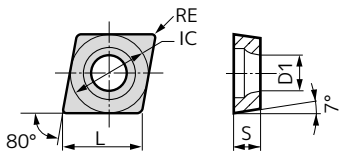
SUMIBORON (CBN) Inserts L45, L46 | SUMIDIA (PCD) Inserts M11
SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C13, D28, D30, D31, D42 | Applicable Boring Bars E18 to E22

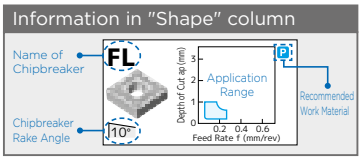
					Coated Carbide																				Coated Cermet		Cermet	Cemented Carbide			
					CVD						PVD			CVD				PVD								PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	**LB**		CCMT 060202 NLB	0.2	★	★	★	★		★	★	★	★	▲						—										★	★		★				
			CCMT 060204 NLB	0.4	★	★	★	★		★	★	★	★	▲						—										★	★		★				
			CCMT 060208 NLB	0.8	★	★	★	★		★	★	★	★	▲						—										★	★		★				
	SU		CCMT 060202 NSU	0.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★		★	★	★	★	★				
			CCMT 060204 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★			★	★		★	★	★	★	★				
			CCMT 060208 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★				★		★	★	★	★	★				
	SI		CCGT 060201 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	★	★					★		—	—	—	—				
			CCGT 060202 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	★	★					★		—	—	—	—				
			CCGT 060204 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	★	★					★		—	—	—	—				
	SL		CCGT 060201 MNSL	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			—	—	★	—	—	—	—	—	—	—	—
			CCGT 060202 MNSL	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			—	—	★	—	—	—	—	—	—	—	—
	SC		CCMT 060204 NSC	0.4			★													—								—								—
	SC		CCGT 0602003 NSC	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★	★			★	★	—	—	—	
			CCGT 060201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★	★	★	★	★	★	—	—	—	
			CCGT 060202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							—	—	—	—	—	—	—	—	—	
			CCGT 060204 MNSC	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★	★	★	★		★	—	—	—	
			CCMW 060204	0.4											★	★	★	▲		—								—								—
			CCGW 060200	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			CCGW 060201	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
	SK		CCMT 060204 NSK	0.4			★	★												—								—								—
			CCMT 060208 NSK	0.8			★	★												—								—								—
Light to Medium Cutting	**GU**		CCMT 060204 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲			★			—			★					—		★	★		★				
			CCMT 060208 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲						—			★					—		★	★		★				
For Aluminum	**AG**		CCGT 060202 NAG	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 060204 NAG	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	AY		CCGT 060201 RAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 060201 LAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 060202 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 060202 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 060204 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 060204 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

A "<" next to the corner radius RE indicates negative tolerance.
SI type and SL type chipbreakers in AC5015S, AC5025S and AC1030U have a sharp edge.
G-class insert (CCGT) with SC type chipbreaker in AC1030U, AC530U and ACZ150 grades has a sharp edge.
AG type and AY type chipbreakers have a sharp edge.

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole

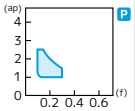
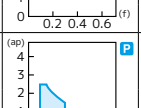




● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

CC■■0802●●

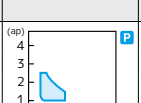
Dimensions (mm)	Cutting Edge Length L	8.0	Thickness S	2.38
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD				PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	SC  	CCMT 080204 NSC	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	SC  	CCGT 080201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—
		CCGT 080202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—
		CCGW 080200	0	—	—	—	—	—	—	—	—	—	—	—	—	—																	
		CCGW 080201	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—																	

A "<" next to the corner radius RE indicates negative tolerance.

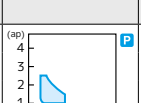
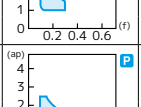
CC■■0803●●

Dimensions (mm)	Cutting Edge Length L	8.0	Thickness S	3.18
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD				PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	SC  	CCMT 080304 NSC	0.4		★																											

CC■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD				PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	SC  	CCMT 090308 NSC	0.8		★																											
	SC  	CCGT 090301 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—
		CCGT 090302 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—
		CCGW 090300	0	—	—	—	—	—	—	—	—	—	—	—	—	—																	
		CCGW 090301	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—																	

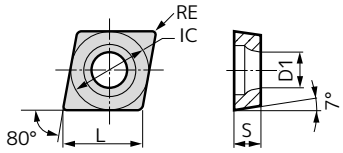
A "<" next to the corner radius RE indicates negative tolerance.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

CC■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application

P	Steel	●	◔	●	✖	○			✪	✪			◔						✪				✪	●		●	✖	●	●			
M	Stainless Steel			○	✪		●	●	✖	✪	✪								✪				✪	●	✪							
K	Cast Iron	○	◔	✪										●	●	✖	✪			✪				●				●				
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	●	✖	●	●	◔	✪	✪						
H	Hardened Steel																●	○													

SUMIBORON (CBN) Inserts ☞ L47 on | SUMIDIA (PCD) Inserts ☞ M12
SUMIDIA BINDERLESS Inserts ☞ M31
Applicable External Holders ☞ C13, D28, D30, D31, D42 | Applicable Boring Bars ☞ E12, E18 to E22

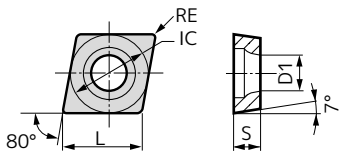
						Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide			
						CVD						PVD			CVD				PVD								PVD							
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FF**		CCGT 09T301 MNFF	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	—	—	★	—	—	—	—	—	—	—	—
	15° Sharp Edge		CCGT 09T302 MNFF	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	—	—	★	—	—	—	—	—	—	—	—
			CCGT 09T304 MNFF	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	—	—	★	—	—	—	—	—	—	—	—
Finishing	**FB**		CCMT 09T302 NFB	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	
	20°		CCMT 09T304 NFB	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	
			CCMT 09T308 NFB	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	
	LU		CCMT 09T302 NLU	0.2																	—							—	★							
	15°		CCMT 09T304 NLU	0.4		★	★	★		▲	★	★	★	★	▲	★					—							—	★	★	★	★	★			
			CCMT 09T308 NLU	0.8		★	★	★		▲	★	★	★	★	▲	★					—							—	★	★	★	★	★			
	LUW		CCMT 09T304 NLUW	0.4		★	★	★		▲	★					★					—						★	—		★	★		★			
	→B127 Wiper 10°		CCMT 09T308 NLUW	0.8		★	★	★		▲						★					—							—		★	★		★			
	FP		CCMT 09T302 NFP	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—	
	10°		CCMT 09T304 NFP	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	★	—	—	
			CCMT 09T308 NFP	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★							
	FC		CCGT 09T301 MNFC	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★	★			★	★	—	—	—	
	15° Sharp Edge		CCGT 09T302 MNFC	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★	★			★	★	—	—	—	
			CCGT 09T304 MNFC	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★	★			★	★	—	—	—	
	FX		CCGT 09T3003 RFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★			★	★				
			CCGT 09T3003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★			★	★				
			CCGT 09T301 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★				
			CCGT 09T301 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★				
			CCGT 09T302 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★				
			CCGT 09T302 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★				
			CCGT 09T304 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★								
			CCGT 09T304 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★		★	★				
			CCGT 09T308 RFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★								
	15° Sharp Edge		CCGT 09T308 LFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★								
	FX		CCET 09T3003 RFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 09T3003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 09T301 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 09T301 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 09T302 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 09T302 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
			CCET 09T304 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								
	15° Sharp Edge		CCET 09T304 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★								

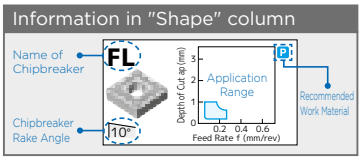
A "<" next to the corner radius RE indicates negative tolerance.
FF type and FC type chipbreakers in AC5015S, AC5025S, AC1030U and ACZ150 grades have a sharp edge.
FX type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation
✱ Interrupted Cutting 2nd Recommendation

CC■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L47 on | SUMIDIA (PCD) Inserts M12 | SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C13, D28, D30, D31, D42 | Applicable Boring Bars E12, E18 to E22

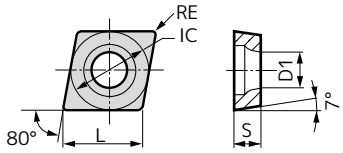
					Coated Carbide																		Coated Cermet	Cermet	Cemented Carbide			
					CVD					PVD			CVD				PVD						PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FY**		CCET 09T3003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★								
			CCET 09T3003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★								
			CCET 09T3008 RFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			CCET 09T3008 LFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			CCET 09T301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★	★				
			CCET 09T301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★	★				
			CCET 09T3018 RFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			CCET 09T3018 LFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			CCET 09T302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★	★				
			CCET 09T302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★	★				
			CCET 09T304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★								
			CCET 09T304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★								
	LB		CCMT 09T302 NLB	0.2	★	★	★	★		★	★	★	★	▲					—							—		★	★		★				
			CCMT 09T304 NLB	0.4	★	★	★	★		★	★	★	★	▲					—							—		★	★		★				
			CCMT 09T308 NLB	0.8	★	★	★	★		★	★	★	★	▲					—							—		★	★		★				
	SU		CCMT 09T302 NSU	0.2	★	★	★	★	▲	★	★	★	★	▲	★				—	★	★	★					—	★	★	★	★	★				
			CCMT 09T304 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★		★		—	★	★	★	★	★	★	—	★	★	★	★	★				
			CCMT 09T308 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★			—	★	★	★	★	★	★	—	★	★	★	★	★				
	SI		CCGT 09T301 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	★				—		★	★	★	★	★	★	★	★	★	★	★	★	★				
			CCGT 09T302 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	★				—		★	★	★	★	★	★	★	★	★	★	★	★	★				
			CCGT 09T304 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	★				—		★	★	★	★	★	★	★	★	★	★	★	★	★				
	SL		CCGT 09T301 MNSL	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	—	★	—	—	—	—	—	—	—	—
			CCGT 09T302 MNSL	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	—	★	—	—	—	—	—	—	—	—
			CCGT 09T304 MNSL	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	—	★	—	—	—	—	—	—	—	—
Light Cutting	**SC**		CCGT 09T3003 NSC	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★				
			CCGT 09T301 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	—	—	—	
			CCGT 09T302 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	—	—	—	
			CCGT 09T304 MNSC		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★			★	—	—	—	
			CCGT 09T308 MNSC		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					—	—	—	
	SK		CCMT 09T304 NSK	0.4			★	★											—							—		—	—	—	—				—
			CCMT 09T308 NSK	0.8			★	★											—							—		—	—	—	—				—
			CCMW 09T304	0.4												★	★	★	▲	—							—		—	—	—	—				—
			CCMW 09T308	0.8												★	★	★	▲	—							—		—	—	—	—				—
			CCGW 09T300	0	—	—	—	—	—	—	—	—	—	—	—					—																
			CCGW 09T301	0.1	—	—	—	—	—	—	—	—	—	—	—					—																
			CCGW 09T304	0.4	—	—	—	—	—	—	—	—	—	—	—					—																★
			CCGW 09T308	0.8	—	—	—	—	—	—	—	—	—	—	—					—																★
	GU		CCMT 09T304 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲					—			★					—		★	★		★				
			CCMT 09T308 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲			★		—			★					—		★	★		★				

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CC 80° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

CC■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

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	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
	MU		**CCMT 09T304 NMU**	0.4	★	★	★	★	▲	★	★				★	★	★	★	▲	—										—	—	—	—				—
			CCMT 09T308 NMU	0.8	★	★	★	★	▲	★	★				★	★	★	★	▲	—										—	—	—	—				—
For Aluminum	**AG**		**CCGT 09T302 NAG**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T304 NAG	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T308 NAG	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	AY		**CCGT 09T301 RAY**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T301 LAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T302 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T302 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T304 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 09T304 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

AG type and AY type chipbreakers have a sharp edge.

CC■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.9	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.5

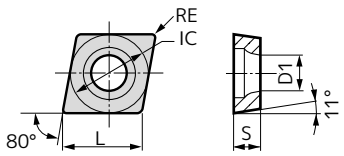
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	**FP**		**CCMT 120404 NFP**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—	—
			CCMT 120408 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—	—
Light Cutting	**AG**		**CCGT 120404 NAG**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT 120408 NAG	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	SU		**CCMT 120404 NSU**	0.4	★	★	★	★	▲	★				★					—	★	★	★					—	★	—	—	—	—				—
			CCMT 120408 NSU	0.8	★	★	★	★	▲	★				★		★			—	★	★	★					—	★	—	—	—	—				—
	SC		**CCMT 120408 NSC**	0.8			★				★				★	★			—								—		—	—	—	—				—
	SK		**CCMT 120404 NSK**	0.4			★												—								—		—	—	—	—				—
			CCMT 120408 NSK	0.8			★	★											—								—		—	—	—	—				—
			CCMT 120412 NSK	1.2													★		—								—		—	—	—	—				—
Light to Medium Cutting	**GU**		**CCMT 120408 NGU**	0.8	★	★	★	★	▲										—								—		—	—	—	—				—

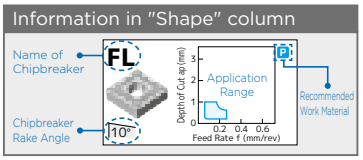
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CP 80° Diamond type 11° Positive With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

CP■■0602●●

Dimensions (mm)	Cutting Edge Length L	6.4	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet (PVD) T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FX		CPGT 060204 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★		★	★				
Light Cutting	US		CPMT 060204 NUS	0.4				★							★					—										—	—	—	—	★			—

FX type chipbreaker has a sharp edge.

CP■■0802●●

Dimensions (mm)	Cutting Edge Length L	8.0	Thickness S	2.38
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

SUMIBORON (CBN) Inserts L52
SUMIDIA (PCD) Inserts M12
Applicable Boring Bars E23, E24

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet (PVD) T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FB		CPMT 080204 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★	★	★	★	★	—	—	—	
	LU		CPMT 080204 NLU	0.4	★	★	★		▲											—										★	★	★	★				
Finishing to Light Cutting	SD		CPGT 080202 NSD	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★					★	★						
			CPGT 080204 NSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★					★	★	★	★	★			
			CPGT 080208 NSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★					★	★	★	★				
Light Cutting	LB		CPMT 080204 NLB	0.4	★	★	★	★		★	★	★	★	▲						—										★	★		★				
	SU		CPMT 080204 NSU	0.4	★	★	★	★	▲						★					—	★	★	★							★	★	★	★				
			CPMT 080208 NSU	0.8	★	★	★	★	▲						★					—	★	★	★							★	★	★	★				
	SS *1		CPMT 080208 NSS	0.8											★					—										—	—	—	—				—
			CPMW 080204	0.4												★	★	★	▲	—										—	—	—	—				—
			CPMW 080208	0.8												★	★	★	▲	—										—	—	—	—				—
Light to Medium Cutting	MU		CPMT 080204 NMU	0.4	★	★	★		▲						★	★	★	★	▲	—										—	—	—	—				—
			CPMT 080208 NMU	0.8	★	★	★		▲						★	★	★	★	▲	—										—	—	—	—				—

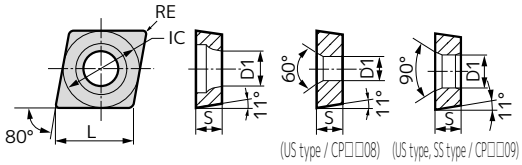
*1: Hole Dia. D1=4.8.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CP 80° Diamond type / 11° Positive / With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

CP■■0803●●

Dimensions (mm)	Cutting Edge Length L	8.0	Thickness S	3.18
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Light Cutting	**US** 10°	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPMT 080308 NUS**	0.8											★					—										—	—	—	—	★			—

CP■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

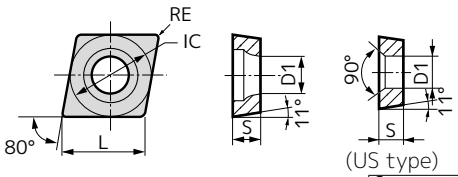
SUMIBORON (CBN) Inserts ☞ L53, L54
SUMIDIA (PCD) Inserts ☞ M12
Applicable Boring Bars ☞ E12, E23, E24

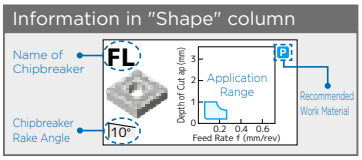
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	**FB** 20°	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPMT 090304 NFB**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
			CPMT 090308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
	LU 15°	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPMT 090304 NLU**	0.4	★	★	★		▲		★	★	★	▲	★					—								—		★	★	★	★				
			CPMT 090308 NLU	0.8	★	★	★		▲		★	★	★	▲	★					—								—		★	★	★	★				
	LUW 10° →B129 Wiper	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPMT 090304 NLUW**	0.4	★	★	★		▲						★					—								—		★	★		★				
			CPMT 090308 NLUW	0.8	★	★	★		▲						★					—								—		★	★		★				
Finishing to Light Cutting	**SD** 0°	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPGT 090302 NSD**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★						★	★				
			CPGT 090304 NSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★					★	★	★	★	★			
			CPGT 090308 NSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★					★	★	★	★				
Light Cutting	**LB** 15°	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPMT 090304 NLB**	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			CPMT 090308 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	SU 8°	(ap) 4 / 3 / 2 / 1 / 0 — 0.2 0.4 0.6 (f) — P	**CPMT 090304 NSU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★					—		★	★	★	★				
			CPMT 090308 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★					—		★	★	★	★				
	SS 5° *1	(ap) 4 / 3 / 2 / 1 / 0 — 0.2 0.4 0.6 (f) — P	**CPMH 090308 NSS**	0.8											★					—								—		—	—	—	—				—
	US 10°	(ap) 2 / 1 / 0 — 0.2 0.4 (f) — P	**CPMH 090304 NUS**	0.4																—								—		—	—	—	—				—
			CPMH 090308 NUS	0.8											★					—								—		—	—	—	—				—

*1: Hole Dia. D1=4.8.

80° Diamond type Positive Inserts

CP 80° Diamond type / 11° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

CP■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel ● ○ ✖ ✖ ○ / M Stainless Steel ○ ○ ✖ ✖ / K Cast Iron ○ ○ ✖ ✖ / N Non-Ferrous Metal ● / S Exotic Alloy ● ● ✖ ● ● ○ ✖ ✖ / H Hardened Steel ● ○

SUMIBORON (CBN) Inserts L53, L54 SUMIDIA (PCD) Inserts M12

Applicable Boring Bars E12, E23, E24

						Coated Carbide																			Coated Cermet		Cermet	Cemented Carbide		
						CVD					PVD			CVD				PVD							PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting			**CPMW 090304**	0.4												★	★	★	▲	—								—								
			CPMW 090308	0.8												★	★	★	▲	—								—								
Light to Medium Cutting	**GU** 5°	(ap) 4 3 2 1 0 P 0.2 0.4 0.6 (f)	**CPMT 090304 NGU**	0.4		★	★	★	★	▲	★	★	★	★	▲					—								—		★	★		★				
			CPMT 090308 NGU	0.8		★	★	★	★	▲	★	★	★	★	▲					—								—		★	★		★				
	MU 0°	(ap) 4 3 2 1 0 P 0.2 0.4 0.6 (f)	**CPMT 090304 NMU**	0.4		★	★	★		▲	★	★				★	★	★	★	▲	—							—		—	—	—	—				—
			CPMT 090308 NMU	0.8		★	★	★		▲	★	★				★	★	★	★	▲	—							—		—	—	—	—				—

CP■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel ● ○ ✖ ✖ ○ / M Stainless Steel ○ ○ ✖ ✖ / K Cast Iron ○ ○ ✖ ✖ / N Non-Ferrous Metal ● / S Exotic Alloy ● ● ✖ ● ● ○ ✖ ✖ / H Hardened Steel ● ○

						Coated Carbide																			Coated Cermet		Cermet	Cemented Carbide		
						CVD					PVD			CVD				PVD							PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FX** 15° Sharp Edge	(ap) 2 1 0 P 0.2 0.4 (f)	**CPGT 09T308 LFX**	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																
Light Cutting	**US** 10°	(ap) 2 1 0 P 0.2 0.4 (f)	**CPMT 09T308 NUS**	0.8					★							★					—								—		—	—	—	—	★			—

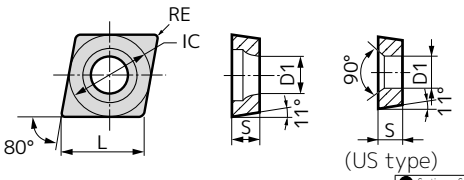
FX type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

80° Diamond type Positive Inserts

CP 80° Diamond type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ◔ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✲ Interrupted Cutting 2nd Recommendation

CP■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.9	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.5

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide PVD: AC6135M	AC6145M	AC6040M	Coated Carbide CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing to Light Cutting	SD	(ap) 2 / 1 / 0 / 0.2 / 0.4 / (f)	**CPGT 120402 NSD**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★						★	★					
			CPGT 120404 NSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★				★		★	★	★				
			CPGT 120408 NSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★						★	★					
Light Cutting	US	(ap) 2 / 1 / 0 / 0.2 / 0.4 / (f) / 10°	**CPMH 120408 NUS**	0.8											★					—									—	—	—	—	—	★			—

CP■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.1	Thickness S	4.76
	Inscribed Circle IC	15.875	Hole Dia. D1	6.5

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

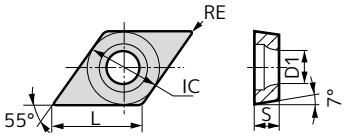
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide PVD: AC6135M	AC6145M	AC6040M	Coated Carbide CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	US	(ap) 2 / 1 / 0 / 0.2 / 0.4 / (f) / 10°	**CPMH 160408 NUS**	0.8											★					—									—	—	—	—	—				—

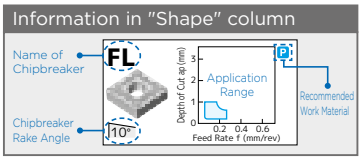
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation
✱ Interrupted Cutting 2nd Recommendation

DC■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.7	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application

P	Steel	●	◔	●	✱	○			✱	✱		◔						✱				●	●	✱	●	●					
M	Stainless Steel			○	✱		●	●	✱	✱	✱	◔						✱				●	●	✱							
K	Cast Iron	○	◔	✱					✱	✱	✱		●	●	✱	✱			✱			✱	●		●							
N	Non-Ferrous Metal																														●
S	Exotic Alloy																●	●	✱	●	●	◔	✱	✱							
H	Hardened Steel															●	○														

SUMIBORON (CBN) Inserts L63, L64 | SUMIDIA (PCD) Inserts M14 | SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C17, D27, D28, D32, D33, D43 | Applicable Boring Bars E16, E28 to E32

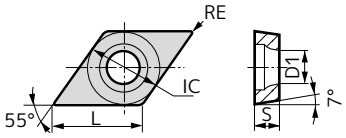
						Coated Carbide																					Coated Cermet		Cermet		Cemented Carbide			
						CVD				PVD			CVD					PVD									PVD							
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FF** 15° Sharp Edge		**DCGT 070201 MNFF**	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							—
			DCGT 070202 MNFF	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							—
			DCGT 070204 MNFF	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							—
	FB 20°		**DCMT 070202 NFB**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—
			DCMT 070204 NFB	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—
			DCMT 070208 NFB	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—
	LU 15°		**DCMT 070202 NLU**	0.2		★	★	★		▲		★	★	★	▲	★					—							—	★	★	★	★			
			DCMT 070204 NLU	0.4		★	★	★		▲	★	★	★	★	▲	★					—							—	★	★	★	★			
	FP 10°		**DCMT 070202 NFP**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★			★	—	—	—
			DCMT 070204 NFP	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	★	—	—	—
	FC 15° Sharp Edge		**DCGT 070201 MNFC**	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—
			DCGT 070202 MNFC	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—
			DCGT 070204 MNFC	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—
Finishing	**FX** 15° Sharp Edge		**DCGT 0702003 RFX**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★			
			DCGT 0702003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★			
			DCGT 070201 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★			
			DCGT 070201 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★			
			DCGT 070202 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★			
			DCGT 070202 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★			
			DCGT 070204 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						★				★	—	—	—
			DCGT 070204 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						★				★	—	—	—
	FX		**DCET 0702003 RFX**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 0702003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 0702008 RFX	0.08		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 0702008 LFX	0.08		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 070201 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 070201 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 0702018 RFX	0.18		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 0702018 LFX	0.18		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 070204 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
			DCET 070204 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★							
	FYS 15° Sharp Edge		**DCGT 0702003 RFYS**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 0702003 LFYS	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 070201 RFYS	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 070201 LFYS	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 070202 RFYS	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 070202 LFYS	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 070204 RFYS	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							
			DCGT 070204 LFYS	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★							

A "<" next to the corner radius RE indicates negative tolerance.
FF type and FC type chipbreakers in AC5015S, AC5025S, AC520U, AC1030U, AC530U and ACZ150 grades have a sharp edge.
FX type and FYS type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

DC■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.7	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L63, L64
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Applicable External Holders C17, D27, D28, D32, D33, D43
Applicable Boring Bars E16, E28 to E32

Coated Carbide (CVD: AC8115P, AC8020P, AC8025P, AC8035P, AC8015P, AC6020M, AC6030M; PVD: AC6135M, AC6145M, AC6040M; CVD: AC630M, AC4010K, AC4015K, AC4125K, AC420K; PVD: AC503U, AC5005S, AC5015S, AC5025S, AC9115T, AC9125T, AC510U, AC520U, AC1030U, AC530U) | Coated Cermet (PVD: T1500Z, T2500Z) | Cermet (T1000A, T1500A) | Cemented Carbide (G10E, EH510, EH520, H1)

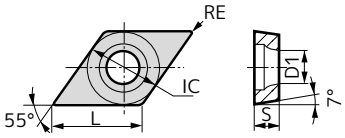
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	FYS		DCET 0702003 RFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 0702003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070201 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070201 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070202 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070202 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070204 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070204 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
	FY		DCGT 0702003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★								
			DCGT 0702003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★								
			DCGT 070201 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★			★					
			DCGT 070201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★			★					
			DCGT 070202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★			★					
			DCGT 070202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★			★					
			DCGT 070204 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★			★					
			DCGT 070204 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★			★					
	FY		DCET 0702003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 0702003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 0702008 RFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 0702008 LFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070201 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 0702018 RFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 0702018 LFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070204 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 070204 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
Finishing to Light Cutting	SD		DCGT 070202 RSD	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★		★	★					
			DCGT 070202 LSD	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★		★	★					
			DCGT 070204 RSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★		★	★					
			DCGT 070204 LSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★		★	★					
Light Cutting	LB		DCMT 070202 NLB	0.2	★	★	★	★		★	★	★	★	▲						—							—		★	★		★					
			DCMT 070204 NLB	0.4	★	★	★	★		★	★	★	★	▲						—							—		★	★		★					
			DCMT 070208 NLB	0.8	★	★	★	★		★	★	★	★	▲						—							—		★	★		★					
	SU		DCMT 070202 NSU	0.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	—	★	★	★	★	★					
			DCMT 070204 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★			★	★	—	★	★	★	★	★				
			DCMT 070208 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★				—	★	★	★	★	★				
	SI		DCGT 070201 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—	★					—		★	★	★	★	★	★	★	★	★	★	★					
			DCGT 070202 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	★					—		★	★	★	★	★	★	★	★	★	★	★					
			DCGT 070204 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	★					—		★	★	★	★	★	★	★	★	★	★	★					

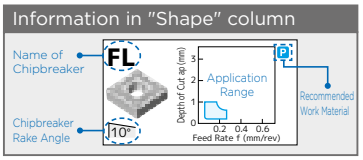
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▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
● Interrupted Cutting 1st Recommendation ○ Interrupted Cutting 2nd Recommendation

DC■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.7	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

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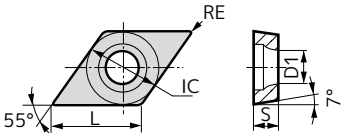
Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	PVD: AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting																																			
SL	(ap) 2 1 0 0.2 0.4 (f) P; 20° Sharp Edge	DCGT 070201 MNSL	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			—	—	★	—	—	—	—	—	—	—	—
		DCGT 070202 MNSL	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			—	—	★	—	—	—	—	—	—	—	—
		DCGT 070204 MNSL	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			—	—	★	—	—	—	—	—	—	—	—
SC	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P; 6° Sharp Edge	DCGT 0702003 NSC	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★			★	★				
		DCGT 070201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★	★	—	—	—	
		DCGT 070202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★	★	—	—	—	
		DCGT 070204 MNSC	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★	★	★	—	—	—	
		DCMW 070204	0.4												★	★	★	▲	—								—	—	—	—	—	—				
		DCMW 070208	0.8												★	★	★	▲	—								—	—	—	—	—	—				
	Sharp Edge	DCGW 070200	0	—	—	—	—	—	—	—	—	—	—	—																						
		DCGW 070201	0.1	—	—	—	—	—	—	—	—	—	—	—																						
		DCGW 070202	0.2	—	—	—	—	—	—	—	—	—	—	—						★																
		DCGW 070204	0.4	—	—	—	—	—	—	—	—	—	—	—						★																★
		DCGW 070208	0.8	—	—	—	—	—	—	—	—	—	—	—						★																★
SK	(ap) 2 1 0 0.1 0.2 0.3 0.4 (f) P	DCMT 070204 NSK	0.4			★	★												—								—								
		DCMT 070208 NSK	0.8			★													—								—								
Light to Medium Cutting																																			
GU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P; 5°	DCMT 070204 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
		DCMT 070208 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
For Aluminum																																			
AG	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N; 20° Sharp Edge	DCGT 070202 NAG	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		DCGT 070204 NAG	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
AY	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N; 15° Sharp Edge	DCGT 070201 RAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		DCGT 070201 LAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		DCGT 070202 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		DCGT 070202 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		DCGT 070204 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		DCGT 070204 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

A "<" next to the corner radius RE indicates negative tolerance.
SL type chipbreaker in AC5015S, AC5025S and AC1030U grades has a sharp edge.
SC type chipbreaker in AC5015S, AC5025S, AC510U, AC520U, AC1030U, AC530U and ACZ150 grades has a sharp edge.
G-class insert without chipbreaker (DCGW) in H1 grade has a sharp edge.
AG type and AY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

DC■■0902●●

Dimensions (mm)	Cutting Edge Length L	9.7	Thickness S	2.38
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	SC	(ap) 4 3 2 1 0 P; 0.2 0.4 0.6 (f); 6°	DCGT 090201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—
			DCGT 090202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—
			DCGW 090200	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DCGW 090201	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

A "<" next to the corner radius RE indicates negative tolerance.

DC■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	SC	(ap) 4 3 2 1 0 P; 0.2 0.4 0.6 (f); 6°	DCGT 110301 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—
			DCGT 110302 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—
			DCGW 110300	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DCGW 110301	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

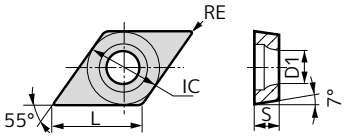
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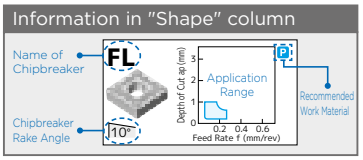
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▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

DC■■11T3●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L65 on | SUMIDIA (PCD) Inserts M15 | SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C17, D27, D28, D32, D33, D43 | Applicable Boring Bars E13, E28 to E32

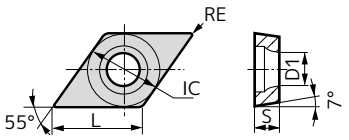
					Coated Carbide																			Coated Cermet		Cermet		Cemented Carbide			
					CVD				PVD			CVD				PVD									PVD							
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FF**		**DCGT 11T301 MNFF**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	★	—	—	—	—	—	—	—	—
			DCGT 11T302 MNFF	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	★	—	—	—	—	—	—	—	—
			DCGT 11T304 MNFF	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	★	—	—	—	—	—	—	—	—
	FB		**DCMT 11T302 NFB**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
			DCMT 11T304 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
			DCMT 11T308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
	LU		**DCMT 11T302 NLU**	0.2	★	★	★		▲	★		★	★	▲	★					—			★				—	★	★	★	★	★				
			DCMT 11T304 NLU	0.4	★	★	★		▲	★	★	★	★	▲	★					—			★				—	★	★	★	★	★				
			DCMT 11T308 NLU	0.8	★	★	★		▲	★	★	★	★	▲	★					—			★				—	★	★	★	★	★				
	FP		**DCMT 11T302 NFP**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—	
			DCMT 11T304 NFP	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	★	—	—	—	
			DCMT 11T308 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★	—	—	—	
			DCMT 11T312 NFP	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★					—	—	—	
	FC		**DCGT 11T301 MNFC**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			DCGT 11T302 MNFC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			DCGT 11T304 MNFC	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
Finishing	**FX**		**DCGT 11T3003 RFX**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			DCGT 11T3003 LFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			DCGT 11T301 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			DCGT 11T301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			DCGT 11T302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★	—	—	—	
			DCGT 11T302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★	—	—	—	
			DCGT 11T304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★	—	—	—	
			DCGT 11T304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★	—	—	—	
	FX		**DCET 11T3003 RFX**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T3003 LFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T3008 RFX	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T3008 LFX	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T301 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T3018 RFX	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T3018 LFX	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
			DCET 11T304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★							
	FYS		**DCGT 11T3003 RFYS**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T3003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T301 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T301 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T302 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T302 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T304 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									
			DCGT 11T304 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★									

A "<" next to the corner radius RE indicates negative tolerance.
FF type and FC type chipbreakers in AC5015S, AC5025S, AC520U, AC1030U, AC530U and ACZ150 grades have a sharp edge.
FX type and FYS type chipbreakers have a sharp edge.

★ mark: Global stocked item
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55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
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Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

DC■■11T3●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

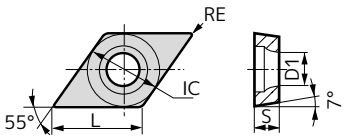
SUMIBORON (CBN) Inserts L65 on
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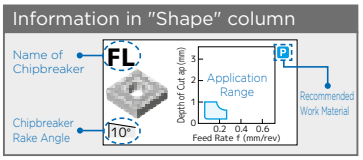
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	**FYS**	(ap) 2 1 0 0.2 0.4 (f) P	DCET 11T3003 RFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 11T3003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 11T301 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 11T301 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 11T302 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 11T302 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
			DCET 11T304 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
		15° Sharp Edge	DCET 11T304 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★									
	FY	(ap) 2 1 0 0.2 0.4 (f) P	DCGT 11T3003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★									
			DCGT 11T3003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★									
			DCGT 11T301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			DCGT 11T301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			DCGT 11T302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			DCGT 11T302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			DCGT 11T304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
		15° Sharp Edge	DCGT 11T304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
	FY	(ap) 2 1 0 0.2 0.4 (f) P	DCET 11T3003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T3003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T3008 RFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T3008 LFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T3018 RFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T3018 LFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			DCET 11T302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			DCET 11T302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																	
			DCET 11T304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
		15° Sharp Edge	DCET 11T304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
Finishing to Light Cutting	**SD**	(ap) 2 1 0 0.2 0.4 (f) P	DCGT 11T304 RSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
			DCGT 11T304 LSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
			DCGT 11T308 RSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
		0°	DCGT 11T308 LSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
Light Cutting	**LB**	(ap) 2 1 0 0.2 0.4 (f) P	DCMT 11T302 NLB	0.2	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			DCMT 11T304 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
		15°	DCMT 11T308 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	SU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	DCMT 11T302 NSU	0.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★			—	★	★	★	★	★				
			DCMT 11T304 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★	★	★			—	★	★	★	★	★	★	★	—	★	★	★	★	★				
		8°	DCMT 11T308 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★			—	★	★	★	★	★	★	★	—	★	★	★	★	★				
	SK	(ap) 2 1 0 0.1 0.2 0.3 0.4 (f) P	DCMT 11T304 NSK	0.4			★	★												—								—									
			DCMT 11T308 NSK	0.8			★	★												—								—									
			DCMT 11T312 NSK	1.2			★													—								—									
	SI	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	DCGT 11T301 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	★	★	★	★				
			DCGT 11T302 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	★	★	★	★				
			DCGT 11T304 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	★	★	★	★				
		15° Sharp Edge	DCGT 11T308 MNSI	< 0.8	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	★	★	★	★				

A "<" next to the corner radius RE indicates negative tolerance.
FYS type and FY type chipbreakers have a sharp edge.
SI type chipbreaker in AC5015S, AC5025S, AC510U, AC520U, AC1030U and AC530U grades has a sharp edge.

55° Diamond type Positive Inserts

DC 55° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

DC■■11T3●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L65 on | SUMIDIA (PCD) Inserts M15 | SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C17, D27, D28, D32, D33, D43 | Applicable Boring Bars E13, E28 to E32

						Coated Carbide																Coated Cermet	Cermet	Cemented Carbide			
						CVD				PVD			CVD				PVD						PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	**SL**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**DCGT 11T301 MNSL**	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	★	—	—	—	—	—	—	—	—	—
	20° Sharp Edge		**DCGT 11T302 MNSL**	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	★	—	—	—	—	—	—	—	—	—
			DCGT 11T304 MNSL	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	★	—	—	—	—	—	—	—	—	—
	SC	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**DCGT 11T3003 NSC**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★				
	6° Sharp Edge		**DCGT 11T301 MNSC**	< 0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	—	—	—	—
			DCGT 11T302 MNSC	< 0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	—	—	—	—
			DCGT 11T304 MNSC	< 0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	—	—	—	—
			DCGT 11T308 MNSC	< 0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	—	—	—	—
			DCMW 11T304	0.4												★	★	★	▲	—							—		—	—	—	—				—
			DCMW 11T308	0.8												★	★	★	▲	—							—		—	—	—	—				—
			DCGW 11T300	0		—	—	—	—	—	—	—	—	—	—	—																					
			DCGW 11T301	0.1		—	—	—	—	—	—	—	—	—	—	—																					
			DCGW 11T302	0.2		—	—	—	—	—	—	—	—	—	—	—					★																
			DCGW 11T304	0.4		—	—	—	—	—	—	—	—	—	—	—					★																
			DCGW 11T308	0.8		—	—	—	—	—	—	—	—	—	—	—					★																
Finishing	**LUW**		**DCMX 11T308 NLUW**	0.8		★				★						★					—								—							
	10°																																			
Light to Medium Cutting	**GU**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**DCMT 11T302 NGU**	0.2		★	★	★	★	▲	★	★	★	★	▲						—				★				—		★	★		★				
	5°		**DCMT 11T304 NGU**	0.4		★	★	★	★	▲	★	★	★	★	▲						—		★	★	★				—		★	★		★				
			DCMT 11T308 NGU	0.8		★	★	★	★	▲	★	★	★	★	▲		★				—		★	★	★				—		★	★		★				
			DCMT 11T312 NGU	1.2				★				★									—								—		—	—	—	—				—
	MU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**DCMT 11T304 NMU**	0.4		★	★	★	★	▲	★	★				★	★	★	★	▲	—								—		—	—	—	—				—
	0°		**DCMT 11T308 NMU**	0.8		★	★	★	★	▲	★	★				★	★	★	★	▲	—								—		—	—	—	—				—
For Aluminum	**AG**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N	**DCGT 11T302 NAG**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	20° Sharp Edge		**DCGT 11T304 NAG**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DCGT 11T308 NAG	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	AY	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N	**DCGT 11T301 RAY**	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DCGT 11T301 LAY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DCGT 11T302 RAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DCGT 11T302 LAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DCGT 11T304 RAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	15° Sharp Edge		**DCGT 11T304 LAY**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

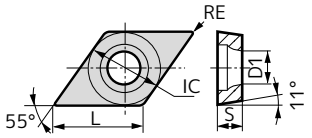
A "<" next to the corner radius RE indicates negative tolerance.
SL type chipbreaker in AC5015S, AC5025S and AC1030U grades has a sharp edge.
SC type chipbreaker in AC5015S, AC5025S, AC510U, AC520U, AC1030U, AC530U and ACZ150 grades has a sharp edge.
AG type and AY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

55° Diamond type Positive Inserts

DP 55° Diamond type / 11° Positive / With Hole



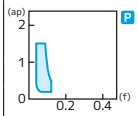
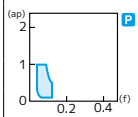
Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

DP■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.7	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

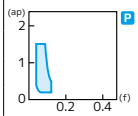
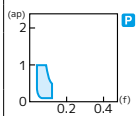
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	FX		DPGT 0702003 RFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 0702003 LFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070201 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070201 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070202 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070202 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	FY		DPGT 0702003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 0702003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070201 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 070202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

FX type and FY type chipbreakers have a sharp edge.

DP■■11T3●●

Dimensions (mm)	Cutting Edge Length L	11.6	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	FX		DPGT 11T3003 RFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T3003 LFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T301 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	FY		DPGT 11T3003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T3003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			DPGT 11T302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

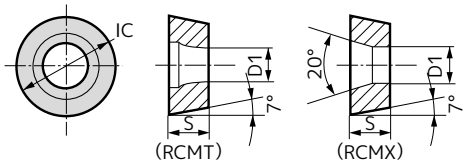
FX type and FY type chipbreakers have a sharp edge.

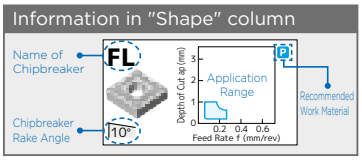
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Round type Positive Inserts

RC Round type 7° Positive With Hole





RC■■●●●●●●

Dimensions (mm)	Inscribed Circle IC	10.0 to 32.0	Thickness S	3.18 to 9.52
	Hole Dia. D1	3.6 to 9.5		

Applicable External Holders C18, C19

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

Recommended Application

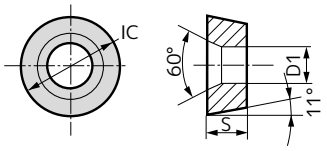
		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD					PVD			CVD					PVD									PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium to Roughing	**RE**	**RCMT 0803M0 NRE**	8.0	3.18	3.4													★	★	★				—									
		RCMT 1003M0 NRE	10.0	3.18	4.4	★	★	★										★	★	★				—									
		RCMT 1204M0 NRE	12.0	4.76	4.4	★	★	★										★	★	★	★	★		—									
		RCMT 1606M0 NRE	16.0	6.35	5.5	★	★	★										—	★	★	★	★		—									
	RET	**RCMT 0803M0 NRET**	8.0	3.18	3.4																★	★		—									
		RCMT 1204M0 NRET	12.0	4.76	4.4																★	★		—									
		RCMT 1606M0 NRET	16.0	6.35	5.5																★	★		—									
	RX	**RCMT 1003M0 NRX**	10.0	3.18	4.4	★	★	★	★	▲			★											★	—								
		RCMT 10T3M0 NRX	10.0	3.97	3.6		★	★					★												—								
		RCMT 1204M0 NRX	12.0	4.76	4.4	★	★	★	★	▲			★							★				★	—								
		RCMT 1606M0 NRX	16.0	6.35	5.0	★	★	★	★	▲			★							★				★	—								
		RCMT 2006M0 NRX	20.0	6.35	6.5	★	★	★	★	▲			★							★					—								
		RCMT 2507M0 NRX	25.0	7.94	7.6	★	★	★	★	▲			★												—								
	RH	**RCMT 1204M0 NRH**	12.0	4.76	4.4	★	★	★	★	▲			★												—								
		RCMT 1606M0 NRH	16.0	6.35	5.0	★	★	★	★	▲			★												—								
		RCMT 2006M0 NRH	20.0	6.35	6.5	★	★	★	★	▲			★												—								
Roughing	**RP**	**RCMX 1003M0 NRP**	10.0	3.18	3.6	★	★	★	★	▲			★	★	★	★	▲	—							—								
		RCMX 1204M0 NRP	12.0	4.76	4.2	★	★	★	★	▲			★	★	★	★	▲	—	★	★	★			★	—								
		RCMX 1606M0 NRP	16.0	6.35	5.2	★	★	★	★	▲			★	★	★	★	▲	—							—								
		RCMX 2006M0 NRP	20.0	6.35	6.5	★	★	★	★	▲			★					—	★	★	★			★	—								
		RCMX 2507M0 NRP	25.0	7.94	7.2	★	★	★	★	▲								—							—								
		RCMX 3209M0 NRP	32.0	9.52	9.5	★	★	★		▲								—							—								

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Round type Positive Inserts

RP Round type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

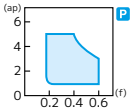
● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

RP■■●●●●●

Dimensions (mm)	Inscribed Circle IC	8.0 to 24.0	Thickness S	3.18 to 6.35
	Hole Dia. D1	3.3 to 7.3		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIDIA (PCD) Inserts M29

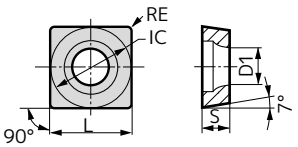
								Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide		
								CVD						PVD			CVD				PVD								PVD				
	Shape	Application Range	ISO Cat. No.	IC	S	D1	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	 Sharp Edge		**RPGW 0803M0**	8.0	3.18	3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	★	—	—	—
			RPGW 1004M0	10.0	4.76	3.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	★	—	—	—
			RPGW 1204M0	12.0	4.76	4.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	★	—	—	—
			RPGW 1604M0	16.0	4.76	5.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			RPGW 2004M0	20.0	4.76	6.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			RPGW 2406M0	24.0	6.35	7.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Roughing	**RD**  0°		**RPGT 0803M0 NRD**	8.0	3.18	3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			RPGT 1004M0 NRD	10.0	4.76	3.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			RPGT 1204M0 NRD	12.0	4.76	4.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			RPGT 1604M0 NRD	16.0	4.76	5.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			RPGT 2004M0 NRD	20.0	4.76	6.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			RPGT 2406M0 NRD	24.0	6.35	7.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

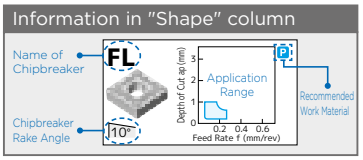
Insert without chipbreaker in AC5015S, AC5025S, AC510U and G10E grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SC Square type 7° Positive With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

SC■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.94	Thickness S	2.38
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

SUMIDIA (PCD) Inserts M16

Applicable External Holders D36

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◷	●	✖	○			✪	✪		◷								✪				✪	●	●	✖	●	●				
M Stainless Steel				○	✪		●	●	✖	✪	✪	◷	●	●	✖	✪				✪				✪	●	✪							
K Cast Iron		○	◷	✪					✖	✪	✪		●	●	✖	✪			✪				✪		●				●				
N Non-Ferrous Metal																																	●
S Exotic Alloy																	●	●	✖	●	●	◷	✪	✪									
H Hardened Steel																	●	○															

	Shape	Application Range	ISO Cat. No.	Corner Radius RE																														
Light Cutting	SC 6°	(ap) 4 3 2 1 0 P 0.2 0.4 0.6 (f)	SCMT 070204 NSC	0.4																														—
	SC 6° Sharp Edge	(ap) 4 3 2 1 0 P 0.2 0.4 0.6 (f)	SCGT 070201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						★	★		★	★	—	—	—	
			SCGT 070202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						★	★		★	★	—	—	—	
			SCGW 070200	0	—	—	—	—	—			—	—	—																			
			SCGW 070201	0.1	—	—	—	—	—			—	—	—																			

A "<" next to the corner radius RE indicates negative tolerance.
G-class insert (SCGT) with SC type chipbreaker in AC1030U and AC530U grades has a sharp edge.

SC■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◷	●	✖	○			✪	✪		◷								✪				✪	●	●	✖	●	●				
M Stainless Steel				○	✪		●	●	✖	✪	✪	◷	●	●	✖	✪				✪				✪	●	✪							
K Cast Iron		○	◷	✪					✖	✪	✪		●	●	✖	✪			✪				✪		●				●				
N Non-Ferrous Metal																																	●
S Exotic Alloy																	●	●	✖	●	●	◷	✪	✪									
H Hardened Steel																	●	○															

	Shape	Application Range	ISO Cat. No.	Corner Radius RE																														
Light Cutting	SC 6°	(ap) 4 3 2 1 0 P 0.2 0.4 0.6 (f)	SCMT 090308 NSC	0.8																														—
	SC 6°	(ap) 4 3 2 1 0 P 0.2 0.4 0.6 (f)	SCGT 090301 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	—	—	—	
			SCGT 090302 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	—	—	—	
			SCGW 090300	0	—	—	—	—	—	—	—	—	—	—																				
			SCGW 090301	0.1	—	—	—	—	—	—	—	—	—	—																				

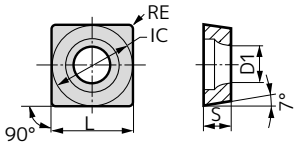
A "<" next to the corner radius RE indicates negative tolerance.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SC Square type 7° Positive With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

SC■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

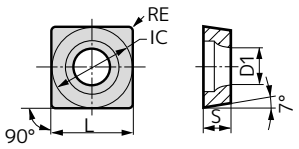
Applicable External Holders D36
Applicable Boring Bars E38

					Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD					PVD									PVD							
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FB**		SCMT 09T304 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
	20°		SCMT 09T308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
	LU		SCMT 09T304 NLU	0.4	★	★	★		▲		★	★	★	▲	★					—								—		★	★	★	★				
	15°		SCMT 09T308 NLU	0.8	★	★	★		▲		★	★	★	▲	★					—								—		★	★	★	★				
	FP		SCMT 09T304 NFP	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—	—
	10°		SCMT 09T308 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	—	—
	FX		SCGT 09T302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★						★	★								
	15° Sharp Edge		SCGT 09T302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★						★	★								
			SCGT 09T304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★						★	★								
			SCGT 09T304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★						★	★								
Light Cutting	**LB**		SCMT 09T304 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	15°		SCMT 09T308 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	SU		SCMT 09T304 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★			★	★	—	★								
	8°		SCMT 09T308 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★			★	★	—	★	—	—	—	—				—
	SC		SCGT 09T301 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—	—	—	
	6° Sharp Edge		SCGT 09T302 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—	—	—	
			SCMW 09T308	0.8											★	★	★	▲	—								—		—	—	—	—				—
			SCGW 09T300	0	—	—	—	—	—	—	—	—	—	—																						
			SCGW 09T301	0.1	—	—	—	—	—	—	—	—	—	—																						
	SK		SCMT 09T304 NSK	0.4				★												—								—								
			SCMT 09T308 NSK	0.8			★													—								—		—	—	—	—				—
Light to Medium Cutting	**GU**		SCMT 09T304 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲						—								—		—	—	—	—				—
	5°		SCMT 09T308 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲			★			—			★					—		—	—	—	—				—
	MU		SCMT 09T308 NMU	0.8	★	★	★	★	▲	★	★				★	★	★	★	▲	—								—		—	—	—	—				—
	0°																																			

A "<" next to the corner radius RE indicates negative tolerance.
FX type chipbreaker has a sharp edge.
SC type chipbreaker in AC1030U and AC530U grades has a sharp edge.

Square type Positive Inserts

SC Square type 7° Positive With Hole



SC■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.5

Applicable Boring Bars E38

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

Recommended Application

P	Steel	●	○	●	✖	○			✖	✖			○						✖				●	●	✖	●						
M	Stainless Steel		○	○	✖		●	●	✖	✖	✖		○						✖				●	●	✖	●						
K	Cast Iron	○	○	✖					✖	✖	✖			●	●	✖	✖			✖		✖	●	●		●						
N	Non-Ferrous Metal																															●
S	Exotic Alloy																	●	●	✖	●	●	○	✖	✖							
H	Hardened Steel																●	○														

					Coated Carbide																							Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD				PVD										PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FP**	(ap) 2 1 0 0.2 0.4 (f) P	**SCMT 120404 NFP**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
	10°		**SCMT 120408 NFP**	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
	FX	(ap) 2 1 0 0.2 0.4 (f) P	**SCGT 120404 RFX**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★	—	—	—	—	—	—	—
	15° Sharp Edge		**SCGT 120404 LFX**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★	—	—	—	—	—	—	—
			SCGT 120408 RFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SCGT 120408 LFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Light Cutting	**SU**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**SCMT 120404 NSU**	0.4	★	★	★	★	▲						★					—								—	★	—	—	—	—				—
	8°		**SCMT 120408 NSU**	0.8	★	★	★	★	▲	★					★					—								—	★	—	—	—	—				—
	SC	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**SCMT 120408 NSC**	0.8																—								—		—	—	—	—				—
	6°																																			
			SCMW 120408	0.8												★	★	★	▲	—								—		—	—	—	—				—
			SCMW 120412	1.2												★	★	★	▲	—								—		—	—	—	—				—
	SK	(ap) 2 1 0 0.1 0.2 0.3 0.4 (f) P	**SCMT 120408 NSK**	0.8			★													—								—		—	—	—	—				—
Light to Medium Cutting	**GU**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**SCMT 120408 NGU**	0.8	★	★	★	★	▲		★									—								—		—	—	—	—				—
	5°																																			
	MU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**SCMT 120408 NMU**	0.8	★	★	★	★	▲						★	★	★	★	▲	—								—		—	—	—	—				—
	0°		**SCMT 120412 NMU**	1.2			★													—								—		—	—	—	—				—

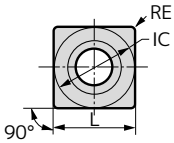
FX type chipbreaker has a sharp edge.

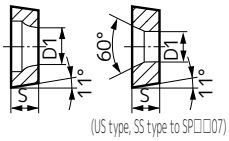
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SP Square type 11° Positive With Hole





(US type, SS type to SP□□07)

Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

SP■■0602●●

Dimensions (mm)	Cutting Edge Length L	6.35	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application		Coated Carbide																								Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD										PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	US		SPMT 060204 NUS	0.4											★					—									—	—	—	—				—

SP■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.94	Thickness S	2.38
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

Recommended Application		Coated Carbide																								Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD										PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	SS		SPMT 070208 NSS	0.8			★								★		★			—									—	—	—	—				—

SP■■0703●●

Dimensions (mm)	Cutting Edge Length L	7.94	Thickness S	3.18
	Inscribed Circle IC	7.94	Hole Dia. D1	3.4

Recommended Application		Coated Carbide																								Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD										PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing to Light Cutting	SD		SPGT 070304 RSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			SPGT 070304 LSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			SPGT 070308 RSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
			SPGT 070308 LSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★			
Light Cutting	US		SPMT 070308 NUS	0.8			★								★		★			—									—	—	—	—				—
			SPGW 070304	0.4	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—														★			★
			SPGW 070308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—														★			★

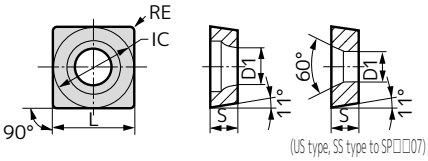
Insert without chipbreaker in G10E and H1 grades has a sharp edge.

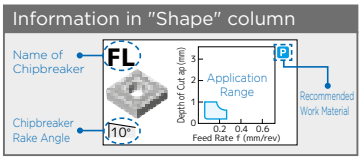
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SP Square type / 11° Positive / With Hole





SP■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	3.4

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

Recommended Application: P Steel / M Stainless Steel / K Cast Iron / N Non-Ferrous Metal / S Exotic Alloy / H Hardened Steel

SUMIDIA (PCD) Inserts M16

Applicable Boring Bars E36

					Corner Radius RE	Coated Carbide																						Coated Cermet		Cermet	Cemented Carbide			
						CVD					PVD			CVD					PVD									PVD						
	Shape		Application Range	ISO Cat. No.		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FB**	20°	(ap) 2 1 0 0.2 0.4 (f) P	**SPMT 090304 NFB**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
				SPMT 090308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	LU	15°	(ap) 2 1 0 0.2 0.4 (f) P	**SPMT 090304 NLU**	0.4	★	★	★		▲		★	★	★	▲	★				—								—			★	★	★				
				SPMT 090308 NLU	0.8	★	★	★		▲		★	★	★	▲	★				—								—			★	★	★				
Finishing to Light Cutting	**SD**	0°	(ap) 2 1 0 0.2 0.4 (f) P	**SPGT 090302 RSD**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★		★	★				
				SPGT 090302 LSD	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★		★	★				
				SPGT 090304 RSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★		★	★	★			
				SPGT 090304 LSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★	★	★	★			
				SPGT 090308 RSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★		★	★				
				SPGT 090308 LSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	★	★	★	★			
Light Cutting	**LB**	15°	(ap) 2 1 0 0.2 0.4 (f) P	**SPMT 090304 NLB**	0.4	★	★	★	★		★	★	★	★	▲		★			—								—			★	★		★			
				SPMT 090308 NLB	0.8	★	★	★	★		★	★	★	★	▲		★			—								—			★	★		★			
	SS	5° *1	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**SPMH 090308 NSS**	0.8											★				—								—			—	—	—	—			—
	US	10°	(ap) 2 1 0 0.2 0.4 (f) P	**SPMH 090308 NUS**	0.8											★				—								—			—	—	—	—			—
		Sharp Edge		**SPGW 090304 T**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—														★				
				SPGW 090300	0.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
				SPGW 090304	0.4	—	—	—	—	—	—	—	—	—	—	—	★																		★		★
				SPGW 090308	0.8	—	—	—	—	—	—	—	—	—	—	—	★																				★
Light to Medium Cutting	**SF**	0° *2	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**SPMT 090304 NSF**	0.4			★	★											—								—			—	—	—	—			—
				SPMT 090308 NSF	0.8			★	★											—								—			—	—	—	—			—

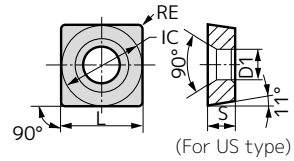
*1: Hole Dia. D1=4.4. *2: Hole Dia. D1=3.3.
Insert without chipbreaker in G10E and H1 grades has a sharp edge.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SP Square type / 11° Positive / With Hole



(For US type)

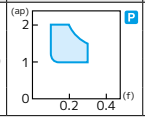
Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

SP■■09T3●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

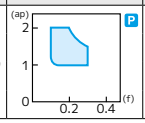
Recommended Application		Coated Carbide																									Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD											PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			✪	✪		◔								✪					✪	●	●	✖	●	●				
M	Stainless Steel			○	✪		●	●	✖	✪	✪									✪					✪	●	✪							
K	Cast Iron	○	◔	✪									●	●	✖	✪			✪				✪			●				●				
N	Non-Ferrous Metal																																	●
S	Exotic Alloy																	●	●	✖	●	●	◔	✪	✪									
H	Hardened Steel																●	○																

	Shape	Application Range	ISO Cat. No.	Corner Radius RE																														
Light Cutting	US		**SPMT 09T308 NUS**	0.8											★																			

SP■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.5

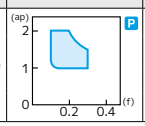
Recommended Application		Coated Carbide																									Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD											PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			✪	✪		◔								✪					✪	●	●	✖	●	●				
M	Stainless Steel			○	✪		●	●	✖	✪	✪									✪					✪	●	✪							
K	Cast Iron	○	◔	✪									●	●	✖	✪			✪				✪			●				●				
N	Non-Ferrous Metal																																	●
S	Exotic Alloy																	●	●	✖	●	●	◔	✪	✪									
H	Hardened Steel																●	○																

	Shape	Application Range	ISO Cat. No.	Corner Radius RE																														
Light Cutting	US		**SPMH 120408 NUS**	0.8											★																			

SP■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.875	Thickness S	4.76
	Inscribed Circle IC	15.875	Hole Dia. D1	6.5

Recommended Application		Coated Carbide																									Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD											PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			✪	✪		◔								✪					✪	●	●	✖	●	●				
M	Stainless Steel			○	✪		●	●	✖	✪	✪									✪					✪	●	✪							
K	Cast Iron	○	◔	✪									●	●	✖	✪			✪				✪			●				●				
N	Non-Ferrous Metal																																	●
S	Exotic Alloy																	●	●	✖	●	●	◔	✪	✪									
H	Hardened Steel																●	○																

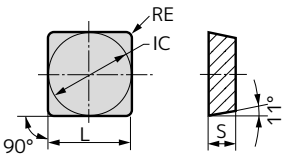
	Shape	Application Range	ISO Cat. No.	Corner Radius RE																														
Light Cutting	US		**SPMH 150408 NUS**	0.8											★																			

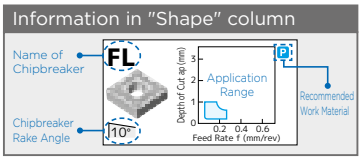
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SP Square type / 11° Positive / Without Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

SP■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.94	Thickness S	2.38
	Inscribed Circle IC	7.94		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing to Light Cutting	**W** 0°		**SPGR 070204 LW**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Light Cutting	Sharp Edge		**SPGN 070204**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Insert without chipbreaker in H1 grade has a sharp edge.

SP■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.18
	Inscribed Circle IC	9.525		

SUMIBORON (CBN) Inserts L80 SUMIDIA (PCD) Inserts M16

Applicable Boring Bars E37

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	**FK** 0°		**SPMR 090304 NFK**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—	
			SPMR 090308 NFK	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
Finishing to Light Cutting	**W** 0°		**SPGR 090304 LW**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Light to Medium Cutting	**SF** 0°		**SPMR 090304 NSF**	0.4			★	★												—								—		—	—	—	—				—
			SPMR 090308 NSF	0.8			★	★												—								—		—	—	—	—				—
	UJ 0°		**SPMR 090304 NUJ**	0.4			★													—								—		—	—	—	—				—
			SPMR 090308 NUJ	0.8			★	★												—								—		—	—	—	—				—
Medium Cutting			**SPMN 090304**	0.4												★	★	★	▲	—								—				★	★				
			SPMN 090308	0.8												★	★	★	▲	—								—				★	★				
	Sharp Edge		**SPGN 090302**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SPGN 090304	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★
			SPGN 090308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	★	★	★	★				★
			SPGN 090312	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

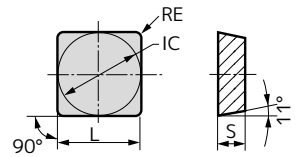
G-class insert without chipbreaker (SPGN) in AC5015S, AC5025S, AC510U, G10E and H1 grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SP Square type 11° Positive Without Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

SP■■1203●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	3.18
	Inscribed Circle IC	12.7		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L81 SUMIDIA (PCD) Inserts M16
Applicable External Holders C29, C30

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	FK 0°	(ap) 2 1 0 0.2 0.4 (f) P	SPMR 120304 NFK	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—	
			SPMR 120308 NFK	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—	
Light to Medium Cutting	SF 0°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	SPMR 120304 NSF	0.4			★	★												—								—	—	—	—	—				—
			SPMR 120308 NSF	0.8			★	★												—								—	—	—	—	—				—
			SPMR 120312 NSF	1.2			★													—								—								
	UJ 0°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	SPMR 120304 NUJ	0.4			★													—								—	—	—	—	—				—
			SPMR 120308 NUJ	0.8			★	★												—								—	—	—	—	—				—
Medium Cutting			SPMN 120304	0.4												★	★	★	▲	—								—					★			
			SPMN 120308	0.8												★	★	★	▲	—	★	★	★			★		—				★	★	★			
			SPMN 120312	1.2												★	★	★	▲	—	★	★	★			★		—	★			★	★	★			
	Sharp Edge		SPGN 120304	0.4	—	—	—	—	—	—	—	—	—	—	—							★	★			★						★	★	★			
			SPGN 120308	0.8	—	—	—	—	—	—	—	—	—	—	—							★	★			★						★	★	★			
			SPGN 120312	1.2	—	—	—	—	—	—	—	—	—	—	—																			★			

G-class insert without chipbreaker (SPGN) in AC5015S, AC5025S, AC510U and G10E grades has a sharp edge.

SP■■1204●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	4.76
	Inscribed Circle IC	12.7		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

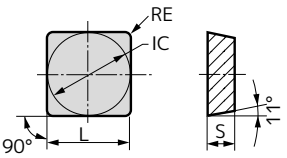
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Medium Cutting	Sharp Edge		SPGN 120408	0.8	—	—	—	—	—	—	—	—	—	—	—																						
			SPGN 120412	1.2	—	—	—	—	—	—	—	—	—	—	—																						
			SPGN 120416	1.6	—	—	—	—	—	—	—	—	—	—	—																						

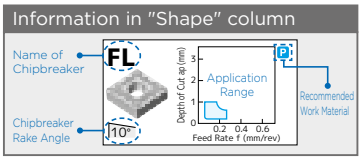
G-class insert without chipbreaker (SPGN) in AC5015S, AC5025S, AC510U and G10E grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SP Square type 11° Positive Without Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

SP■■1504●●

Dimensions (mm)	Cutting Edge Length L	15.875	Thickness S	4.76
	Inscribed Circle IC	15.875		

Applicable External Holders C29, C30

Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Cemented Carbide		
		CVD					PVD			CVD				PVD										PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			✖	✖		◔								✖					●		✖	●	●				
M	Stainless Steel			○	✖		●	●	✖	✖	✖									✖				✖	●	✖							
K	Cast Iron	○	◔	✖					✖	✖	✖		●	●	✖	✖			✖				✖	✖	●				●				
N	Non-Ferrous Metal																																●
S	Exotic Alloy																●	●	✖	●	●	◔	✖	✖									
H	Hardened Steel																●	○															
Medium Cutting		**SPMN 150408**																★	★	★			★							★			
		SPMN 150412																★	★	★			★							★			
	Sharp Edge	**SPGN 150408**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Sharp Edge	**SPGN 150412**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

G-class insert without chipbreaker (SPGN) in AC5015S, AC5025S, AC510U and G10E grades has a sharp edge.

SP■■1904●●

Dimensions (mm)	Cutting Edge Length L	19.05	Thickness S	4.76
	Inscribed Circle IC	19.05		

Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Cemented Carbide		
		CVD					PVD			CVD				PVD										PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			✖	✖		◔								✖					●		✖	●	●				
M	Stainless Steel			○	✖		●	●	✖	✖	✖									✖				✖	●	✖							
K	Cast Iron	○	◔	✖					✖	✖	✖		●	●	✖	✖			✖				✖	✖	●				●				
N	Non-Ferrous Metal																																●
S	Exotic Alloy																●	●	✖	●	●	◔	✖	✖									
H	Hardened Steel																●	○															
Medium Cutting		**SPMN 190404**															—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			—
		SPMN 190408															—	—	—	—	—	—	—	—	—	—	—	—	—	—				—
		SPMN 190412															—	—	—	—	—	—	—	—	—	—	—	—	—	—				—
	Sharp Edge	**SPGN 190404**	—	—	—	—	—			—	—	—																					
	Sharp Edge	**SPGN 190408**	—	—	—	—	—			—	—	—																					
	Sharp Edge	**SPGN 190412**	—	—	—	—	—			—	—	—																					
	Sharp Edge	**SPGN 190416**	—	—	—	—	—			—	—	—																					

G-class insert without chipbreaker (SPGN) in AC5015S, AC5025S, AC510U and G10E grades has a sharp edge.

SP■■2506●●

Dimensions (mm)	Cutting Edge Length L	25.4	Thickness S	6.35
	Inscribed Circle IC	25.4		

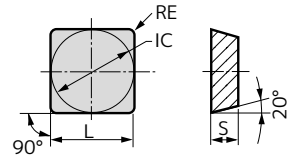
Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Cemented Carbide		
		CVD					PVD			CVD				PVD										PVD				
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P	Steel	●	◔	●	✖	○			✖	✖		◔								✖					●		✖	●	●				
M	Stainless Steel			○	✖		●	●	✖	✖	✖									✖				✖	●	✖							
K	Cast Iron	○	◔	✖					✖	✖	✖		●	●	✖	✖			✖				✖	✖	●				●				
N	Non-Ferrous Metal																																●
S	Exotic Alloy																●	●	✖	●	●	◔	✖	✖									
H	Hardened Steel																●	○															
Medium Cutting		**SPMN 250620**															—	—	—	—	—	—	—	—	—	—	—	—	—	—				—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Square type Positive Inserts

SE Square type / 20° Positive / Without Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

SE■■0702●●

Dimensions (mm)	Cutting Edge Length L	7.94	Thickness S	2.38
	Inscribed Circle IC	7.94		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	Sharp Edge		**SEGN 070202**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SEGN 070204	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			SEGN 070208	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Insert without chipbreaker in H1 grade has a sharp edge.

SE■■0903●●

Dimensions (mm)	Cutting Edge Length L	9.525	Thickness S	3.18
	Inscribed Circle IC	9.525		

SUMIDIA (PCD) Inserts M17

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	Sharp Edge		**SEGN 090302**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SEGN 090304	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			SEGN 090308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Insert without chipbreaker in H1 grade has a sharp edge.

SE■■1203●●

Dimensions (mm)	Cutting Edge Length L	12.7	Thickness S	3.18
	Inscribed Circle IC	12.7		

SUMIDIA (PCD) Inserts M17

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	Sharp Edge		**SEGN 120304**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SEGN 120308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

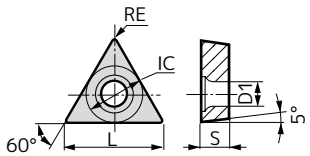
Insert without chipbreaker in H1 grade has a sharp edge.

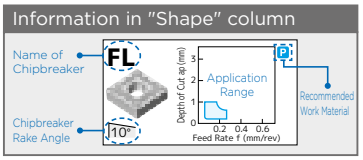
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TB Triangular type 5° Positive With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TB■■0601●●

Dimensions (mm)	Cutting Edge Length L	6.9	Thickness S	1.59
	Inscribed Circle IC	3.97	Hole Dia. D1	2.2

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L91 SUMIDIA (PCD) Inserts M18

Applicable Boring Bars E44, E46

						Coated Carbide																		Coated Cermet		Cermet	Cemented Carbide			
						CVD				PVD			CVD				PVD							PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FW**		**TBGT 060102 RFW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			TBGT 060102 LFW	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			TBGT 060104 RFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			TBGT 060104 LFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
	FX		**TBGT 0601003 RFX**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TBGT 0601003 LFX	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TBGT 060101 RFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TBGT 060101 LFX	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TBGT 060102 RFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	—	★	★							
			TBGT 060102 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	—	★	★							
			TBGT 060104 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	—	★	★							
			TBGT 060104 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	—	★	★							
	FY		**TBGT 0601003 RFY**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TBGT 0601003 LFY	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TBGT 060101 RFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★							
			TBGT 060101 LFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★							
			TBGT 060102 RFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★			★	★			
			TBGT 060102 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★			★	★			
			TBGT 060104 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★			★	★			
			TBGT 060104 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	★			★	★			
Finishing to Light Cutting	**W**		**TBGT 060102 RW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★		★	★	★		
			TBGT 060102 LW	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★			
			TBGT 060104 RW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★		★	★	★		
			TBGT 060104 LW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★		★	★	★		
Light Cutting			**TBGW 060102**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				
			TBGW 060104	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				
For Aluminum	**AY**		**TBGT 060101 RAY**	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TBGT 060101 LAY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TBGT 060102 RAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TBGT 060102 LAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TBGT 060104 RAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TBGT 060104 LAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

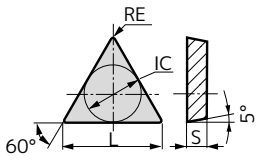
FX type, FY type and AY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TB Triangular type / 5° Positive / Without Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

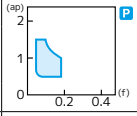
Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TB■■0601●●

Dimensions (mm)	Cutting Edge Length L	6.9	Thickness S	1.59
	Inscribed Circle IC	3.97		

Recommended Application: P Steel / M Stainless Steel / K Cast Iron / N Non-Ferrous Metal / S Exotic Alloy / H Hardened Steel

SUMIBORON (CBN) Inserts L91 SUMIDIA (PCD) Inserts M18

					Coated Carbide																										Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD				PVD													PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing to Light Cutting	**W**  		**TBGR 060104 LW**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				
Light Cutting	 Sharp Edge		**TBGN 060104**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★

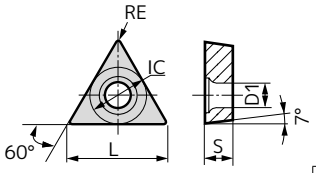
Insert without chipbreaker in H1 grade has a sharp edge.

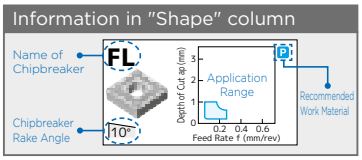
★ mark: Global stocked item
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Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TC Triangular type 7° Positive With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✪ Interrupted Cutting 2nd Recommendation

TC■■0802●●

Dimensions (mm)	Cutting Edge Length L	8.2	Thickness S	2.38
	Inscribed Circle IC	4.76	Hole Dia. D1	2.3

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Light Cutting	SC 6° Sharp Edge	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	TCGT 080201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—	—	—	—
			TCGT 080202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	—	—	—	—
			TCGW 080200	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
			TCGW 080201	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								

A "<" next to the corner radius RE indicates negative tolerance.
SC type chipbreaker in AC1030U and AC530U grades has a sharp edge.

TC■■0902●●

Dimensions (mm)	Cutting Edge Length L	9.6	Thickness S	2.38
	Inscribed Circle IC	5.56	Hole Dia. D1	2.5

SUMIDIA (PCD) Inserts ☞ M18
Applicable External Holders ☞ D37

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FX 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	TCGT 090201 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			TCGT 090201 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			TCGT 090202 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			TCGT 090202 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
	FY 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	TCGT 090201 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			TCGT 090201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			TCGT 090202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			TCGT 090202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
	FP 10° Sharp Edge	(ap) 2 1 0 0.1 0.2 (f) P	TCMT 090202 NFP	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	—	—	—
			TCMT 090204 NFP	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	—	—	—
			TCMT 090208 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	—	—	—
Light Cutting	SC 6° Sharp Edge	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	TCGT 090201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—	—
			TCGT 090202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—	—
			TCGW 090200	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			TCGW 090201	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		

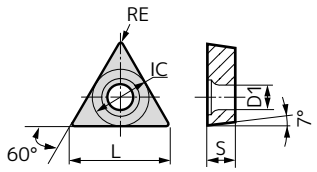
A "<" next to the corner radius RE indicates negative tolerance.
FX type and FY type chipbreakers have a sharp edge.
SC type chipbreaker in AC1030U and AC530U grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TC Triangular type 7° Positive With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ◔ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

TC■■1102●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

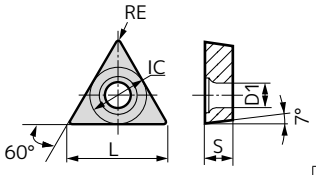
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

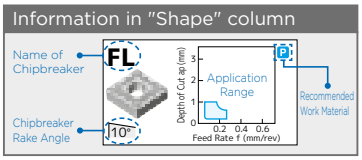
SUMIDIA (PCD) Inserts M18
Applicable External Holders D37

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet PVD: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Fine Cutting	FF		TCGT 110201 MNFF	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—		—	—	—
	15° Sharp Edge		TCGT 110202 MNFF	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—		—	—	—
			TCGT 110204 MNFF	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—		—	—	—
Finishing	FB		TCMT 110204 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★		—	—	—	
	20°		TCMT 110208 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★		—	—	—	
	LU		TCMT 110204 NLU	0.4	★	★	★		▲		★	★	★	▲	★					—								—	★	★	★	★	★					
	15°		TCMT 110208 NLU	0.8	★	★	★		▲		★	★	★	▲	★					—								—		★	★	★	★					
	FP		TCMT 110202 NFP	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				—	—	—	—	
	10°		TCMT 110204 NFP	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—	—	
			TCMT 110208 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—	—	
	FX		TCGT 110201 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
	15° Sharp Edge		TCGT 110201 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
			TCGT 110202 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
			TCGT 110202 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
	FY		TCGT 110201 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
	15° Sharp Edge		TCGT 110201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
			TCGT 110202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
			TCGT 110202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
Light Cutting	LB		TCMT 110204 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—			★	★		★				
	15°		TCMT 110208 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—			★	★		★				
	SU		TCMT 110204 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★				★	—	★	★	★							
	8°		TCMT 110208 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★				★	—	★	—	—	—	—				—
	SK		TCMT 110204 NSK				★	★												—								—									
			TCMT 110208 NSK				★	★												—								—									
	SI		TCGT 110201 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—				
	15° Sharp Edge		TCGT 110202 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—				
			TCGT 110204 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	★					—	★	★				★	★	★	★	★	★	★	★				
	AG		TCGT 110202 NAG	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	20°		TCGT 110204 NAG	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	SC		TCGT 110201 MNSC	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—	
	6° Sharp Edge		TCGT 110202 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★			★	★	—	—	—	
			TCGT 110204 MNSC	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★				★	—	—	—	
			TCMW 110204	0.4											★	★	★	▲	—								—				—	—	—	—		—
			TCMW 110208	0.8											★	★	★	▲	—								—				—	—	—	—		—
			TCGW 110200	0	—	—	—	—	—	—	—	—	—	—	—																					
			TCGW 110201	0.1	—	—	—	—	—	—	—	—	—	—	—																					

Triangular type Positive Inserts

TC Triangular type 7° Positive With Hole





● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
◔ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

TC■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	**FX** 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**TCGT 110301 RFX**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			TCGT 110301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			TCGT 110302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			TCGT 110302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			TCGT 110304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			TCGT 110304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
Light Cutting	**SC** 6°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TCGT 110301 MNSC**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—
			TCGT 110302 MNSC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—
			TCGW 110300	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TCGW 110301	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

A "<" next to the corner radius RE indicates negative tolerance.
FX type chipbreaker has a sharp edge.

TC■■16T3●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.97
	Inscribed Circle IC	9.525	Hole Dia. D1	4.3

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

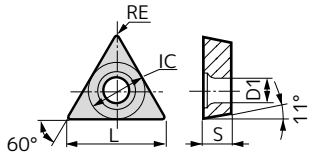
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	**FP** 10°	(ap) 2 1 0 0.2 0.4 (f) P	**TCMT 16T304 NFP**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	★	—	—	—	—
			TCMT 16T308 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	★	—	—	—	—
Light Cutting	**SU** 8°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TCMT 16T304 NSU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★			—	★	★	★				—	★	—	—	—	—	—	—	—	—	—	—	—
			TCMT 16T308 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★		★		—	★	★	★				—	★	—	—	—	—	—	—	—	—	—	—	—
	SK	(ap) 2 1 0 0.1 0.2 0.3 0.4 (f) P	**TCMT 16T304 NSK**	0.4			★													—										—	—	—	—	—	—	—	—
			TCMT 16T308 NSK	0.8			★	★												—										—	—	—	—	—	—	—	—
			TCMT 16T312 NSK	1.2			★									★				—										—	—	—	—	—	—	—	—
	AG 20°	(ap) 3 2 1 0 0.1 0.2 0.3 0.4 (f) N	**TCGT 16T304 NAG**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TCGT 16T308 NAG	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TCMW 16T304	0.4												★	★	★	▲	—										—	—	—	—	—	—	—	—
			TCMW 16T308	0.8												★	★	★	▲	—										—	—	—	—	—	—	—	—
			TCMW 16T312	1.2												★	★	★	▲	—										—	—	—	—	—	—	—	—

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TP■■0802●●

Dimensions (mm)	Cutting Edge Length L	8.2	Thickness S	2.38
	Inscribed Circle IC	4.76	Hole Dia. D1	2.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

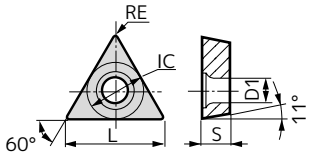
SUMIBORON (CBN) Inserts L92 | SUMIDIA (PCD) Inserts M19
SUMIDIA BINDERLESS Inserts M31 | Applicable Boring Bars E44 to E47

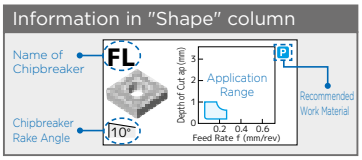
					Coated Carbide																				Coated Cermet		Cermet		Cemented Carbide			
					CVD					PVD			CVD				PVD								PVD							
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Fine Cutting	**FF**		**TPGT 080201 MNFF**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		—	—	—	—				—
			TPGT 080202 MNFF	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		—	—	—	—				—
			TPGT 080204 MNFF	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		—	—	—	—				—
Finishing	**FB**		**TPMT 080202 NFB**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★	★	★	★	★	—	—	—	—	
			TPMT 080204 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★	★	★	★	★	—	—	—	—	
	LU		**TPMT 080202 NLU**	0.2						★	★	★	▲	★						—							—	★			★	★				
			TPMT 080204 NLU	0.4			★			★	★	★	▲	★		★				—							—	★		★	★	★				
	FW		**TPGT 080202 RFW**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
			TPGT 080202 LFW	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
			TPGT 080204 RFW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	★				
			TPGT 080204 LFW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★	★	★	★				
	FX		**TPGT 080202 RFX**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 080202 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 080204 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 080204 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
	FY		**TPGT 0802003 RFY**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 0802003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 080201 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 080201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★							
			TPGT 080202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★				★	★		
			TPGT 080202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★				★	★		
			TPGT 080204 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★				★	★		
			TPGT 080204 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★				★	★	★				★	★		
Finishing to Light Cutting	**W**		**TPGT 080202 RW**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	★			
			TPGT 080202 LW	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	★			
			TPGT 080204 RW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★		★	★				
			TPGT 080204 LW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	★			
Light Cutting	**LB**		**TPMT 080202 NLB**	0.2	★	★	★	★		★	★	★	★	▲						—							—		★	★		★				
			TPMT 080204 NLB	0.4	★	★	★	★		★	★	★	★	▲						—							—		★	★		★				
	SU		**TPMT 080202 NSU**	0.2						★	★	★	★	▲	★					—	★	★	★				—	★			★	★				
			TPMT 080204 NSU	0.4			★			★	★	★	★	▲	★		★			—	★	★	★				—	★			★	★				
	SI		**TPGT 080201 MNSI**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		—	—	—	—				—
			TPGT 080202 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		—	—	—	—				—
			TPGT 080204 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★		—	—	—	—				—
			TPGW 080202	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—												★	★				
			TPGW 080204	0.4	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—												★	★				★
			TPGW 080208	0.8	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—												★	★				★

A "<" next to the corner radius RE indicates negative tolerance.
FF type and SI type chipbreakers in AC5015S, AC5025S and AC1030U grades has a sharp edge.
FX type and FY type chipbreakers have a sharp edge.
Insert without chipbreaker in H1 grade has a sharp edge.

Triangular type Positive Inserts

TP Triangular type 11° Positive With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TP■■0802●●

Dimensions (mm)	Cutting Edge Length L	8.2	Thickness S	2.38
	Inscribed Circle IC	4.76	Hole Dia. D1	2.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L92 · SUMIDIA (PCD) Inserts M19 · SUMIDIA BINDERLESS Inserts M31 · Applicable Boring Bars E44 to E47

						Coated Carbide																				Coated Cermet		Cermet	Cemented Carbide		
						CVD					PVD			CVD				PVD								PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
For Aluminum	**AY**		**TPGT 080201 RAY**	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 080201 LAY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 080202 RAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 080202 LAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 080204 RAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 080204 LAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

AY: 15° Sharp Edge

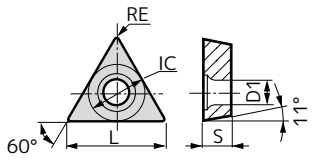
AY type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TP■■0902●●

Dimensions (mm)	Cutting Edge Length L	9.6	Thickness S	2.38
	Inscribed Circle IC	5.56	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L94
SUMIDIA (PCD) Inserts M19
Applicable Boring Bars E44

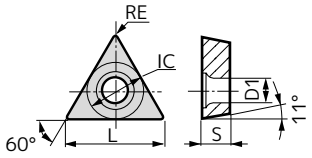
Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing																																			
FB 20°	(ap) 2 / 1 / 0 / 0.2 0.4 (f) P	**TPMT 090202 NFB**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
		TPMT 090204 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
LU 15°	(ap) 2 / 1 / 0 / 0.2 0.4 (f) P	**TPMT 090202 NLU**	0.2	★	★	★		▲											—								—		★	★	★	★				
		TPMT 090204 NLU	0.4	★	★	★		▲											—								—		★	★	★	★				
FX 15° Sharp Edge	(ap) 2 / 1 / 0 / 0.2 0.4 (f) P	**TPGT 090204 LFX**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★				
FY 15° Sharp Edge	(ap) 2 / 1 / 0 / 0.2 0.4 (f) P	**TPGT 090201 RFY**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★					★									
		TPGT 090201 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★					★									
		TPGT 090202 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★					★					★				
		TPGT 090202 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★					★					★				
		TPGT 090204 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★					★					★				
		TPGT 090204 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★					★					★				
Light Cutting																																			
LB 15°	(ap) 2 / 1 / 0 / 0.2 0.4 (f) P	**TPMT 090202 NLB**	0.2	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
		TPMT 090204 NLB	0.4	★	★	★	★		★	★	★	★	▲			★			—								—		★	★		★				
SU 8°	(ap) 4 / 3 / 2 / 1 / 0 / 0.2 0.4 0.6 (f) P	**TPMT 090204 NSU**	0.4																—	★	★	★					—									
Sharp Edge		**TPGW 090204**	0.4	—	—	—	—	—	—	—	—	—	—	—		★																				★
		TPGW 090208	0.8	—	—	—	—	—	—	—	—	—	—	—		★																				★
For Aluminum																																			
AY 15° Sharp Edge	(ap) 4 / 3 / 2 / 1 / 0 / 0.2 0.4 0.6 (f) N	**TPGT 090201 RAY**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TPGT 090201 LAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TPGT 090202 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TPGT 090202 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TPGT 090204 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TPGT 090204 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

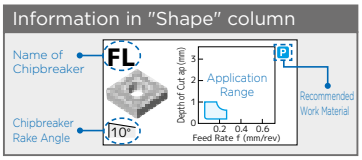
FX type, FY type and AY type chipbreakers have a sharp edge.
Insert without chipbreaker in H1 grade has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type 11° Positive With Hole





TP■■1102●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

Recommended Application

P	Steel	●	◔	◕	✖	○			✪	✪		◔						✪			✪	◕		◕	✖	●	◕				
M	Stainless Steel			○	✪		●	◕	✖	✪	✪	◔						✪				◕	✪								
K	Cast Iron	○	◔	✪					✖	✪			●	◕	✖	✪			✪				✪	◕		●						
N	Non-Ferrous Metal																														◕
S	Exotic Alloy																●	◕	✖	●	◕	◔	✪	✪							
H	Hardened Steel															●	○														

SUMIBORON (CBN) Inserts L96 SUMIDIA (PCD) Inserts M20

Applicable Boring Bars E44

						Coated Carbide																					Coated Cermet		Cermet		Cemented Carbide		
						CVD					PVD			CVD					PVD								PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FW**		**TPGT 110202 RFW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★				
			TPGT 110202 LFW	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★				
			TPGT 110204 RFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★				
			TPGT 110204 LFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★				
	FX		**TPGT 110202 RFX**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—				
			TPGT 110202 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—				
			TPGT 110204 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—				
			TPGT 110204 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—				
			TPGT 110208 RFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—				
			TPGT 110208 LFX	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—				
	FY		**TPGT 110202 RFY**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				
			TPGT 110202 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				
			TPGT 110204 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				
			TPGT 110204 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				
			TPGT 110208 RFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★				
			TPGT 110208 LFY	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★				
For Aluminum	**AY**		**TPGT 110202 RAY**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110202 LAY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110204 RAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110204 LAY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

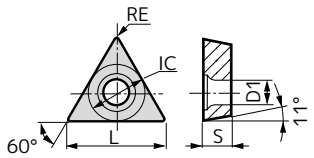
FX type, FY type and AY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

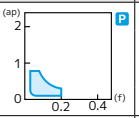
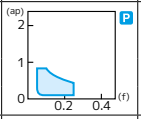
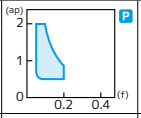
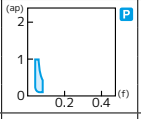
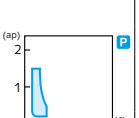
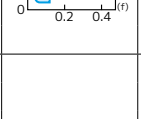
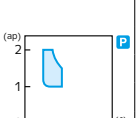
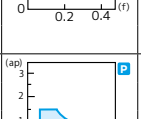
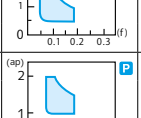
● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

TP■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	3.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L97 on
SUMIDIA (PCD) Inserts M21
SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E14, E44 to E48

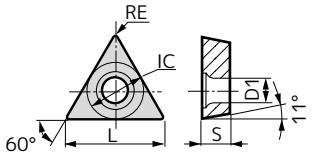
					Coated Carbide																					Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD					PVD									PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FB** 20°		TPMT 110302 NFB	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
			TPMT 110304 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
			TPMT 110308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
	LU 15°		TPMT 110302 NLU	0.2								★	★	▲						—							—	★	★	★	★	★				
			TPMT 110304 NLU	0.4	★	★	★		▲		★	★	★	▲	★					—							—	★	★	★	★	★				
			TPMT 110308 NLU	0.8	★	★	★		▲		★	★	★	▲	★					—							—	★	★	★	★	★				
	FK 0°		TPMT 110304 NFK	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★	—	—	—	
			TPMT 110308 NFK	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★	—	—	—	
	FC 15° Sharp Edge		TPGT 110302 MNFC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
			TPGT 110304 MNFC	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★			★	★	—	—	—	
	FX 15° Sharp Edge		TPGT 110302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110308 RFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110308 LFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
	FY 15° Sharp Edge		TPGT 1103003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 1103003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★								
			TPGT 110302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★				
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			TPGT 110304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★		★	★				
			TPGT 110304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★	★	★	★				
			TPGT 110308 RFY	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★				
			TPGT 110308 LFY	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★				
Finishing to Light Cutting	**SD** 0°		TPGT 110302 RSD	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★		★	★				
			TPGT 110302 LSD	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	★			
			TPGT 110304 RSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	★			
			TPGT 110304 LSD	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★		★	★	★	★	★	★	★			
			TPGT 110308 RSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★		★	★				
			TPGT 110308 LSD	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★	★	★	★	★	★			
	W 0°		TPGT 110302 RW	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★	—	—	—	
			TPGT 110302 LW	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—									★		★	—	—	—	
			TPGT 110304 RW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★	★		★				
			TPGT 110304 LW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★				
	SDW 0° →B127 Wiper		TPGX 110304 RSDW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★				
			TPGX 110304 LSDW	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★				
			TPGX 110308 RSDW	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★				
			TPGX 110308 LSDW	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—											★				

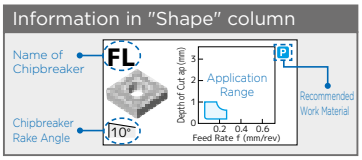
A "<" next to the corner radius RE indicates negative tolerance.
FC type chipbreaker in AC5015S, AC5025S, AC520U, AC1030U and AC530U grades has a sharp edge.
FX type and FY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type 11° Positive With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TP■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	3.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L97 on
SUMIDIA (PCD) Inserts M21
SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E14, E44 to E48

					Coated Carbide																					Coated Cermet		Cermet	Cemented Carbide			
					CVD					PVD			CVD					PVD									PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	**LB** 15°	(ap) 2 1 0 0.2 0.4 (f) P	**TPMT 110302 NLB**	0.2	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			TPMT 110304 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			TPMT 110308 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	SU 8°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TPMT 110302 NSU**	0.2	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★					—	★	★	★	★	★				
			TPMT 110304 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★					—	★	★	★	★	★				
			TPMT 110308 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★					—	★	★	★	★	★				
	Sharp Edge		**TPGW 110302**	0.2	—	—	—	—	—	—	—	—	—	—	—				★																	
			TPGW 110304	0.4	—	—	—	—	—	—	—	—	—	—	—	★			★		★	★			★							★	★	★			★
			TPGW 110308	0.8	—	—	—	—	—	—	—	—	—	—	—	★			★													★	★				★
Light to Medium Cutting	**GU** 5°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TPMT 110304 NGU**	0.4	★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
			TPMT 110308 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
	MU 0°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TPMT 110304 NMU**	0.4	★	★	★		▲	★	★				★	★	★	★	▲	—								—		—	—	—	—				—
			TPMT 110308 NMU	0.8	★	★	★		▲	★	★				★	★	★	★	▲	—								—		—	—	—	—				—
	SF 0°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	**TPMH 110304 NSF**	0.4			★	★												—								—		—	—	—	—				—
			TPMH 110308 NSF	0.8			★	★												—								—		—	—	—	—				—
For Aluminum	**AY** 15° Sharp Edge	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N	**TPGT 110301 RAY**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110301 LAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110302 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110302 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110304 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT 110304 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

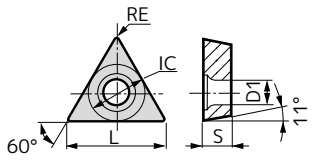
Insert without chipbreaker in AC5015S, AC5025S, AC510U, G10E and H1 grades has a sharp edge.
AY type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

TP■■1603●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L100
SUMIDIA (PCD) Inserts M22
Applicable Boring Bars E44, E48

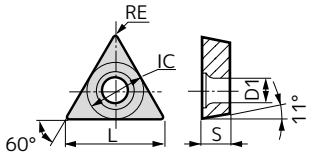
					Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
					CVD					PVD			CVD					PVD										PVD						
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FB**		**TPMT 160304 NFB**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
			TPMT 160308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
	FX		**TPGT 160304 RFX**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160308 RFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160308 LFX	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
	FY		**TPGT 160302 RFY**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160308 RFY	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
			TPGT 160308 LFY	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	★	—	—	—	—	—	—	—	—	
Light Cutting	**LB**		**TPMT 160304 NLB**	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			TPMT 160308 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				

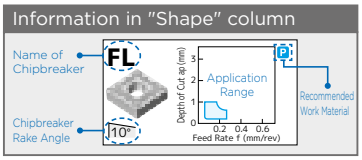
FX type and FY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type / 11° Positive / With Hole





TP■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L100 on | SUMIDIA (PCD) Inserts M22 | SUMIDIA BINDERLESS Inserts M31 | Applicable Boring Bars E14, E44 to E46

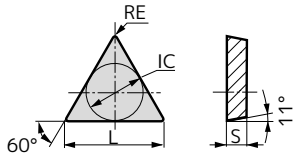
						Coated Carbide																		Coated Cermet		Cermet	Cemented Carbide		
						CVD				PVD			CVD					PVD							PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FB**		**TPMT 160404 NFB**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
	20°		**TPMT 160408 NFB**	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
	FK		**TPMT 160404 NFK**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	★	—	—	—	
	0°		**TPMT 160408 NFK**	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	★	—	—	—	
Finishing to Light Cutting	**SD**		**TPGT 160402 RSD**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	★	★			
			TPGT 160402 LSD	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	★	★			
			TPGT 160404 RSD	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	★	★	★			
			TPGT 160404 LSD	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	—			★	★	★	★			
			TPGT 160408 RSD	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★		★	★	★			
	0°		**TPGT 160408 LSD**	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★		★	★	★			
	W		**TPGT 160402 LW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	—	—	
			TPGT 160404 RW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★				
	0°		**TPGT 160404 LW**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★				
	SDW		**TPGX 160404 RSDW**	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			★	—	—	—	
			TPGX 160404 LSDW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			★	—	—	—	
			TPGX 160408 RSDW	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			★	—	—	—	
	0° →B127 Wiper		**TPGX 160408 LSDW**	0.8		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			★	—	—	—	
Light Cutting	**LB**		**TPMT 160404 NLB**	0.4		★	★	★	★		★	★	★	★	▲						—							—		★	★		★				
	15°		**TPMT 160408 NLB**	0.8		★	★	★	★		★	★	★	★	▲						—							—		★	★		★				
	SU		**TPMT 160404 NSU**	0.4		★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★					—	★	★	★	★	★				
			TPMT 160408 NSU	0.8		★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★					—		★	★	★	★				
	8°		**TPGW 160400**	0.0		—	—	—	—	—	—	—	—	—	—	—					—								—								
			TPGW 160404	0.4		—	—	—	—	—	—	—	—	—	—	—		★			—		★	★			★		—						★		★
	Sharp Edge		**TPGW 160408**	0.8		—	—	—	—	—	—	—	—	—	—	—		★			—								—								★
Light to Medium Cutting	**GU**		**TPMT 160404 NGU**	0.4		★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
	5°		**TPMT 160408 NGU**	0.8		★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
	MU		**TPMT 160404 NMU**	0.4		★	★	★		▲	★	★				★	★	★	★	▲	—								—		—	—	—	—	—			—
	0°		**TPMT 160408 NMU**	0.8		★	★	★		▲	★	★				★	★	★	★	▲	—								—		—	—	—	—	—			—
	SF		**TPMT 160404 NSF**	0.4				★	★												—								—		—	—	—	—				—
	0°		**TPMT 160408 NSF**	0.8				★	★												—								—		—	—	—	—				—

Insert without chipbreaker in AC5015S, AC5025S, AC510U, G10E and H1 grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TP Triangular type / 11° Positive / Without Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

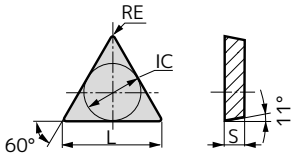
TP■■0902●●

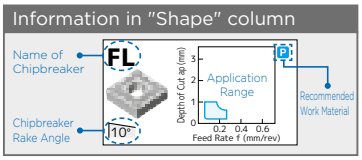
Dimensions (mm)	Cutting Edge Length L	9.6	Thickness S	2.38
	Inscribed Circle IC	5.56		

Recommended Application: P Steel ● ◔ ● ✖ ○ ● ● ✖ ✪ ✪ ◔ ● ● ✖ ✪ ✪ ✪ ✪ ● ✖ ● ● ✪ ✪ ● ● ✪ ✪ ✪ ● ✪ ✪ ✪ ✪

Triangular type Positive Inserts

TP Triangular type / 11° Positive / Without Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TP■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	3.18
	Inscribed Circle IC	6.35		

SUMIBORON (CBN) Inserts L103 on | SUMIDIA (PCD) Inserts M23

Applicable Boring Bars E48

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Medium Cutting	TPGN 110302	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★
	TPGN 110304	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	★	★				★
	TPGN 110308	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★
	TPGN 110312	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★

Sharp Edge

Insert without chipbreaker in AC5015S, AC5025S, AC510U, G10E and H1 grades has a sharp edge.

TP■■1603●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.18
	Inscribed Circle IC	9.525		

SUMIBORON (CBN) Inserts L105 | SUMIDIA (PCD) Inserts M22

Applicable External Holders C38, C39 | Applicable Boring Bars E48

Recommended Application		Coated Carbide																						Coated Cermet		Cermet		Cemented Carbide		
		CVD							PVD			CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	FK 0° TPMR 160304 NFK	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	TPMR 160308 NFK	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	—
	TPMR 160312 NFK	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
Finishing to Light Cutting	W 0° TPGR 160302 RW	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	—	—
	TPGR 160302 LW	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	—	—
	TPGR 160304 RW	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★				—
	TPGR 160304 LW	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★				—
	TPGR 160308 RW	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	—	—
	TPGR 160308 LW	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	—	—
Light to Medium Cutting	SF 0° TPMR 160304 NSF			—	—							—					—								—	—	—	—	—				—
	TPMR 160308 NSF			—	—							—					—								—	—	—	—	—				—
	TPMR 160312 NSF			—	—							—					—								—	—	—	—	—				—
	UJ 0° TPMR 160304 NUJ			—	—							—					—								—	—	—	—	—				—
	TPMR 160308 NUJ			—	—							—					—								—	—	—	—	—				—
Medium Cutting	TPMN 160304											—	—	—	—	—	—	—	—	—			—		—				—	—				
	TPMN 160308											—	—	—	—	—	—	—	—	—			—		—				—	—				
	TPMN 160312											—	—	—	—	—	—	—	—	—			—		—				—	—				
	TPGN 160302	—	—	—	—	—	—	—	—	—	—	—																	★	★	★				
	TPGN 160304	—	—	—	—	—	—	—	—	—	—	—							★	★			★						★	★	★			★
	TPGN 160308	—	—	—	—	—	—	—	—	—	—	—							★	★			★						★	★	★			★
	TPGN 160312	—	—	—	—	—	—	—	—	—	—	—																			★				
	TPGN 160316	—	—	—	—	—	—	—	—	—	—	—																							

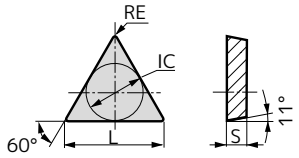
Sharp Edge

G-class insert without chipbreaker (TPGN) in AC5015S, AC5025S, AC510U, G10E and H1 grades has a sharp edge.

continued

Triangular type Positive Inserts

TP Triangular type / 11° Positive / Without Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✪ Interrupted Cutting 2nd Recommendation

TP■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	4.76
	Inscribed Circle IC	9.525		

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Medium Cutting	 Sharp Edge		**TPGN 160404**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
			TPGN 160408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
			TPGN 160412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
			TPGN 160416	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			

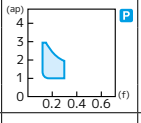
Insert without chipbreaker in G10E grade has a sharp edge.

TP■■2204●●

Dimensions (mm)	Cutting Edge Length L	22.0	Thickness S	4.76
	Inscribed Circle IC	12.7		

SUMIBORON (CBN) Inserts L106
Applicable External Holders C38, C39

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Light to Medium Cutting	**SF**  0°		**TPMR 220408 NSF**	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—
			TPMR 220412 NSF	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—
Medium Cutting			**TPMN 220404**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
			TPMN 220408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	★	—	—	—	—	—	—	★	★	★			
			TPMN 220412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	★	—	—	—	—	—	—	—	—	★			
			TPMN 220416	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	 Sharp Edge		**TPGN 220404**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			
			TPGN 220408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—	—	—	—	—	★			
			TPGN 220412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
			TPGN 220416	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				

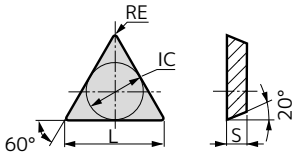
G-class insert without chipbreaker (TPGN) in AC5015S, AC5025S, AC510U and G10E grades has a sharp edge.

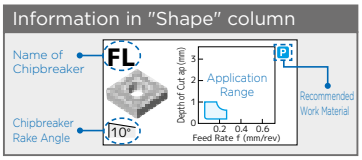
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TE Triangular type / 20° Positive / Without Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

TE■■1102●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	2.38
	Inscribed Circle IC	6.35		

SUMIDIA (PCD) Inserts ☞M24

Recommended Application		Coated Carbide																							Coated Cermet	Cermet	Cermet	Cemented Carbide			
		CVD							PVD				CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◷	◕	✖	○			✪	✪		◷							✪					✪	◕		◕	✖	●	◕			
M Stainless Steel				○	✪		●	◕	✖	✪	✪	◷							✪					✪	◕	✪							
K Cast Iron		○	◷	✪									●	◕	✖	✪		✪					✪		◕				●				
N Non-Ferrous Metal																																	◕
S Exotic Alloy																	●	◕	✖	●	◕	◷	✪	✪									
H Hardened Steel																	●	○															
Light Cutting	Sharp Edge	**TEGN 110202**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TEGN 110204	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TEGN 110208	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Insert without chipbreaker in H1 grade has a sharp edge.

TE■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.0	Thickness S	3.18
	Inscribed Circle IC	6.35		

SUMIDIA (PCD) Inserts ☞M24

Recommended Application		Coated Carbide																							Coated Cermet	Cermet	Cermet	Cemented Carbide			
		CVD							PVD				CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◷	◕	✖	○			✪	✪		◷							✪					✪	◕		◕	✖	●	◕			
M Stainless Steel				○	✪		●	◕	✖	✪	✪	◷							✪					✪	◕	✪							
K Cast Iron		○	◷	✪									●	◕	✖	✪		✪					✪		◕				●				
N Non-Ferrous Metal																																	◕
S Exotic Alloy																	●	◕	✖	●	◕	◷	✪	✪									
H Hardened Steel																	●	○															
Light Cutting	Sharp Edge	**TEGN 110302**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TEGN 110304	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		TEGN 110308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Insert without chipbreaker in H1 grade has a sharp edge.

TE■■1603●●

Dimensions (mm)	Cutting Edge Length L	16.5	Thickness S	3.18
	Inscribed Circle IC	9.525		

SUMIDIA (PCD) Inserts ☞M24

Recommended Application		Coated Carbide																							Coated Cermet	Cermet	Cermet	Cemented Carbide			
		CVD							PVD				CVD					PVD								PVD						
		AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
P Steel		●	◷	◕	✖	○			✪	✪		◷							✪					✪	◕		◕	✖	●	◕			
M Stainless Steel				○	✪		●	◕	✖	✪	✪	◷							✪					✪	◕	✪							
K Cast Iron		○	◷	✪									●	◕	✖	✪		✪					✪		◕				●				
N Non-Ferrous Metal																																	◕
S Exotic Alloy																	●	◕	✖	●	◕	◷	✪	✪									
H Hardened Steel																	●	○															
Light to Medium Cutting	Sharp Edge	**TEGN 160302**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	★
		TEGN 160304	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	★
		TEGN 160308	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	★

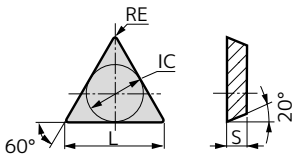
Insert without chipbreaker in H1 grade has a sharp edge.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Triangular type Positive Inserts

TE Triangular type / 20° Positive / Without Hole



Grade Selection Guide ☞ A2
Chipbreaker Selection ☞ B4 on
Insert Grade Selection Guide by Work Material ☞ A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

TE■■2204●●

Dimensions (mm)	Cutting Edge Length L	22.0	Thickness S	4.76
	Inscribed Circle IC	12.7		

SUMIDIA (PCD) Inserts ☞ M24

Recommended Application

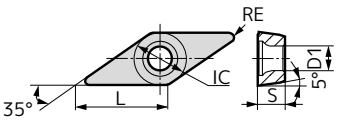
		Coated Carbide																										Coated Cermet	Cermet	Cemented Carbide		
		CVD							PVD			CVD				PVD												PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light to Medium Cutting	▽		**TEGN 220404**	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TEGN 220408	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TEGN 220412	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

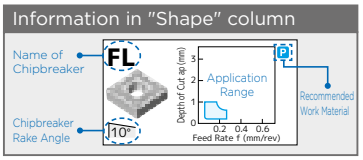
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

35° Diamond type Positive Inserts

VB 35° Diamond type / 5° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

VB■■1102●●

Dimensions (mm)	Cutting Edge Length L	11.1	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

SUMIBORON (CBN) Inserts → L110, L111

Applicable Boring Bars → E52, E54, E55, E57, E58, E60, E61

Recommended Application		VB■■1102●●	VB■■1103●●
P	Steel	● ◔ ● ✖ ○	● ◔ ● ✖ ○
M	Stainless Steel	○ ◔ ○ ✖	○ ◔ ○ ✖
K	Cast Iron	○ ◔ ✖	○ ◔ ✖
N	Non-Ferrous Metal		
S	Exotic Alloy		
H	Hardened Steel		

							Coated Carbide																	Coated Cermet	Cermet	Cemented Carbide		
							CVD				PVD		CVD				PVD							PVD				
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FP** 10°	(ap) 1 0 0.1 0.2 0.3 (f) P	**VBMT 110202 NFP**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—	
			VBMT 110304 NFP	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—	
	SU 13°	(ap) 2 1 0 0.1 0.2 0.3 (f) P M S	**VBMT 110204 NSU**	0.4						★					★					—	—							★							
			VBMT 110208 NSU	0.8						★					★					—	—							★							
Finishing	**FB** 20°	(ap) 2 1 0 0.2 0.4 (f) P	**VBMT 110302 NFB**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			VBMT 110304 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
			VBMT 110308 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	—	—	—	
	LU 15°	(ap) 2 1 0 0.2 0.4 (f) P	**VBMT 110302 NLU**	0.2																—	—							—	★	★	★	★				
			VBMT 110304 NLU	0.4	★	★	★		▲	★		★	★	▲	★					—	—							—	★	★	★	★				
			VBMT 110308 NLU	0.8	★	★	★		▲	★	★	★	★	▲	★					—	—			★				—	★	—	—	—	—				—
	FX 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**VBGT 110301 RFX**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★	★	★		★	★	—	—	—	
			VBGT 110301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★	★	★		★	★	—	—	—	
			VBGT 110302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★	★	★		★	★	—	—	—	
			VBGT 110302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★	★	★		★	★	—	—	—	
			VBGT 110304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★	★	★		★	★				
			VBGT 110304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★	★	★		★	★				
	FYS 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**VBGT 1103003 RFYS**	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 1103003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110301 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110301 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110302 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110302 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110304 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110304 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110308 RFYS	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									
			VBGT 110308 LFYS	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★									

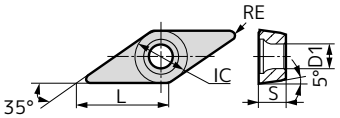
FX type, FYS type and FY type chipbreakers have a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

35° Diamond type Positive Inserts

VB 35° Diamond type / 5° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

VB■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.1	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L110, L111

Applicable Boring Bars E52, E54, E55, E57, E58, E60, E61

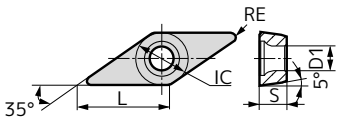
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	PVD: AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	**FYS**	(ap) 2 1 0 0.2 0.4 (f) P	VBET 1103003 RFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
	15° Sharp Edge		VBET 1103003 LFYS	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110301 RFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110301 LFYS	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110302 RFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110302 LFYS	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110304 RFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110304 LFYS	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110308 RFYS	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VBET 110308 LFYS	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
	FY	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VBGT 110301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★			★	★	—	—	—	
	15° Sharp Edge		VBGT 110301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★			★	★	—	—	—	
			VBGT 110302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★			★	★	—	—	—	
			VBGT 110302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★	★			★	★	—	—	—	
			VBGT 110304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
			VBGT 110304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★					★	★									
Light Cutting	**LB**	(ap) 2 1 0 0.2 0.4 (f) P	VBMT 110302 NLB	0.2	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	15°		VBMT 110304 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			VBMT 110308 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	SU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VBMT 110302 NSU	0.2								★	★							—	★	★	★					—	★								
	8°		VBMT 110304 NSU	0.4	★	★	★			★		★	★	▲	★					—	★	★	★					—	★			★					
			VBMT 110308 NSU	0.8	★	★	★			★	★	★	★	▲	★					—	★	★	★	★	★			—	★	—	—	—	—				—
	SI	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VBGT 110301MN-SI	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	★	★								
	15° Sharp Edge		VBGT 110302MN-SI	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	★	★								
			VBGT 110304MN-SI	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	★	★								
			VBGT 110308MN-SI	< 0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★	★								
Light to Medium Cutting	**GU**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VBMT 110304 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
	5°		VBMT 110308 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲						—								—		★	★		★				
For Aluminum	**AY**	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N	VBGT 110301 RAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	15° Sharp Edge		VBGT 110301 LAY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 110302 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 110302 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 110304 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 110304 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

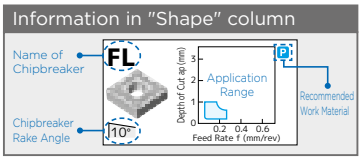
A "<" next to the corner radius RE indicates negative tolerance.
SI type chipbreaker in AC5015S, AC5025S, AC510U, AC520U, AC1030U and AC530U grades has a sharp edge.
AY type chipbreaker has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

35° Diamond type Positive Inserts

VB 35° Diamond type / 5° Positive / With Hole





VB■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

SUMIBORON (CBN) Inserts → L112, L113

Applicable Boring Bars → E14, E52, E54, E57, E60

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
● Interrupted Cutting 1st Recommendation ○ Interrupted Cutting 2nd Recommendation

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

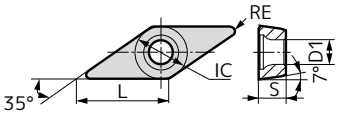
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FB		VBMT 160404 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
			VBMT 160408 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	
	FP		VBMT 160404 NFP	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	★	—	—	—	
			VBMT 160408 NFP	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★				★	—	—	—	
	LU		VBMT 160404 NLU	0.4	★	★	★		▲		★	★	★	▲	★					—								—	★	★	★	★	★				
			VBMT 160408 NLU	0.8	★	★	★		▲		★	★	★	▲	★					—								—	★	★	★	★	★				
	FX		VBGT 160402 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	—	—	—	
			VBGT 160402 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	—	—	—	
			VBGT 160404 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	—	—	—	
			VBGT 160404 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													★	★	—	—	—	
Light Cutting	LB		VBMT 160404 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			VBMT 160408 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
			VBMT 160412 NLB	1.2	★	★	★	★		★	★	★	★	▲						—								—		★	★		★				
	SU		VBMT 160404 NSU	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			VBMT 160408 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★	★	★			—	★	★	★	★	★	★	★	—	★	★	★	★	★				
			VBMT 160412 NSU	1.2	★	★	★		▲											—								—		—	—	—	—				—
	SK		VBMT 160404 NSK	0.4			★	★	★											—		★	★			★	★									
			VBMT 160406 NSK	0.6			★	★												—																	
			VBMT 160408 NSK	0.8			★	★	★											—		★				★	★									
			VBMT 160412 NSK	1.2	★		★	★	★							★				—																
	SI		VBGT 160401 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★			★	★	★	★	—	—	—	—	—	—	—	—
			VBGT 160402 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		★	★	★	★	★	★	★	★	—	—	—	—	—	—	—	—
			VBGT 160404 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	★	★	—	—	—	—	—	—	—	—	—
			VBGT 160408 MNSI	< 0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	★	★	★	—	—	—	—	—	—	—	—	—
Light to Medium Cutting			VBMW 160404	0.4												★	★	★	▲	—								—								—
			VBMW 160408	0.8												★	★	★	▲	—								—								—
	GU		VBMT 160404 NGU	0.4	★	★	★	★	▲	★	★	★	★	▲		★				—			★					—		★	★		★				
			VBMT 160408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲		★	★			—			★					—		★	★		★				
	MU		VBMT 160408 NMU	0.8	★										★					—								—		—	—	—	—				—
For Aluminum	AY		VBGT 160402 RAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 160402 LAY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 160404 RAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT 160404 LAY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

A "<" next to the corner radius RE indicates negative tolerance.
FX type and AY type chipbreakers have a sharp edge.
SI type chipbreaker in AC5015S, AC5025S, AC510U, AC520U, AC1030U and AC530U grades has a sharp edge.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

35° Diamond type Positive Inserts

VC 35° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

VC■■0802●●

Dimensions (mm)	Cutting Edge Length L	8.3	Thickness S	2.38
	Inscribed Circle IC	4.76	Hole Dia. D1	2.3

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L114 · SUMIDIA BINDERLESS Inserts M31
Applicable Boring Bars E53, E56, E59, E62

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Finishing	**FB**	20°	**VCMT 080202 NFB**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
			VCMT 080204 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
	FC	15° Sharp Edge	**VCGT 080204 MNFC**	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	★					—	—	—	—
Light Cutting	**LB**	15°	**VCMT 080202 NLB**	0.2	★	★	★	★		★	★	★	★	▲						—								—	★	★		★					
			VCMT 080204 NLB	0.4	★	★	★	★		★	★	★	★	▲						—								—	★	★		★					
	SU	8°	**VCMT 080204 NSU**	0.4						★	★	★	★	▲	★					—	★	★	★					—	★	—	—	—	—	—				—

A "<" next to the corner radius RE indicates negative tolerance.
FC type chipbreaker in AC5015S, AC5025S, AC520U, AC1030U, AC530U and ACZ150 grades has a sharp edge.

VC■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.1	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

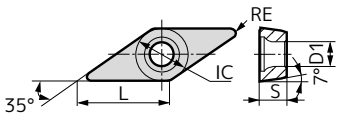
SUMIBORON (CBN) Inserts L114 · SUMIDIA (PCD) Inserts M26 · SUMIDIA BINDERLESS Inserts M31
Applicable External Holders C42, C43, D40, D44 · Applicable Boring Bars E56, E59, E62

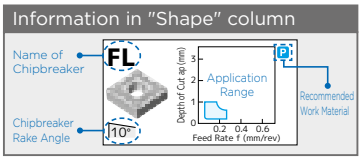
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Fine Cutting	**FF**	15° Sharp Edge	**VCGT 110301 MNFF**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★								—
			VCGT 110302 MNFF	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★								—
			VCGT 110304 MNFF	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★						★								—
Finishing	**FC**	15° Sharp Edge	**VCGT 110301 MNFC**	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★				★	★	—	—	—	—
			VCGT 110302 MNFC	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★				★	★	—	—	—	—
			VCGT 110304 MNFC	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★				★	★	—	—	—	—
	FX	15° Sharp Edge	**VCGT 110301 RFX**	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			VCGT 110301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			VCGT 110302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			VCGT 110302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★				★	★				
			VCGT 110304 RFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
			VCGT 110304 LFX	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★								
	FX	15° Sharp Edge	**VCET 1103008 RFX**	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★									
			VCET 1103008 LFX	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★									
			VCET 110301 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★									
			VCET 110301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★									
			VCET 1103018 RFX	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★									
			VCET 1103018 LFX	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—							★									

A "<" next to the corner radius RE indicates negative tolerance.
FF type and FC type chipbreakers in AC5015S, AC5025S, AC520U, AC1030U, AC530U and ACZ150 grades has a sharp edge.
FX type chipbreaker has a sharp edge.

35° Diamond type Positive Inserts

VC 35° Diamond type / 7° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
● Interrupted Cutting 1st Recommendation ○ Interrupted Cutting 2nd Recommendation

VC■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.1	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

SUMIBORON (CBN) Inserts L115 | SUMIDIA (PCD) Inserts M26 | SUMIDIA BINDERLESS Inserts M31

Applicable External Holders C42, C43, D40, D44 | Applicable Boring Bars E56, E59, E62

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FY	(ap) 2 1 0 0.2 0.4 (f) P	VCGT 110301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★									
	15° Sharp Edge		VCGT 110301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★									
			VCGT 110302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★									
			VCGT 110302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	★									
			VCGT 110304 RFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★									
			VCGT 110304 LFY	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	★									
	FY	(ap) 2 1 0 0.2 0.4 (f) P	VCET 1103008 RFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
	15° Sharp Edge		VCET 1103008 LFY	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VCET 110301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VCET 110301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VCET 1103018 RFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
			VCET 1103018 LFY	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								★									
Light Cutting	SU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VCMT 110302 NSU	0.2						★	★	★	★	▲	★					—	★	★	★					—		—	—	—	—	—			
	8°		VCMT 110304 NSU	0.4	★	★	★			★	★	★	★	▲	★					—	★	★	★					—		—	—	—	—	—			
			VCMT 110308 NSU	0.8	★	★	★			★	★	★	★	▲	★					—	★	★	★					—		—	—	—	—	—			
	SI	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VCGT 110301 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	★	★	★	★	★	★	★	★	★	★	★	★	★				
	15° Sharp Edge		VCGT 110302 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	★	★	★	★	★	★	★	★	★	★	★	★	★				
			VCGT 110304 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	★	★	★	★	★	★	★	★	★	★	★	★	★				
			VCGT 110308 MNSI	< 0.8	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	★	★				★	★	★	★	★	★	★	★				
	SL	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) P	VCGT 110301 MNSL	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	—	★	—	—	—	—	—	—	—	—	—
	20° Sharp Edge		VCGT 110302 MNSL	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	—	★	—	—	—	—	—	—	—	—	—
			VCGT 110304 MNSL	< 0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	—	★	—	—	—	—	—	—	—	—	—
For Aluminum	AG	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f) N	VCGT 110302 NAG	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	20° Sharp Edge		VCGT 110304 NAG	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

A "<" next to the corner radius RE indicates negative tolerance.
FY type and AG type chipbreakers have a sharp edge.
SI type and SL type chipbreakers in AC5015S, AC5025S, AC510U, AC520U, AC1030U and AC530U grades has a sharp edge.

VC■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

SUMIBORON (CBN) Inserts L114 | SUMIDIA (PCD) Inserts M26, M27 | SUMIDIA BINDERLESS Inserts M31

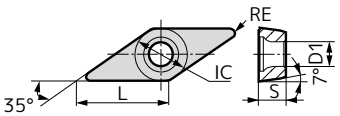
Applicable External Holders C42, C43 | Applicable Boring Bars E56, E59

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	Coated Carbide (PVD) AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Finishing	FB	(ap) 2 1 0 0.2 0.4 (f) P	VCMT 160404 NFB	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
	20°		VCMT 160408 NFB	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—
	LU	(ap) 2 1 0 0.2 0.4 (f) P	VCMT 160404 NLU	0.4	★	★	★		▲		★	★	★	▲	★					—				★				—		★	★	★	★				
	15°		VCMT 160408 NLU	0.8	★	★	★		▲		★	★	★	▲	★					—				★				—		★	★	★	★				

35° Diamond type Positive Inserts

VC 35° Diamond type / 7° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

VC■■1604●●

Dimensions (mm)	Cutting Edge Length L	16.6	Thickness S	4.76
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L116 · SUMIDIA (PCD) Inserts M26, M27
SUMIDIA BINDERLESS Inserts M31 · Applicable External Holders C42, C43
Applicable Boring Bars E56, E59

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD						Coated Carbide: PVD						Coated Carbide: CVD				Coated Carbide: PVD								Coated Cermet: PVD		Cermet		Cemented Carbide		
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Light Cutting	**LB** 15°	(ap) 2 / 1 / 0 · 0.2 0.4 (f) · P	**VCMT 160404 NLB**	0.4	★	★	★	★		★	★	★	★	▲						—								—	★	★		★				
			VCMT 160408 NLB	0.8	★	★	★	★		★	★	★	★	▲						—								—	★	★		★				
	SU 8°	(ap) 4 / 3 / 2 / 1 / 0 · 0.2 0.4 0.6 (f) · P	**VCMT 160404 NSU**	0.4	★	★	★	★	▲	★	★	★	★	▲	★					—	★	★	★	★	★	★	—	★	—	—	—	—				—
			VCMT 160408 NSU	0.8	★	★	★	★	▲	★	★	★	★	▲	★		★			—	★	★	★	★	★	★	—	★	—	—	—	—				—
	SI 15° Sharp Edge	(ap) 4 / 3 / 2 / 1 / 0 · 0.2 0.4 0.6 (f) · P	**VCGT 160401 MNSI**	< 0.1	—	—	—	—	—	—	—	—	—	—	★					—	★	★				★	★	★	★	★	★	★	★				
			VCGT 160402 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	★	★	★	★	★				
			VCGT 160404 MNSI	< 0.4	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	★	★	★	★	★				
			VCGT 160408 MNSI	< 0.8	—	—	—	—	—	—	—	—	—	—	★					—	★	★	★	★	★	★	★	★	—	—	—	—	—		—	—	—
	SK	(ap) 2 / 1 / 0 · 0.1 0.2 0.3 0.4 (f) · P	**VCMT 160404 NSK**				★	★												—		★				★	★	—		—	—	—	—			—
			VCMT 160408 NSK				★													—		★				★	★	—		—	—	—	—			—
Light to Medium Cutting	**GU** 5°	(ap) 4 / 3 / 2 / 1 / 0 · 0.2 0.4 0.6 (f) · P	**VCMT 160404 NGU**	0.4	★	★	★	★	▲	★	★	★	★	▲						—			★	★				—		—	—	—	—			—
			VCMT 160408 NGU	0.8	★	★	★	★	▲	★	★	★	★	▲						—			★					—		—	—	—	—			—
For Aluminum	**AW** 25°		**VCGT 160408 NAW**	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT 160412 NAW	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	AG 20° Sharp Edge	(ap) 4 / 3 / 2 / 1 / 0 · 0.2 0.4 0.6 (f) · N	**VCGT 160402 NAG**	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT 160404 NAG	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT 160408 NAG	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT 160412 NAG	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

A "<" next to the corner radius RE indicates negative tolerance.
SI type chipbreaker in AC5015S, AC5025S, AC510U, AC520U, AC1030U and AC530U grades has a sharp edge.
AG type chipbreaker has a sharp edge.

VC■■2205●●

Dimensions (mm)	Cutting Edge Length L	20.2	Thickness S	5.56
	Inscribed Circle IC	12.7	Hole Dia. D1	5.5

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

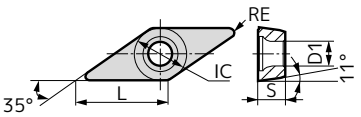
SUMIDIA (PCD) Inserts M27
Applicable External Holders C47

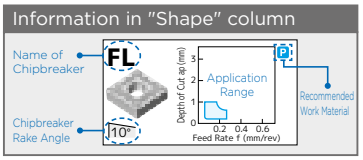
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD						Coated Carbide: PVD						Coated Carbide: CVD				Coated Carbide: PVD								Coated Cermet: PVD		Cermet		Cemented Carbide		
					AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	AC6135M	AC6145M	AC6040M	AC630M	AC4010K	AC4015K	AC4125K	AC420K	AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
For Aluminum	**AW** 25°		**VCGT 220516 NAW**	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			VCGT 220520 NAW	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT 220530 NAW	3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	AG 20° Sharp Edge	(ap) 4 / 3 / 2 / 1 / 0 · 0.2 0.4 0.6 (f) · N	**VCGT 220530 NAG**	3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

AG type chipbreaker has a sharp edge.

35° Diamond type Positive Inserts

VP 35° Diamond type / 11° Positive / With Hole





● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation ✖ Interrupted Cutting 2nd Recommendation

VP■■0802●●

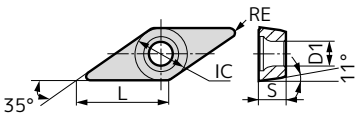
Dimensions (mm)	Cutting Edge Length L	8.3	Thickness S	2.38
	Inscribed Circle IC	4.76	Hole Dia. D1	2.4

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

| | | |

35° Diamond type Positive Inserts

VP 35° Diamond type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

Continuous Cutting 1st Recommendation / Continuous Cutting 2nd Recommendation
General Machining 1st Recommendation / General Machining 2nd Recommendation
Interrupted Cutting 1st Recommendation / Interrupted Cutting 2nd Recommendation

VP■■1103●●

Dimensions (mm)	Cutting Edge Length L	11.1	Thickness S	3.18
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Applicable External Holders D41, D44

Recommended Application: P Steel / M Stainless Steel / K Cast Iron / N Non-Ferrous Metal / S Exotic Alloy / H Hardened Steel

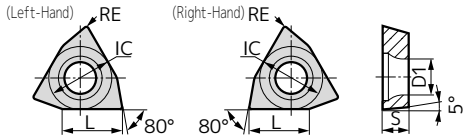
	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide (CVD) AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	Coated Carbide (PVD) AC6135M	AC6145M	AC6040M	Coated Carbide (CVD) AC630M	AC4010K	AC4015K	AC4125K	AC420K	Coated Carbide (PVD) AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet T1500Z	T2500Z	Cermet T1000A	T1500A	Cemented Carbide G10E	EH510	EH520	H1
Fine Cutting	FF		VPGT 110301 MNFF	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—				—
			VPGT 110302 MNFF	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—				—
Finishing	FX		VPGT 110301 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			VPGT 110301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			VPGT 110302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			VPGT 110302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
	FX		VPET 1103003 RFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 1103003 LFX	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110301 RFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110301 LFX	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110302 RFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110302 LFX	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
	FY		VPGT 110301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			VPGT 110301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			VPGT 110302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
			VPGT 110302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																		
	FY		VPET 1103003 RFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 1103003 LFY	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110301 RFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110301 LFY	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110302 RFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
			VPET 110302 LFY	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—										★								
Light Cutting	SI		VPGT 110301 MNSI	< 0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—				—
			VPGT 110302 MNSI	< 0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★					★	—	—	—	—	—	—				—

A "<" next to the corner radius RE indicates negative tolerance.
FF type and SI type chipbreakers in AC5015S, AC5025S and AC1030U grades has a sharp edge.
FX type and FY type chipbreakers have a sharp edge.

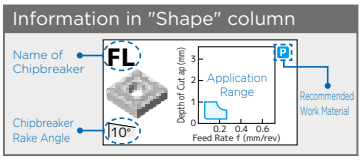
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Trigon type Positive Inserts

WB Trigon type 5° Positive With Hole



*Uneven Trigon type



● Continuous Cutting 1st Recommendation
○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation
○ General Machining 2nd Recommendation
✖ Interrupted Cutting 1st Recommendation
✖ Interrupted Cutting 2nd Recommendation

WB■■0601●●

Dimensions (mm)	Cutting Edge Length L	3.2	Thickness S	1.59
	Inscribed Circle IC	3.97	Hole Dia. D1	2.2

Recommended Application: P Steel ● ○ ✖ ✖ ○ / M Stainless Steel ○ ○ ✖ ✖ ● ● ✖ ✖ ✖ ○ / K Cast Iron ○ ○ ✖ ✖ ● ● ✖ ✖ ✖ ○ / N Non-Ferrous Metal ● / S Exotic Alloy ● ● ✖ ● ● ○ ✖ ✖ / H Hardened Steel ● ○

SUMIBORON (CBN) Inserts L120
SUMIDIA (PCD) Inserts M28
Applicable Boring Bars E64

						Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide			
						CVD					PVD			CVD					PVD							PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FW** 20°	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 060102 RFW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			WBGT 060102 LFW	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★				
			WBGT 060104 RFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			WBGT 060104 LFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★				
	FX 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 060102 RFX**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	—	—	—	—	—	—	
			WBGT 060102 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★	—	—	—	—	—	—	—	—	
			WBGT 060104 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	—	—	—	—	—	—	
			WBGT 060104 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	★	★	★	—	—	—	—	—	—	—	—	
	FY 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 0601003 LFY**	0.03		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	
			WBGT 060101 RFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	
			WBGT 060101 LFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	
			WBGT 060102 RFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	★	—	—	—	—	
			WBGT 060102 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	★	—	—	—	—	
			WBGT 060104 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	★	—	—	—	—	
			WBGT 060104 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	★	—	—	—	—	
Finishing to Light Cutting	**W** 0°	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 060102 RW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 060102 LW	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	—	
			WBGT 060104 RW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 060104 LW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	—	

FX type and FY type chipbreakers have a sharp edge.

WB■■0802●●

Dimensions (mm)	Cutting Edge Length L	4.6	Thickness S	2.38
	Inscribed Circle IC	4.76	Hole Dia. D1	2.4

Recommended Application: P Steel ● ○ ✖ ✖ ○ / M Stainless Steel ○ ○ ✖ ✖ ● ● ✖ ✖ ✖ ○ / K Cast Iron ○ ○ ✖ ✖ ● ● ✖ ✖ ✖ ○ / N Non-Ferrous Metal ● / S Exotic Alloy ● ● ✖ ● ● ○ ✖ ✖ / H Hardened Steel ● ○

SUMIBORON (CBN) Inserts L121
Applicable Boring Bars E64

						Coated Carbide																				Coated Cermet	Cermet	Cemented Carbide			
						CVD					PVD			CVD					PVD							PVD					
	Shape	Application Range	ISO Cat. No.	Corner Radius RE		**AC8115P**	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	**AC6135M**	**AC6145M**	AC6040M	AC630M	AC4010K	AC4015K	**AC4125K**	AC420K	AC503U	AC5005S	AC5015S	AC5025S	**AC9115T**	**AC9125T**	AC510U	AC520U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	T1500A	G10E	EH510	EH520	H1
Finishing	**FW** 15°	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 080202 RFW**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			WBGT 080202 LFW	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★				
			WBGT 080204 RFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★				
			WBGT 080204 LFW	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★				
	FX 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 080202 RFX**	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	—	—	—	—	—	—	
			WBGT 080202 LFX	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	—	—	—	—	—	—	
			WBGT 080204 RFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	—	—	—	—	—	—	
			WBGT 080204 LFX	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	★	—	—	—	—	—	—	—	—	
	FY 15° Sharp Edge	(ap) 2 1 0 0.2 0.4 (f) P	**WBGT 080201 RFY**	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 080201 LFY	0.1		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 080202 RFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 080202 LFY	0.2		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 080204 RFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	
			WBGT 080204 LFY	0.4		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	

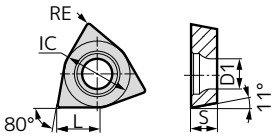
FX type and FY type chipbreakers have a sharp edge.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Trigon type Positive Inserts

WP Trigon type / 11° Positive / With Hole



Grade Selection Guide A2
Chipbreaker Selection B4 on
Insert Grade Selection Guide by Work Material A10 on

● Continuous Cutting 1st Recommendation ○ Continuous Cutting 2nd Recommendation
● General Machining 1st Recommendation ○ General Machining 2nd Recommendation
✱ Interrupted Cutting 1st Recommendation ✱ Interrupted Cutting 2nd Recommendation

WP■■1102●●

Dimensions (mm)	Cutting Edge Length L	4.3	Thickness S	2.38
	Inscribed Circle IC	6.35	Hole Dia. D1	2.8

Applicable Boring Bars E65

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	LB	(ap) 2 / 1 / 0; 0.2 0.4 (f); P; 15°	**WPMT 110204 NLB**	0.4	★	★	★	★		★	★			▲						—										★	★		★				

WP■■1603●●

Dimensions (mm)	Cutting Edge Length L	6.5	Thickness S	3.18
	Inscribed Circle IC	9.525	Hole Dia. D1	4.4

Applicable Boring Bars E65

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	ISO Cat. No.	Corner Radius RE	Coated Carbide: CVD: AC8115P	AC8020P	AC8025P	AC8035P	AC8015P	AC6020M	AC6030M	PVD: AC6135M	AC6145M	AC6040M	CVD: AC630M	AC4010K	AC4015K	AC4125K	AC420K	PVD: AC503U	AC5005S	AC5015S	AC5025S	AC9115T	AC9125T	AC510U	AC520U	AC1030U	AC530U	Coated Cermet: T1500Z	T2500Z	Cermet: T1000A	T1500A	Cemented Carbide: G10E	EH510	EH520	H1
Light Cutting	LB	(ap) 2 / 1 / 0; 0.2 0.4 (f); P; 15°	**WPMT 160308 NLB**	0.8	★	★	★	★		★	★			▲						—										★	★		★				

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

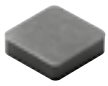
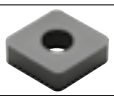
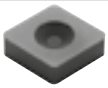
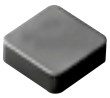
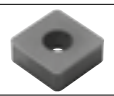
Solid SUMIBORON

Indexable Inserts (Solid CBN type)

Refer to pages L122 to L125 for solid SUMIBORON dedicated holders.

80° Diamond type
55° Diamond type
Round type
Square type
Triangular type

Applications K Cast Iron H Hardened Steel

Shape	Cat. No.	BNC8115	BNS8125	Dimensions (mm) Inscribed Circle	Thickness	Corner Radius	Hole	Applicable Holder
	CNGN 090308	★	★	9.525	3.18	0.8	No	External Dia. L125
	CNGN 090308 LF			9.525	3.18	0.8	No	
	CNGN 090312	★	★	9.525	3.18	1.2	No	
	CNGN 090312 LF			9.525	3.18	1.2	No	
	CNGN 120408	★	★	12.70	4.76	0.8	No	External Dia. L125
	CNGN 120412	★	★	12.70	4.76	1.2	No	
	CNGN 120416	★	★	12.70	4.76	1.6	No	
	CNGA 120408	★	★	12.70	4.76	0.8	Yes	External Dia. C10 to C12 Internal Dia. E15, E25 to E27
	CNGA 120412	★	★	12.70	4.76	1.2	Yes	
	CNGX 120408			12.70	4.76	0.8	Dimple	External Dia. L127
	CNGX 120412	★	★	12.70	4.76	1.2	Dimple	
	CNGX 120416	★	★	12.70	4.76	1.6	Dimple	
	DNGN 110308	★	★	9.525	3.18	0.8	No	External Dia. L125
	DNGN 110308LF			9.525	3.18	0.8	No	
	DNGN 110312	★	★	9.525	3.18	1.2	No	
	DNGN 110312LF			9.525	3.18	1.2	No	
	RNGN 090300	★	★	9.525	3.18	—	No	External Dia. L126
	RNGN 090300LF			9.525	3.18	—	No	
	RNGN 120300	★	★	12.70	3.18	—	No	External Dia. L126
	RNGN 120300 LF			12.70	3.18	—	No	
	RNGN 120400	★	★	12.70	4.76	—	No	
	SNGN 090308	★	★	9.525	3.18	0.8	No	External Dia. L124 Milling Cutters H251 L147
	SNGN 090308 LF			9.525	3.18	0.8	No	
	SNEN 090308 W	★	★	9.525	3.18	0.8	No	
	SNEN 090308 LFW			9.525	3.18	0.8	No	
	SNGN 090312	★	★	9.525	3.18	1.2	No	
	SNGN 090312 LF			9.525	3.18	1.2	No	
	SNGN 120308	★	★	12.70	3.18	0.8	No	External Dia. L124
	SNGN 120308 LF			12.70	3.18	0.8	No	
	SNGN 120312	★	★	12.70	3.18	1.2	No	
	SNGN 120312 LF			12.70	3.18	1.2	No	
	SNGN 120408	★	★	12.70	4.76	0.8	No	External Dia. L124
	SNGN 120412	★	★	12.70	4.76	1.2	No	
	SNGN 120416	★	★	12.70	4.76	1.6	No	
	SNGN 120420	★	★	12.70	4.76	2.0	No	
	SNGA 120408	★	★	12.70	4.76	0.8	Yes	External Dia. C22 to C28 Internal Dia. E39 to E41
	SNGA 120412	★	★	12.70	4.76	1.2	Yes	
	SNGX 120408			12.70	4.76	0.8	Dimple	External Dia. L127
	SNGX 120412	★	★	12.70	4.76	1.2	Dimple	
	SNGX 120416	★	★	12.70	4.76	1.6	Dimple	
	TNGN 110308	★	★	6.35	3.18	0.8	No	External Dia. L124
	TNGN 110308 LF			6.35	3.18	0.8	No	
	TNGN 110312	★	★	6.35	3.18	1.2	No	
	TNGN 110312 LF			6.35	3.18	1.2	No	
	TNGN 160408	★	★	9.525	4.76	0.8	No	External Dia. L124
	TNGN 160412	★	★	9.525	4.76	1.2	No	
	TNGN 160416	★	★	9.525	4.76	1.6	No	
	TNGN 160420	★	★	9.525	4.76	2.0	No	
	TNGA 160408	★	★	9.525	4.76	0.8	Yes	External Dia. C31 to C37 External Dia. D45 D29 Internal Dia. E15, E49 to E51
	TNGA 160412	★	★	9.525	4.76	1.2	Yes	

*Part number suffix: LF: Sharp edged W: Wiper type LFW: Wiper sharp edged

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

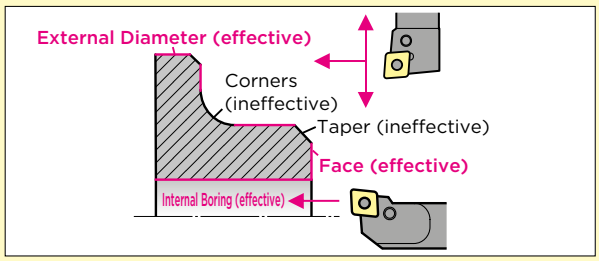
Blank: Made-to-order item
— mark: Not available

Precautions When Using Wiper Inserts

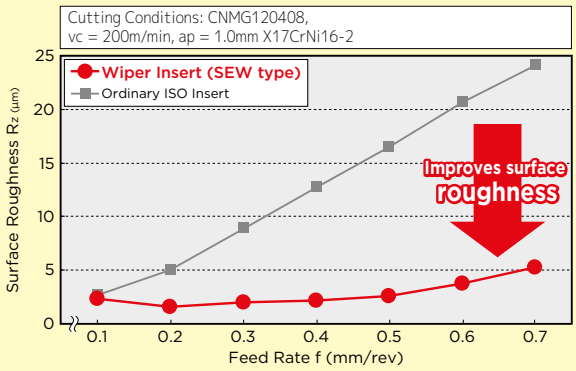
Effectiveness of Wiper Inserts

Wiper inserts are effective for external/internal diameter machining and for facing as shown in the figure below, and surface roughness of the machined surface can be maintained even in high-feed turning.

■ Effective Range of Wiper Inserts



■ Machined Surface Roughness (actual measurements)



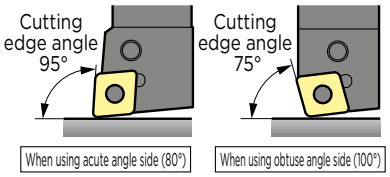
* Note that wiper inserts leave the same machined surface roughness as normal inserts at tapers and corners.
* The cutting edge position may need to be offset depending on the insert shape. See the offset table below.

Coated Carbide / Coated Cermet / Cermet

CNMG/WNMG/CCMT/CPMT type

LUW/GUW/SEW type Chipbreaker (LUW type chipbreaker only for CCMT/CPMT type)

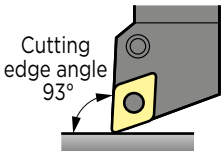
· Use a holder with a cutting edge angle of 95°.
· Machining program modification not required
CNMG type / WNMG type / CCMT type / CPMT type wiper inserts allow use without modifying the machining program.
· The obtuse (100°) corner on the CNMG type can also provide a wiper effect.



DNMX type

SEW type chipbreakers

· Use a holder with a cutting edge angle of 93°.
· Machining program modification required
DNMX type wiper inserts do not comply with the ISO standard. Modify the machining program as explained on page B130.

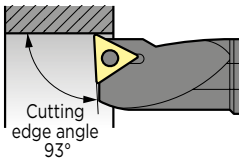


DNMX type Machining Program Modification Guide (→ page B130)

TPGX type

SDW type chipbreakers

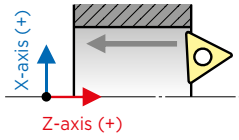
· Use a boring bar with a 93° cutting angle.
· Machining program modification required
TPGX type wiper inserts do not comply with the ISO standard. Correct the cutting edge position (tool offset) as explained on the right.



Note: Unlike the other profiles, the TPGX type is only effective for boring.

Cutting Edge Position Correction for TPGX type chipbreaker (SDW)

Internal boring



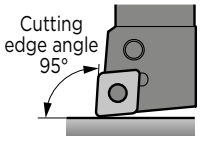
Corner Radius	X-axis direction	Z-axis direction
R0.4	0.12	-0.02
R0.8	0.12	-0.02

CBN (SUMIBORON / Coated SUMIBORON)

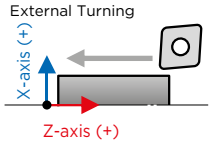
CNGA type/CCGW type/WNGA type

WG type / WH type Wiper Insert

· Use a holder with a cutting edge angle of 95°.
· Machining program modification required
CNGA type / CCGW type / WNGA type wiper inserts do not comply with the ISO standard profiles.
Correct the cutting edge position (tool offset) as explained on the right.



CNGA type / CCGW type / WNGA type Wiper Insert Cutting Edge Position Offset (WG type / WH type)

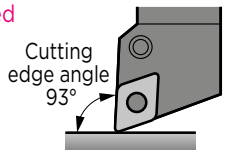


Corner Radius	Type	X-axis direction	Z-axis direction
R0.4	WG type	-0.02	-0.02
	WH type	-0.06	-0.06
R0.8/R1.2	WG type	-0.01	-0.01
	WH type	-0.06	-0.06

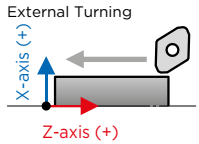
DNGA type / DCGW type

WG type / WH type Wiper Insert

· Use a holder with a cutting edge angle of 93°.
· Machining program modification required
DNGA type / DCGW type wiper inserts do not comply with the ISO standard profiles.
Correct the cutting edge position (tool offset) as explained on the right.



DNGA type / DCGW type Wiper Insert Cutting Edge Position Offset (WG type / WH type)



Corner Radius	Type	X-axis direction	Z-axis direction
R0.4	WG type	-0.17	-0.01
	WH type	-0.70	-0.06
R0.8	WG type	-0.05	0
	WH type	-0.58	-0.05

Note: Unlike other contour shapes, the DNGA/DCGW types can only exhibit wiper effect for external and internal diameter machining, and cannot be used for facing.

Precautions When Using Wiper Inserts

Tool Program Correction Guide for DNMX type Wiper Inserts (Compensation: mm)

(1) Cutting edge position compensation (tool offset) in X and Z axes

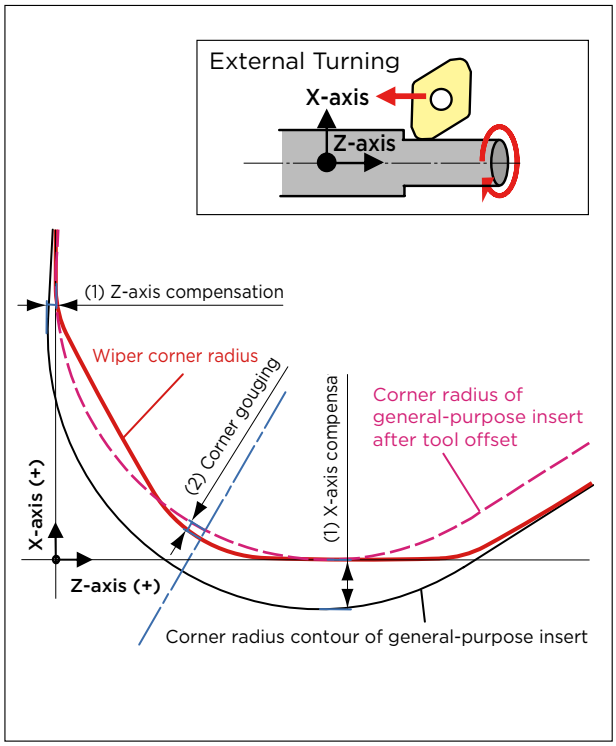
The cutting edge position for this insert differs from standard ISO inserts and therefore requires dimensional correction in the X and Z axes as shown in the table on the right.

*** The X-axis compensation is a positive value for internal boring.**

External Turning

Corner Radius	X-axis direction	Z-axis direction
R0.4	-0.14	-0.02
R0.8	-0.14	-0.02
R1.2	-0.1	-0.03

● Insert Corner Radius Diagram

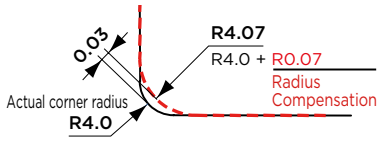


(2) Tool compensation for corners (based on compensation in step (1))

The programmed tool path must be corrected to prevent the insert from gouging into the workpiece's corner radius.

Programmed corner radius = actual corner radius + radius compensation

Example) To machine an R4.0 corner (using an R0.8 corner)



Corner Radius	Amount of Engagement	Radius Compensation
R0.4	0.02	+R0.04
R0.8	**0.03**	**+R0.07**
R1.2	0.08	+R0.18

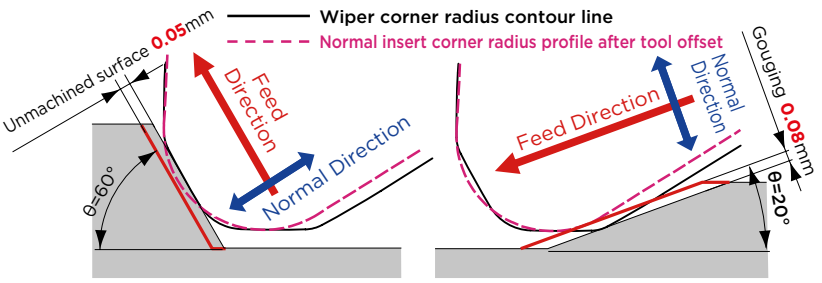
(3) Tool compensation for tapers (based on compensation in step (1))

When machining tapers, the programmed tool path may leave gouged or unmachined surfaces. Make corrections in the normal direction as shown below.

Compensation + indicates gouging
Compensation - indicates unmachined surfaces.

Corner Radius	Taper Angle (θ)				
	-25°	**-20°**	-15°	-10°	-5°
R0.4	0.08	0.07	0.05	0.04	0.02
R0.8	0.09	**0.08**	0.06	0.05	0.02
R1.2	0.05	0.05	0.05	0.03	0.02

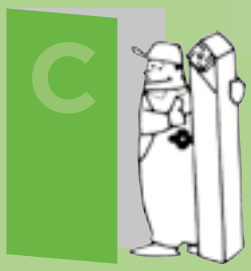
Example) To machine a 60°/-20° taper angle (θ) with a R0.8 corner radius



Corner Radius	Taper Angle (θ)																		
	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	**60°**	65°	70°	75°	80°	85°	90°
R0.4	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.04	-0.05	-0.05	-0.05	-0.03	-0.02	-0.02	-0.01	0.00
R0.8	0.00	0.01	0.02	0.03	0.03	0.03	0.03	0.02	0.01	0.00	-0.02	-0.03	**-0.05**	-0.04	-0.03	-0.02	-0.01	0.00	0.00
R1.2	0.00	0.02	0.04	0.06	0.07	0.08	0.08	0.07	0.06	0.05	0.03	0.00	-0.03	-0.02	-0.01	0.00	0.01	0.00	0.00

External Holders C

C1 to C50



		SEC-External Tool Holder Series C2
		SEC-External Holder Cat. No. Identification Tables and Cutting Edge Position Dimensions C4
		SEC-External Holder Clamp Structure C6
		Internal Coolant Holders C8
Negative	CN** Insert Applicable Holders	DCLN-J/JE type / DCLN type C10
		PCLN type C11
		PCBN type / PCFN type C12
Positive	CC** Insert Applicable Holders	SCLC type C13
Negative	DN** Insert Applicable Holders	DDJN-J/JE type / DDJN type C14
		DDHN type C15
		PDJN type / DDNN type C16
Positive	DC** Insert Applicable Holders	SDJ/HC type C17
	RCM* Insert Applicable Holders	PRGC type / PRDC type C18
		SRGC type C19
		SRDC type C20
		SRSC type (Pos.) / DSBN type (Neg.) C21
Negative	SN** Insert Applicable Holders	DSDN type / DSSN type C22
		DTJN type C23
		PSBN type C24
		PSDN type type C25
		PSSN type / PSKN type C26
		ESBN type / ESDN type C27
		ESSN type / ESKN type C28
Positive	SP** Insert (Without Hole) Applicable Holders	CSRP type / CSDP type C29
		CSKP type C30
Negative	TN** Insert Applicable Holders	DTGN type / DTFN type C31
		PTGN type / PTTN type C32
		PTFN type C33
		ETGN type / ETAN type C34
		ETFN type C35
		ETEN type / ETXN type C36
		MTJN type / MTXN type C37
Positive	TP** Insert (Without Hole) Applicable Holders	CTGP type / CTAP type C38
		CTFP type C39
Negative	VN** Insert Applicable Holders	DVJN-J/JE type / DVJN type C40
		DVVN type / DVQN type C41
Positive	VC** Insert Applicable Holders	SVLC type / SVJC type C42
		SVVC type / SVPC type C43
Negative	WN** Insert Applicable Holders	DWLN-J/JE type / DWLN type C44
		PWLN-J/JE type / MWLN type C45
Positive	For Aluminum Wheel Turning	Tool Holders for Aluminum Wheel Turning C46
		SEC-MV series Profiling Tool Holders C47
		SEC-GD series Profiling Tool Holders C48
	Double Clamp Tool Holders	Clamp Set Parts C50

Stock Markings and Symbols

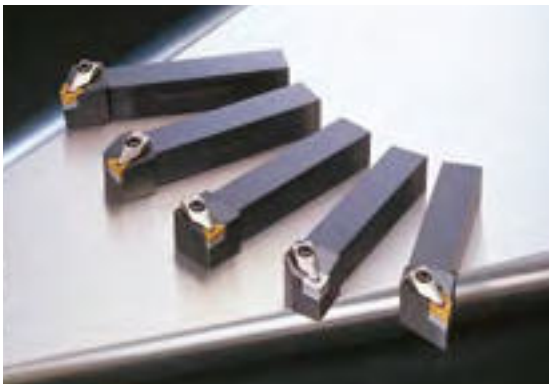
★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

External Tool Holder Series



■ General Features

Since the development of the clamp-on SEC-2 type holders in 1959 and the cam-lock SEC-3 type the following year, Sumitomo Electric Hardmetal has had more than 60 years of experience in producing and developing indexable tools. Presently, Sumitomo Electric Hardmetal provides a wide variety of top quality external turning tools to satisfy any machining needs with reliable and consistent performance.

*SEC: Steady & Easy Clamp. The generic code for our indexable insert tools.

■ Tooling Selection

Applications		General Turning (Facing)		General Turning and Profiling		General Turning			
Insert Shape		80° Diamond type C		55° Diamond type D		Triangular type T			
Structure	Type								
Double Clamp	M series Tool Holders / D series Tool Holders	DCLN-J/JE C10 DCLN C10	—	DDJN-J/JE C14 DDJN C14	DDHN C15	DTGN C31	DTFN C31	MTJN C37	MTXN C37
		—	—	DDNN C16	DTJN C23	—	—	—	—
Pin Lock	30 series Tool Holders	—	—	—	—	ETGN C34 ETAN C34	ETFN C35	ETEN C36	ETXN C36
Lever Lock	70 series Tool Holders	PCLC C26 D30	PCLN C11	PDJC D27 D32	—	PTGN C32	PTTN C32	PTFN C31	PTXN D29
		PCBN C12	PCFN C12	PDJN C16	—	—	—	—	—
Screw-on	Mini Holders	SCLC C13 D26 D30	SCAC D26 C31	SDJ/HC C17 D27 D32	SDAC D28 SDHC D33	STGC D36	STAC D36	—	—
		—	—	SDNC D34	SDPC D28	Clamp-on 40 series Tool Holders	CTGP/CTAP D36	CTFP C39	—

Figures in [ ] are previous model numbers and those in <> indicate the lead angle of the holder. Be careful of interference during turning.

Back Clamp Back Clamping Internal Coolant Internal Coolant Supply

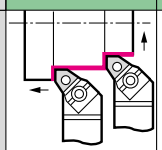
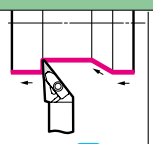
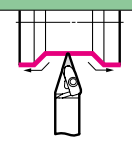
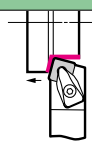
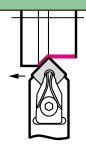
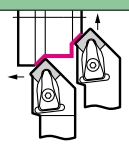
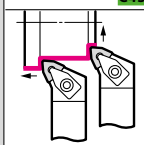
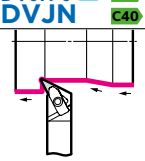
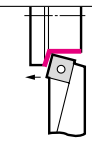
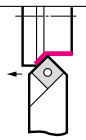
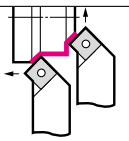
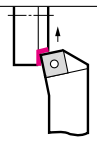
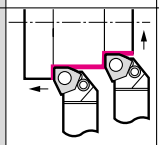
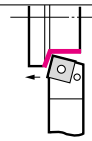
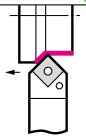
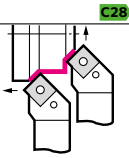
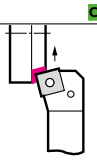
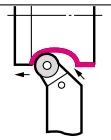
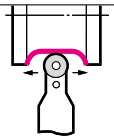
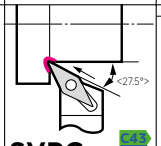
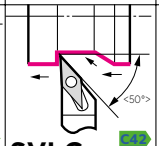
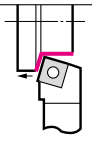
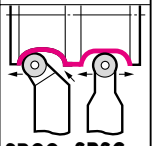
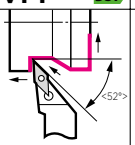
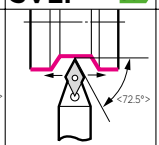
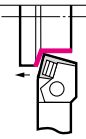
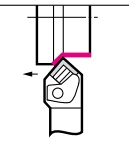
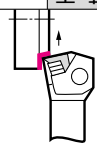
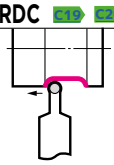
External Tool Holder Series

■ Performance Comparison Table

Series	Clamp Mechanism						Rake Angle		Clamp Rigidity	Operability	Indexing Accuracy	Chip Control
	P Lever Lock	E Pin Lock	C Lever Lock	M Pin & Clamp-on	S Screw-on	D Double Clamp	Negative	Positive				
SEC-D series Holders						○	○		◎	◎	◎	○
SEC-70 series Holders	○						○		◎	◎	◎	◎
SEC-30 series Holders		○					○		△	○	△	◎
SEC-M series Holders				○			○		◎	◎	○	○
SUMIBORON PR series Holders	○							○	◎	◎	◎	◎

◎ mark: Very good (1st recommendation) ◎ mark: Very good ○ mark: Good △ mark: OK

■ Tooling Selection

Applications		General Turning	General Turning and Profiling		General Turning				Special Turning
Insert Shape		Trigon type W	35° Diamond type V		Square type S				Round type R
Structure	Type								
Double Clamp	M series Tool Holders D series Tool Holders	 MWLN C45	 DVJN-J C40 DVJN C40	 DVVN C41	 DSBN C21	 DSDN C22	 DSSN C22	—	—
		 DWLN-J C42 DWLN C42	 DVQN C41	—	—	—	—	—	—
Pin Lock	30 series Tool Holders	—	—	—	 ESBN C27	 ESDN C27	 ESSN C28	 ESKN C28	—
Lever Lock	70 series Tool Holders	 PWLN C45	—	—	 PSBN C24	 PSDN C25	 PSSN C24	 PSKN C24	 PRGC C18
		—	—	—	—	—	—	—	 PRDC C18
Screw-on	Mini Holders	—	 SVPC C43 D36 SVPP D37	 SVLC C42 D36 SVLP D37	 SSBC D36	—	—	Holders for Round type Inserts	 SRGC SRSC SRDC C19 C20
	SV series Profiling Tool Holders	—	 SVJC C42 D29	 SVVC C43	Clamp-on 40 series Tool Holders Roll Turning Tool Holder	 CSRP C29	 CSDP C29	 CSKP C30	 BNRN L141

Figures in [ ] are previous model numbers and those in <> indicate the lead angle of the holder. Be careful of interference during turning.

Back Clamping Back Clamp Internal Coolant Supply Internal Coolant

External Holder Cat. No. Identification Tables

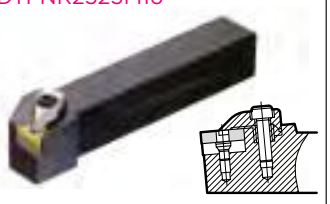
■ SEC-External Holder Cat. No. Identification Tables

Example: **D T F N R 25 25 (-) M 16 (E)**

(1) Clamping System — Refer to Table 1
(2) Insert Shape — Refer to Table 2
(3) Cutting Edge Shape Code — Refer to Table 3
(4) Insert Relief Angle — Refer to Table 4
(5) Feed Direction — Refer to Table 5
(6) Shank Height — Refer to Table 6
(7) Shank Width — Refer to Table 7
(8) Shank Length — Refer to Table 8
(9) Insert Cutting Edge Length — B3 (Table 5) — Previous cat. nos.: See Table 9
(10) Insert Thickness — Refer to Table 10 — Added only for holders with the same catalogue numbers but different insert thicknesses
(11) Shim — Added only for holders with shims. Added only for holders with shims such as SEC-30/GD types.

● Example

DTFNR2525M16



- Structure: Double Clamp Method
- Shape: With Triangle Insert, Cutting Angle 91°
- Shank: H - 25mm, W - 25mm, L - 150mm

Table 1

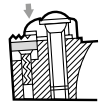
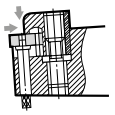
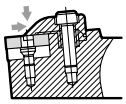
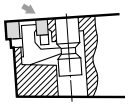
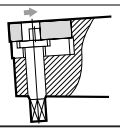
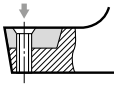
(1) Clamping System					
Symbol	Clamp	Structure	Symbol	Clamp	Structure
C	Clamp-on		M	Clamp-on + Pin Lock	
D	Double Clamp		P	Lever Lock (Insert is supported by 2 faces)	
E	Pin Lock (Insert is supported by 1 face)		S	Screw-on	

Table 2

(2) Insert Shape			
Symbol	Insert Shape	Symbol	Insert Shape
A	85° Apex Angle Parallelogram	M	86° Apex Angle Diamond type
B	82° Apex Angle Parallelogram	O	Octagonal type
C	80° Apex Angle Diamond type	P	Pentagonal type
D	55° Apex Angle Diamond type	R	Round type
E	75° Apex Angle Diamond type	S	Square type
F	50° Apex Angle Diamond type	T	Triangular type
H	Hexagonal type	V	35° Apex Angle Diamond type
K	55° Apex Angle Parallelogram	W	Trigon type
L	Rectangular type		

Table 4

(4) Insert Relief Angle	
Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special Relief Angle

Table 5

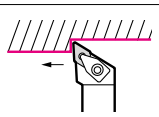
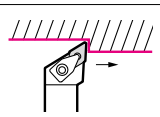
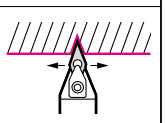
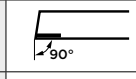
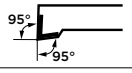
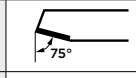
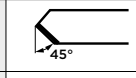
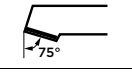
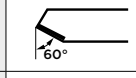
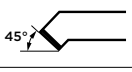
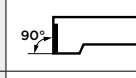
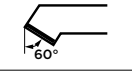
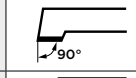
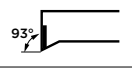
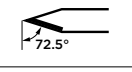
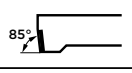
(5) Feed Direction					
Symbol	Right-handed	Symbol	Left-handed	Symbol	Neutral
R		L		N	

Table 3

(3) Cutting Edge Shape Code (▬ indicates main cutting edge)					
Symbol	Shape	Offset	Symbol	Shape	Offset
A*		No	L		Yes
B		No	N		No
D		No	R		Yes
E		No	S		Yes
F*		Yes	T		Yes
G*		Yes	U		Yes
J		Yes	V		No
K		Yes	Y		Yes

* 91° on our products

Table 6

(6) Shank Height	
Symbol	Height (mm)
12	12
16	16
20	20
25	25
32	32
40	40
50	50

2 digits each are used for shank height and width dimensions in mm.

Table 7

(7) Shank Width	
Symbol	Width (mm)
12	12
16	16
20	20
25	25
32	32
40	40
50	50

Table 10

(10) Insert Thickness			
Symbol	Thickness (mm)	Symbol	Thickness (mm)
X1	1.40/1.80*	04	4.76
01	1.59	05	5.56
02	2.38	06	6.35
T2	2.78	07	7.94
03	3.18	09	9.52
T3	3.97		

*CCET03X1→1.40, CCET04X1→1.80

Table 8

(8) Shank Length	
Symbol	Length (mm)
F	80
H	100
K	125
M	150
N	160
P	170
Q	180
S	250
T	300
U	350

For some previous catalogue numbers, a hyphen (-) is used instead of a letter.

Table 9: Applicable for previous cat. nos. only

Insert Inscribed Circle			Insert Thickness	
Symbol	Inscribed Circle (mm)	+	Symbol	Thickness (mm)
3	9.525	+	2	3.18
4	12.70	+	3	4.76
5	15.875	+	4	6.35
6	19.05	+	5	7.94
8	25.40	+	6	9.52

In previous Cat. Nos., the inscribed circle and insert thickness symbols are combined and displayed as a 2-digit code.

For Round type Inserts

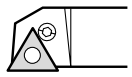
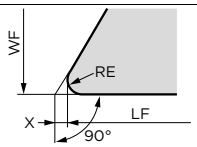
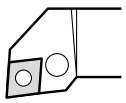
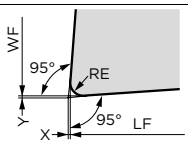
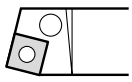
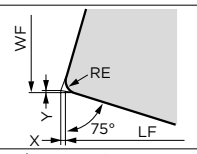
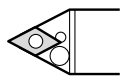
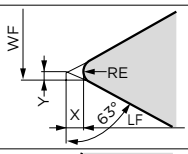
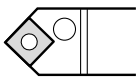
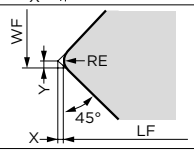
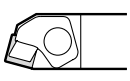
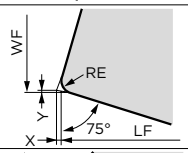
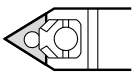
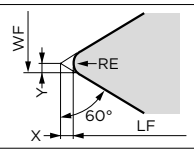
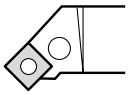
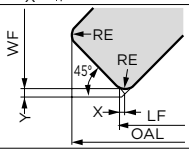
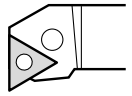
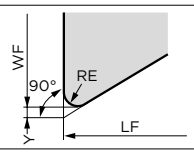
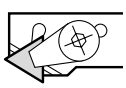
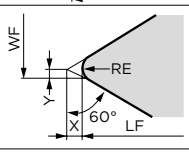
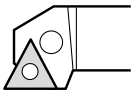
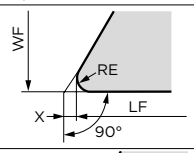
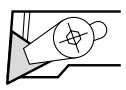
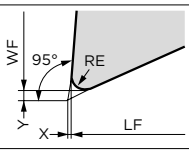
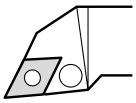
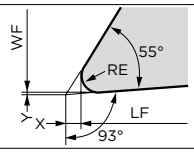
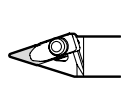
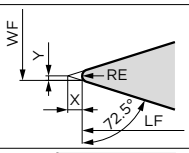
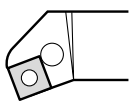
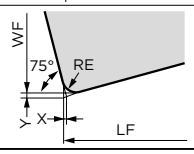
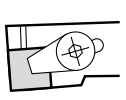
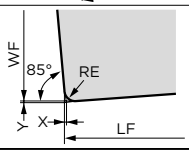
Symbol	Inscribed Circle (mm)
10	10
12	12
16	16
20	20
25	25
32	32

Cutting Edge Position Dimensions

■ Cutting Position Dimensions and Corner Radius

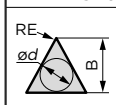
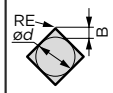
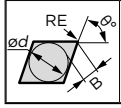
● Cutting position dimensions by corner radius (ISO standard)

(Values for X and Y in the table are with lateral rake angle and cutting edge inclination angle of 0°.)

Tool Shape			Dimensions (mm)			Tool Shape			Dimensions (mm)		
Symbol	Shape	Close-up of Cutting Edge	RE	X	Y	Symbol	Shape	Close-up of Cutting Edge	RE	X	Y
A			0.4	0.291	—	L			0.4	0.040	0.040
			0.8	0.581	—				0.8	0.079	0.079
			1.2	0.872	—				1.2	0.119	0.119
			1.6	1.162	—				1.6	0.159	0.159
			2.4	1.743	—				2.4	0.238	0.238
B			0.4	0.089	0.024	N			0.4	0.463	0.263
			0.8	0.178	0.048				0.8	0.925	0.471
			1.2	0.268	0.072				1.2	1.388	0.707
			1.6	0.357	0.096				1.6	1.850	0.943
			2.4	0.535	0.143				2.4	2.776	1.414
D			0.4	0.164	0.164	R			0.4	0.089	0.024
			0.8	0.329	0.329				0.8	0.178	0.048
			1.2	0.493	0.493				1.2	0.268	0.072
			1.6	0.658	0.658				1.6	0.357	0.096
			2.4	0.986	0.986				2.4	0.535	0.143
E			0.4	0.396	0.229	S			0.4	0.164	0.164
			0.8	0.793	0.458				0.8	0.329	0.329
			1.2	1.190	0.687				1.2	0.493	0.493
			1.6	1.587	0.916				1.6	0.658	0.658
			2.4	2.381	1.374				2.4	0.986	0.986
F			0.4	—	0.291	T			0.4	0.396	0.229
			0.8	—	0.581				0.8	0.793	0.458
			1.2	—	0.872				1.2	1.190	0.687
			1.6	—	1.162				1.6	1.587	0.916
			2.4	—	1.743				2.4	2.381	1.374
G			0.4	0.291	—	U			0.4	0.253	0.058
			0.8	0.581	—				0.8	0.506	0.116
			1.2	0.872	—				1.2	0.759	0.175
			1.6	1.162	—				1.6	1.013	0.233
			2.4	1.743	—				2.4	1.519	0.350
J			0.4	0.344	0.033	V			0.4	0.923	0.291
			0.8	0.687	0.079				0.8	1.846	0.582
			1.2	1.031	0.118				1.2	2.770	0.873
			1.6	1.375	0.157				1.6	3.693	1.164
			2.4	2.062	0.236				2.4	5.537	1.746
K			0.4	0.024	0.089	Y			0.4	0.002	0.033
			0.8	0.048	0.178				0.8	0.005	0.066
			1.2	0.072	0.268				1.2	0.008	0.099
			1.6	0.096	0.357				1.6	0.011	0.132
			2.4	0.143	0.535				2.4	0.017	0.198

● Corner radius position calculation

Calculation Formula for Corner Radius Position (mm)

Shape		Formula
	Triangular type	B = 3/2d - RE
	Square type	B = ($\sqrt{2}$ - 1) × (d/2 - RE)
	Diamond type	B = (1/Sin (θ° /2) − 1) × (d/2 − RE)

Values of IC and RE for the Calculation of B (mm)

Inscribed Circle Nominal Value	IC for Calculation
3.97	3.9688
4.76	4.7625
5.56	5.5562
6.35	6.3500
7.94	7.9375
9.525	9.5250
12.70	12.7000
15.875	15.8750
19.05	19.0500
25.40	25.4000

Corner Radius	Nominal Value	RE for Calculation
02	0.2	0.203
04	0.4	0.397
08	0.8	0.794
12	1.2	1.191
16	1.6	1.588
24	2.4	2.381

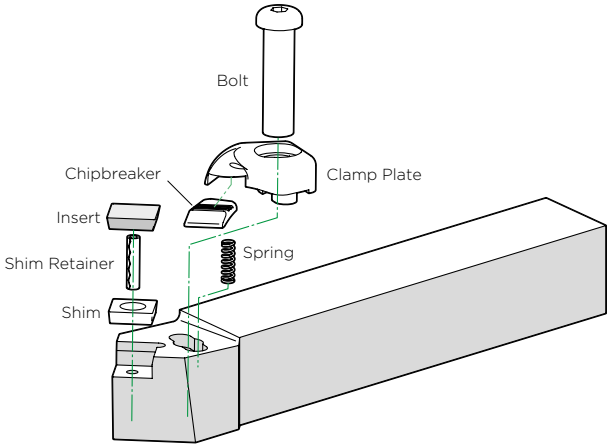
External Holder Clamp Structure

■ SEC-External Holder Clamp Structure List (Examples)

C Clamp-on

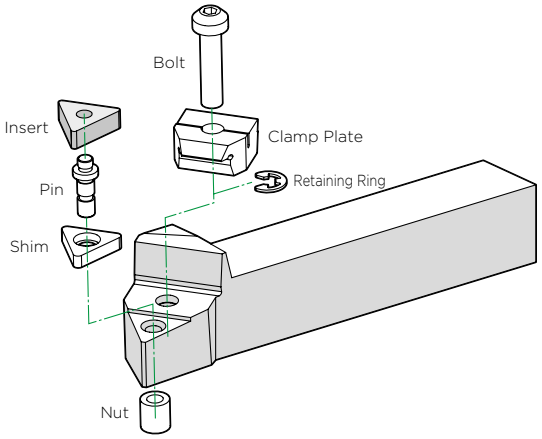
CSRP type / CSDP type / CSKP type / CTGP type / CTAP type / CTFP type





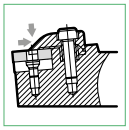
M Clamp-on + Pin Lock

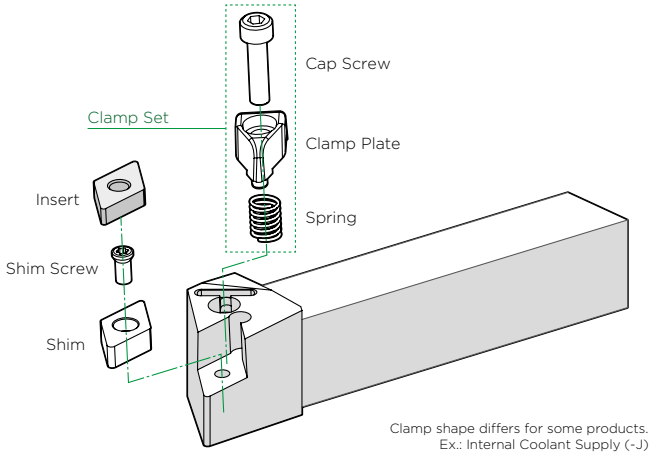
MTJN type / MTXN type / MWLN type



D Double Clamp

DCLN(-J) type / DDJN(-J) type / DDHN type / DDNN type
DSBN type / DSDN type / DSSN type / DTGN type / DTFN type
DVJN(-J) type / DVVN type / DVQN type / DWLN(-J) type

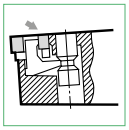


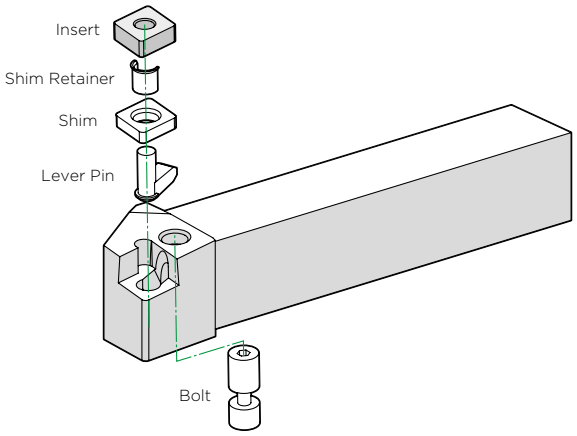


Clamp shape differs for some products.
Ex.: Internal Coolant Supply (-J)

P Lever Lock

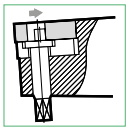
PCLN type / PCBN type / PCFN type / PDJN type
PRGC type / PRDC type / PSBN type / PSDN type / PSSN type / PSKN type
PTGN type / PTTN type / PTFN type / PWLN type

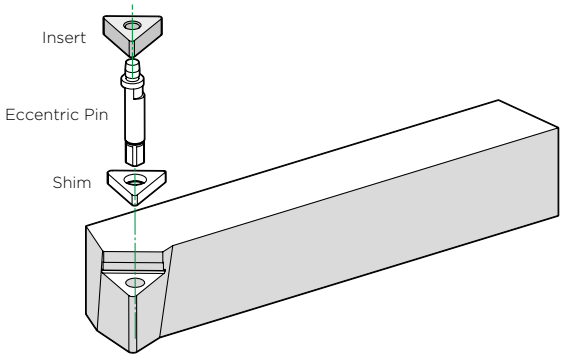




E Pin Lock

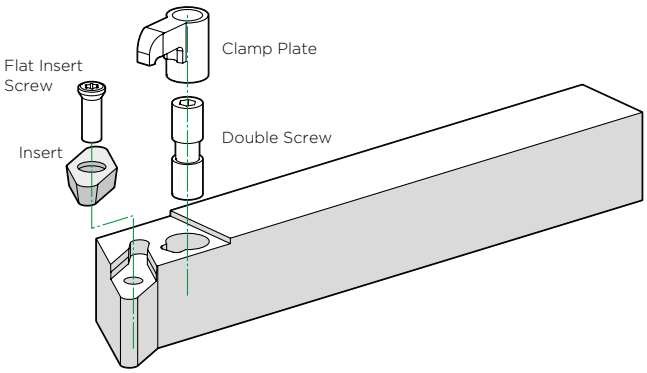
ESBN type / ESDN type / ESSN type / ESKN type
ETGN type / ETAN type / ETFN type / ETEN type / ETXN type





Screw-on + Clamp-on

MVXC type Profiling Tool Holders / MVPC type Profiling Tool Holders



MEMO

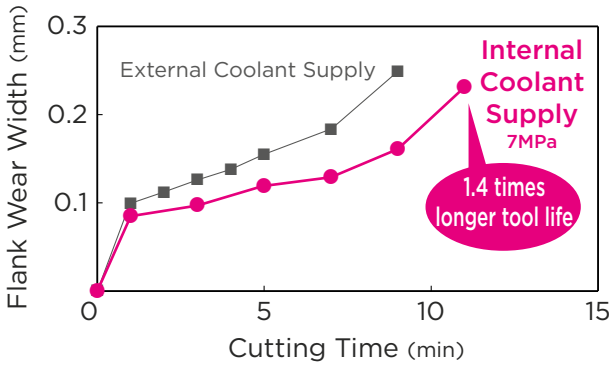
Internal Coolant Holders

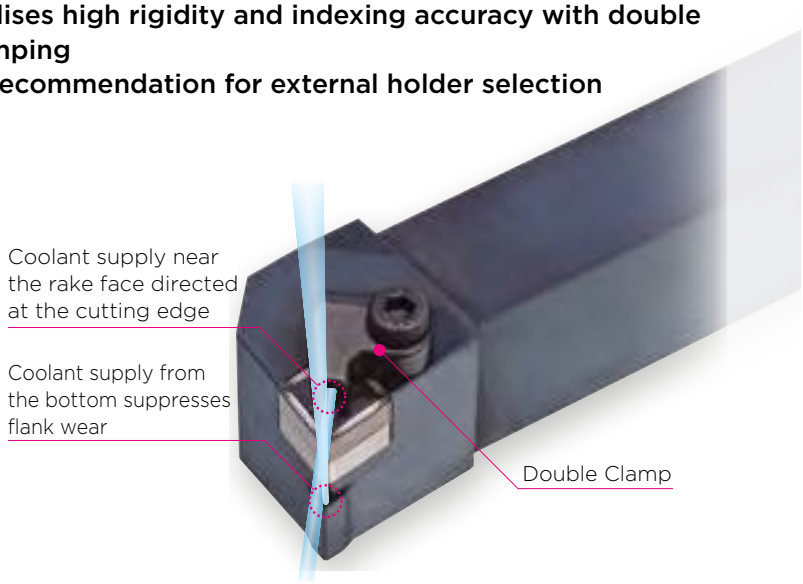


■ Features

- Through-clamp internal coolant supply holder improves chip evacuation and tool life
- Enables directed coolant supply from a close range, towards the cutting edge
- Suppresses flank wear with additional coolant supply to the flank face
- Realises high rigidity and indexing accuracy with double clamping
- 1st recommendation for external holder selection

■ Wear Resistance



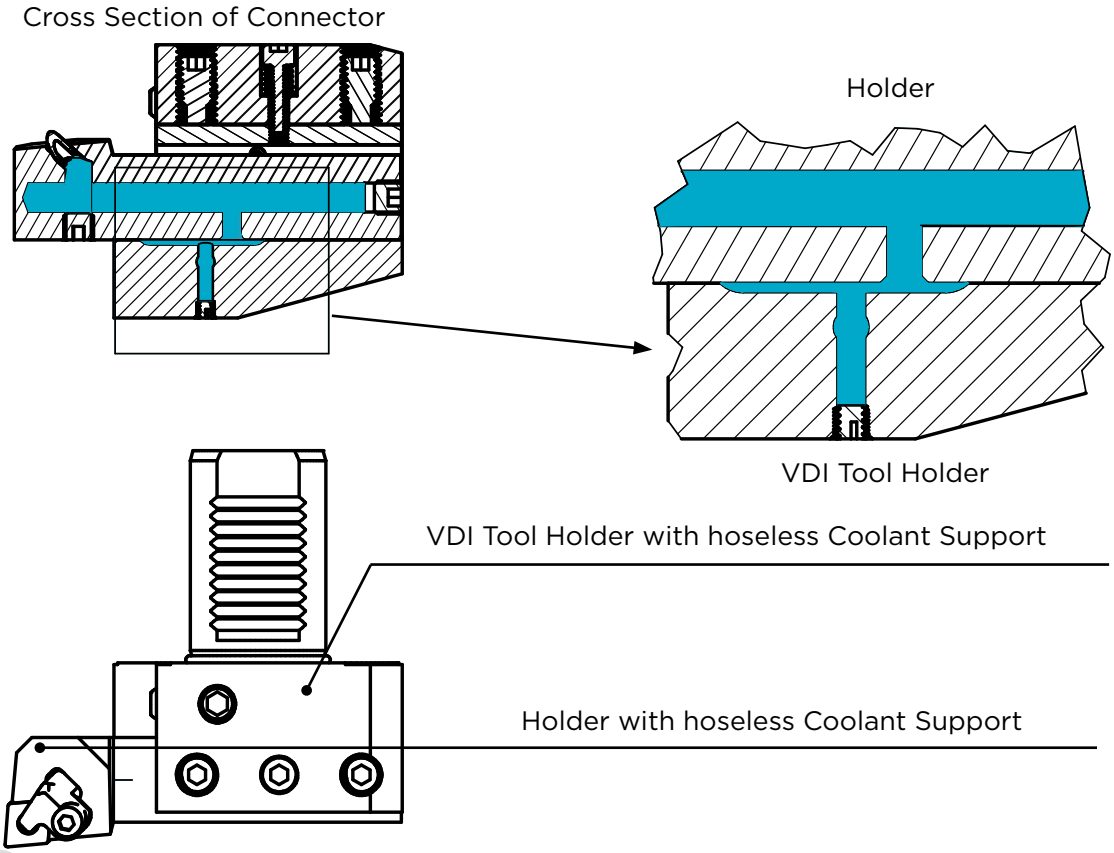


Work Material: X5CrNiMo17-12-2 Holder: DDJN R2525K15-J Insert: DNMG150408N-FE Cutting Conditions: vc = 300m/min* f = 0.1mm/rev ap = 0.5mm Wet

*Evaluated under high-speed cutting conditions due to accelerated testing.

■ Holder with Hoseless Coolant Support

Direct coolant supply from the holder is possible without a hoseDirect



Internal Coolant Holders

■ Parts for Internal Coolant Holder Piping

Fig 1

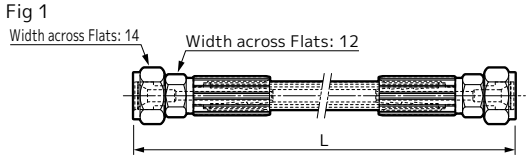


Fig 1

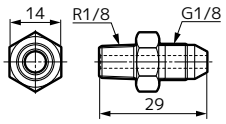


Fig 2

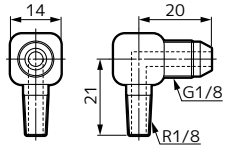


Fig 3

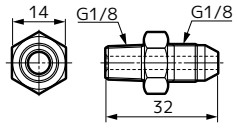
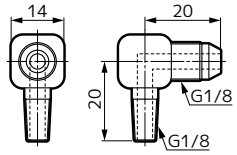


Fig 4



Parts (Hose)

Dimensions (mm)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200 (E)	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300 (E)	★	300	G1/8	G1/8	1

Hoses are sold separately.

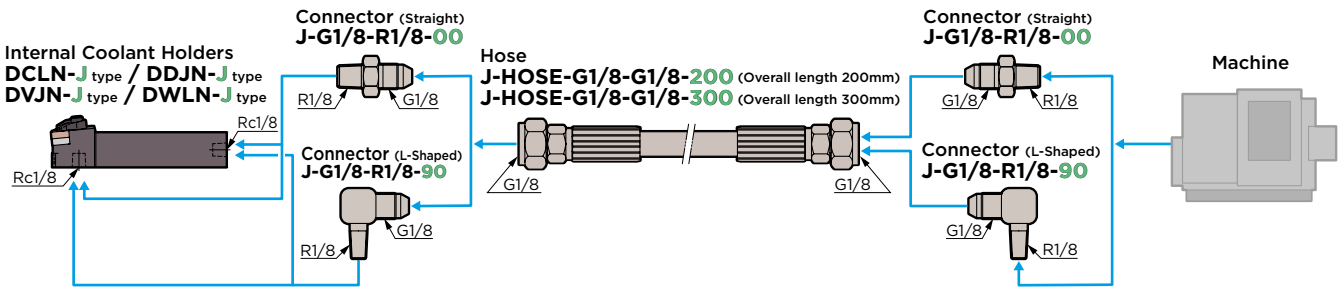
Parts (Connector)

Dimensions (mm)

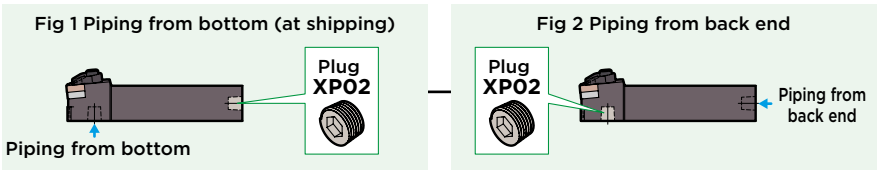
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2
J-G1/8-G1/8-00	★	G1/8	G1/8	3
J-G1/8-G1/8-90	★	G1/8	G1/8	4

Connectors are sold separately.

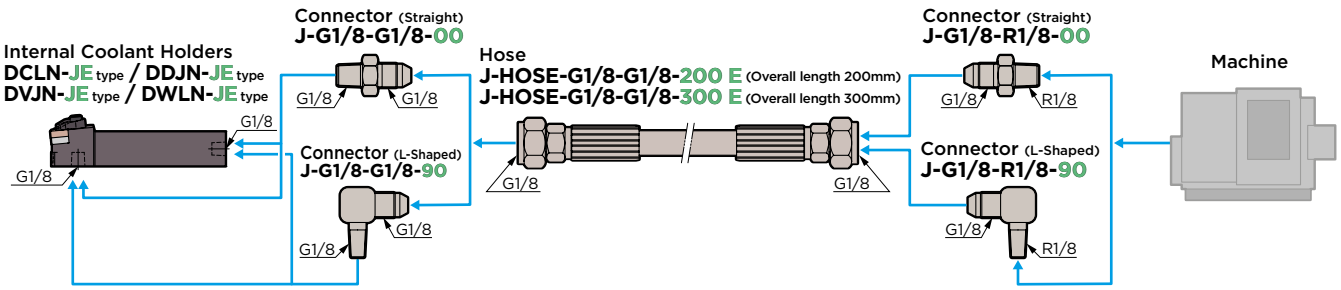
■ Piping Method for J-Type



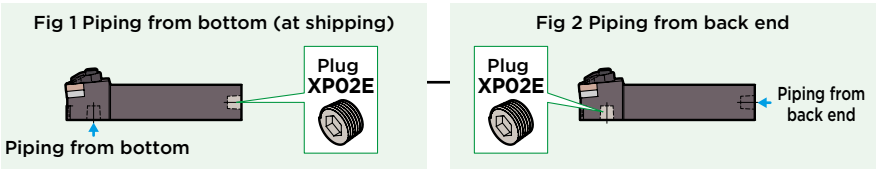
- Apply sealant such as commercial sealing tape to the piping connection parts.
- Internal coolant holders have a plug (XP02) mounted on the holder back end at shipping. (Fig 1)
  When piping from the holder's back end, secure the plug (XP02) at the bottom of the holder. (Fig 2)



■ Piping Method for JE-Type (European Standard)

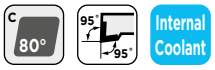


- Apply sealant such as commercial sealing tape to the piping connection parts.
- Internal coolant holders have a plug (XP02E) mounted on the holder back end at shipping. (Fig 1)
  When piping from the holder's back end, secure the plug (XP02E) at the bottom of the holder. (Fig 2)



Coolant pressure supports up to max. 15 MPa.
To maximise coolant effects on the flank and prevent holder interference, use with an insert with corner radius RE 0.4 to 1.2 mm.

DCLN-J type / DCLN type



SEC-D series Holder - General Turning, Facing and Profiling
Internal Coolant Supply, Double Clamp

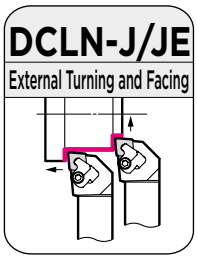


Fig 1

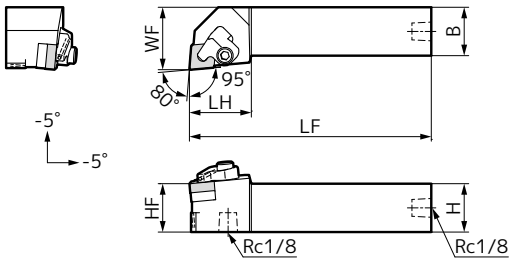


Figure shows right-handed (R) tool.

Fig 2

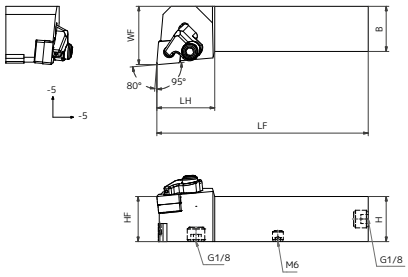


Figure shows right-handed (R) tool.

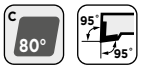
Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	Applicable Insert ISO Cat. No.	Fig.	Clamp Plate	Cap Screw	N·m	Spring	O-ring	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Plug
			Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head										(For Torx hole)	(For hexagonal hole)	(For hexagonal hole)	
DCLN R/L 2020 K12J	★	★	20	20	102	25	20	32	CN□□1204	1	JCR/L-01	CP-M5-20-1	5.0	CSP12J	SS060	CNS1204	BFTX0409N	TRX15(*)	LH040	LH025	XP02
DCLN R/L 2525 K12J	★	★	25	25	117	32	25	32													
DCLN R/L 2020X 12JE	★	★	20	20	102	25	20	32		2											XP03-E
DCLN R/L 2525X 12JE	★	★	25	25	117	32	25	32													

*Wrench for shim is sold separately from the main body.



SEC-D series Holder - General Turning, Facing and Profiling
Double Clamp

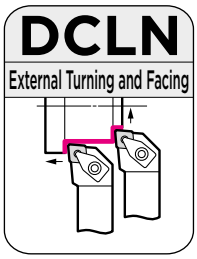


Fig 1

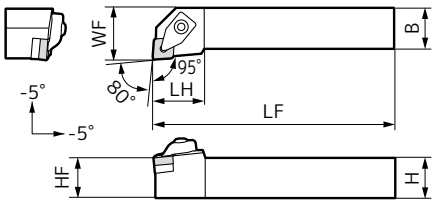


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
			Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head								(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DCLN R/L2020 K12	★	★	20	20	125	25	20	32	CN□□1204	B14 ~	1	SCP2	5.0	CNS1204	BFTX0409N	TRX15(*)	LH040	LH025
DCLN R/L2525 M12	★	★	25	25	150	32	25	32			1							
DCLN R/L2525 M16	★	★	25	25	150	32	25	32	CN□□1606	B18 ~	1	SCP3	5.0	CNS1606	BFTX0509N	TRX20(*)	LH040	LH025
DCLN R/L3232 P16	★	★	32	32	170	40	32	32			1							
DCLN R/L3232 P19	★	★	32	32	170	40	32	42	CN□□1906	B20 ~	1	SCP5	5.0	CNS1906	BFTX0511N	TRX20(*)	LH040	LH025
DCLN R/L4040 S19	★	★	40	40	250	50	40	42			1							
DCLN R/L4040 S25	★	★	40	40	250	50	40	53	CN□□2509	B22	1	SCP6	6.0	CNS2509	BFTX0615N	TRD25(*)	LH060	—

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C48

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PCLN type

SEC-70 series Holder - General Turning, Facing and Profiling
Lever Lock

PCLN
External Turning and Facing

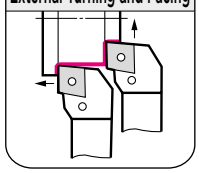


Fig 1

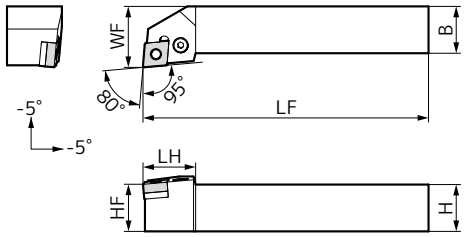


Figure shows right-handed (R) tool.

Fig 2

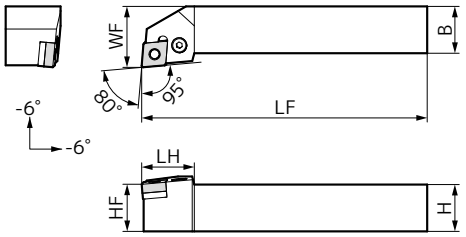
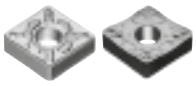


Figure shows right-handed (R) tool.

Inserts

Eg.



N-GU N-HG

❶ CNMG 090308 N-SU
❷ CNMG 120408 N-GU
❸ CNMG 160612 N-GU
❹ CNMM 190612 N-HG

Holders

Spare Parts

ISO Cat. No.	Stock R	Stock L	H	HF	B	LF	LH	WF	Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
PCLN R/L1616 H09	★	★	16	16	16	100	25,7	20	LCL3SD	LCS3TB-SD	LSC32SD	LSP3SD	LH025	❶
PCLN R/L2020 K09	★		20	20	20	125	27	25						
PCLN R/L2525 M09			25	25	25	150	27	32						
PCLN R/L1616 H12	★	★	16	16	16	100	26,1	20	LCL4SD	LCS 4CA / LCS42BS-SD	LSC42SD	LSP4SD	LH030	❷
PCLN R/L2020 K12	★	★	20	20	20	125	27,4	25						
PCLN R/L2525 M12	★	★	25	25	25	150	28	32						
PCLN R/L3225 P12	★	★	32	32	25	170	28	32						
PCLN R/L2525 M16	★		25	25	25	150	32,6	32	LCL5SD	LCS5B-SD	LSC53SD	LSP5SD	LH030	❸
PCLN R/L3225 P16	★		32	32	25	170	32,6	32						
PCLN R/L3232 P16	★	★	32	32	32	170	32,6	40						
PCLN R/L2525 M19	★	★	25	25	25	150	37	32	LCL6SD	LCS6B-SD	LSC63SD	LSP6SD	LH040	❹
PCLN R/L3225 P19	★		32	32	32	170	38	32						
PCLN R/L3232 P19			32	32	32	170	38	40						
PCLN R/L4040 S19			40	40	40	250	37,8	50						

Applicable Inserts ◂·· DCLN-J type / DCLN type / PCLN type / PCBN type / PCFN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD Photo / Grade — GU / AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2115	SUMIBORON BN1000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC2135	SUMIBORON BN350
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~		☞ A20 ~	

Above figures show right hand tools.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
BNC500 is for ductile cast iron
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PCBN type / PCFN type



SEC-70 series Holder - General Turning
Lever Lock

PCBN External Turning

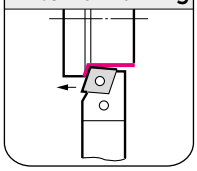


Fig 1

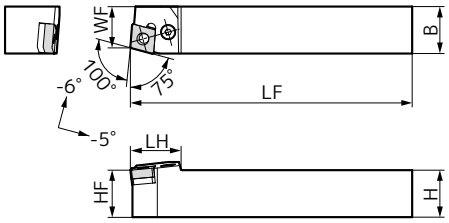
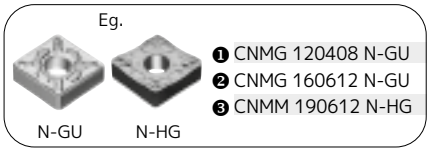


Figure shows right-handed (R) tool.

Inserts



Holders

ISO Cat. No.	Stock R	Stock L	H	HF	B	LF	LH	WF	Applicable Insert ISO Cat. No.	Ref. Page	Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
PCBN R/L2020 K12	★	★	20	20	20	125	27	17	CN□□1204	B14~	LCL4SD	LCS42BS-SD	LSC42SD	LSP4SD	LH030	❶
PCBN R/L2525 M12	★	★	25	25	25	150	27,7	22								
PCBN R/L3225 P12		★	32	32	25	170	27,7	22								
PCBN R/L2525 M16		★	25	25	25	150	31,7	22	CN□□1606	B18~	LCL5SD	LCS5B-SD	LSC53SD	LSP5SD	LH030	❷
PCBN R/L3225 P16			32	32	25	170	31,7	22								
PCBN R/L3232 P19	★	★	32	32	32	170	37,9	27	CN□□1906	B20~	LCL6SD	LCS6B-SD	LSC63SD	LSP6SD	LH040	❸

Spare Parts



SEC-70 series Holder - General Turning, Facing and Profiling
Lever Lock

PCFN Facing

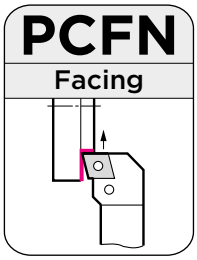


Fig 1

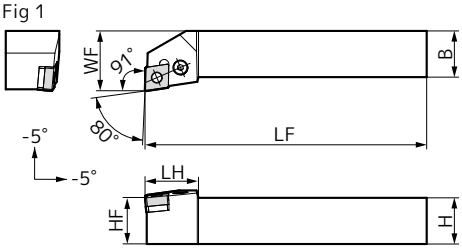


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
PCFN R/L2020 K12	PCFN R/L2020-43	★	★	20	20	125	25	20	28	CN□□1204	B14 ~	1	LCL4	LCS4	LSC42	LSP4	LH030
PCFN R/L2520 M12	PCFN R/L2520-43			25	20	150	25	25	28			1					
PCFN R/L2525 M12	PCFN R/L2525-43	★	★	25	25	150	32	25	28			1					
PCFN R/L3225 P12	PCFN R/L3225-43			32	25	170	32	32	28			1					

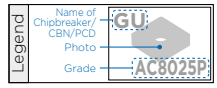
(For Hexagonal hole)

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ··· DCLN-J type / DCLN type / PCLN type / PCBN type / PCFN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2115	SUMIBORON BN1000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC2135	SUMIBORON BN350
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~		☞ A20 ~	

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SCLC type

SEC-SC series Holder - General Turning and Facing Screw-on

SumiSmall

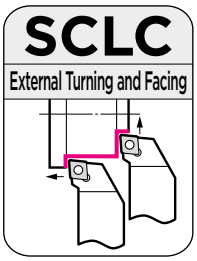


Fig 1

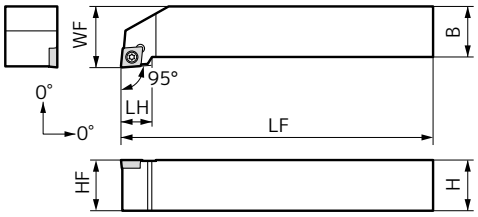


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SCLC R/L0808 D06				8	8	60	10	8		CC□□0602	**B68 ~**	1	BFTX02506N	**1.5**	TRX08
SCLC R/L1010 E06		★	★	10	10	70	12	10				1			
SCLC R/L0808 H06	SCLC R/L0808-06	★	★	8	8	100	10	8	—			1			
SCLC R/L1010 H06	SCLC R/L1010-06	★	★	10	10	100	12	10	15			1			
SCLC R/L1212 F09		★	★	12	12	80	16	12		CC□□09T3	**B71 ~**	1	BFTX0409N	**3.4**	TRX15
SCLC R/L1212 H09	SCLC R/L1212-09	★	★	12	12	100	16	12	15			1			
SCLC R/L1616 H09	SCLC R/L1616-09	★	★	16	16	100	20	16	15			1			
SCLC R/L2020 H09		★		20	20	100	20	25				1			
SCLC R/L2020 K09	SCLC R/L2020-09	★	★	20	20	125	25	20	15			1			
SCLC R/L2525 M09	SCLC R/L2525M-09	★	★	25	25	150	30	25	15			1			
SCLC R/L2020 K12		★	★	20	20	125	25	20		CC□□1204		1	BFTX0511N	**5.0**	TRX20
SCLC R/L2525 M12		★	★	20	25	150	32	25				1			

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ◂·· SCLC type

1st Recommended Insert

● Refer as well to the Insert Selection Guide (Page A10 ~).
● Depending on the insert size, some combinations cannot be made to order or manufactured.

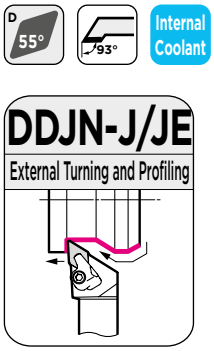
Legend: Name of Chipbreaker/ CBN/PCD Photo — GU — Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6135M	SUMIBORON BN7125/BNC500	MU AC4015K	No Chipbreaker AC4015K	SU AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
High-precision	FF AC1030U	SI AC1030U	SC AC1030U	FF AC1030U	SI AC1030U	SC AC1030U	SUMIBORON BN7125/BNC500	—	—	SI AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DDJN-J/JE type / DDJN type



SEC-D series Holder - General Turning and Profiling
Internal Coolant Supply, Double Clamp

Fig 1

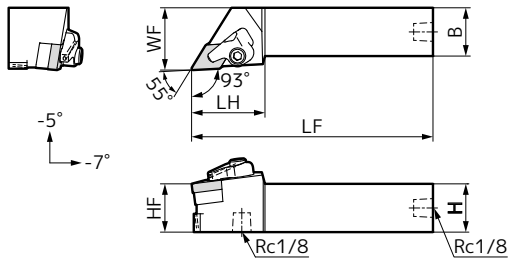


Figure shows right-handed (R) tool.

Fig 2

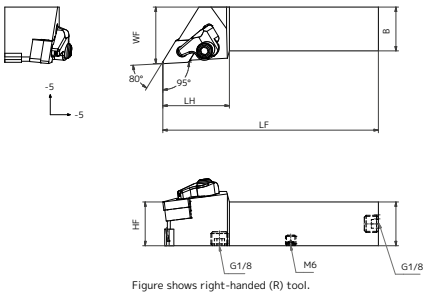


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Cap Screw	Cap Screw N·m	Spring	O-ring	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Plug
														N·m					 (For Torx hole)	 (For Hexagonal hole)	 (For Hexagonal hole)	
DDJN R/L2020 K15-J	★	★	20	20	125	25	20	38	DN□□1504	**B24 ~**	1	JDR/L-01	CP-M5-20-1	**5.0**	CSP12J	SS060	DNS1504	BFTX0409N	TRX15(*)	LH040	LH025	XP02
DDJN R/L2020 K15-JE	★	★	20	20	108	25	20	32			2											XP03-E
DDJN R/L2525 K15-J	★	★	25	25	125	32	25	38			1											XP02
DDJN R/L2525 X15E-JE	★	★	25	25	123	32	25	32			2											XP03-E
DDJN R/L2525 K15E-J	★	★	25	25	125	32	25	38	DN□□1506	**B28 ~**	1						DNS1506					XP02
DDJN R/L2525 X15E-JE	★	★	25	25	123	32	25	32			2											XP03-E

*Wrench for shim is sold separately from the main body.

SEC-D series Holder - General Turning and Profiling
Double Clamp

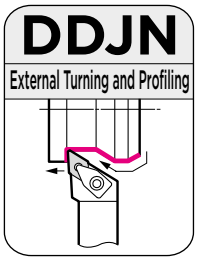


Fig 1

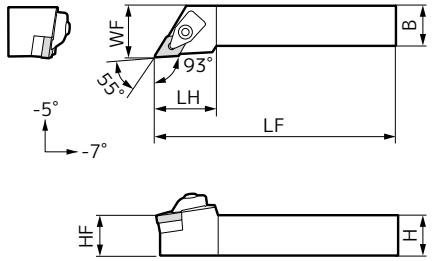


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
													N·m			 (For Torx hole)	 (For Hexagonal hole)	 (For Hexagonal hole)
DDJN R/L2020 K15	★	★	20	20	125	25	20	38	DN□□1504					DNS1504				
DDJN R/L2020 K15E	★	★	20	20	125	25	20	38	DN□□1506	**B24 ~**	1	SCP2	**5.0**	DNS1506	BFTX0409N	TRX15(*)	LH040	LH025
DDJN R/L2525 M15	★	★	25	25	150	32	25	38	DN□□1504					DNS1504				
DDJN R/L2525 M15E	★	★	25	25	150	32	25	38	DN□□1506	**B28 ~**		SCP2	**5.0**	DNS1506				

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DDHN type



SEC-D series Holder - General Turning and Profiling
Double Clamp

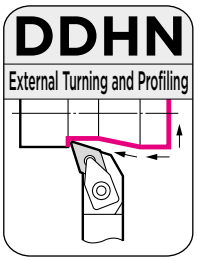


Fig 1

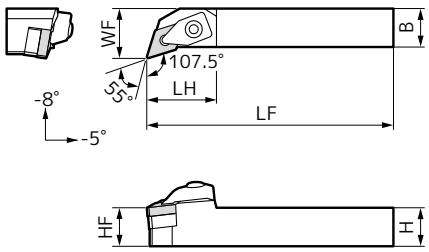


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set (N·m)	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
																(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DDHN R/L2020 K15	★	★	20	20	125	25	20	35	DN□□1504	B24 ~	1	SCP2	5.0	DNS1504	BFTX0409N	TRX15(*)	LH040	LH025
DDHN R/L2020 K15E	★	★	20	20	125	25	20	35	DN□□1506		1			DNS1506				
DDHN R/L2525 M15	★	★	25	25	150	32	25	35	DN□□1504		1			DNS1504				
DDHN R/L2525 M15E	★	★							DN□□1506		1			DNS1506				

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C50

Applicable Inserts ◂·· DDJN-J type / DDJN type / DDHN type / DDNN type / PDJN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC2135	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

DDNN type / PDJN type



SEC-D series Holder - General Turning and Profiling
Double Clamp

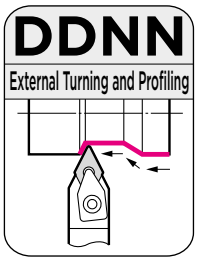


Fig 1

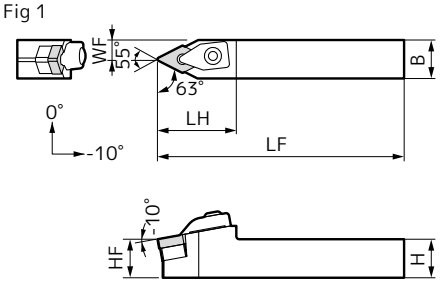
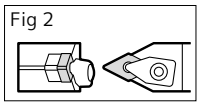


Fig 2



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
															(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DDNN N2020 K15	★	20	20	125	10.5	20	40	DN□□1504	B24 ~	1	SCP2	5.0	DNS1504	BFTX0409N 3,4	TRX15(*)	LH040	LH025
DDNN N2020 K15E	★	20	20	125	10.5	20	40	DN□□1506					DNS1506				
DDNN N2525 M15	★	25	25	150	13.0	25	40	DN□□1504		2			DNS1504				
DDNN N2525 M15E	★	25	25	150	13.0	25	40	DN□□1506					DNS1506				

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50



SEC-70 series Holder - General Turning and Profiling
Lever Lock

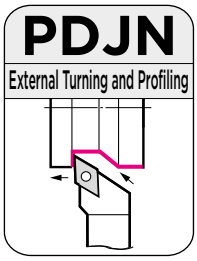
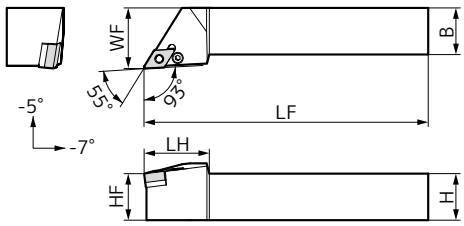


Fig 1



Inserts

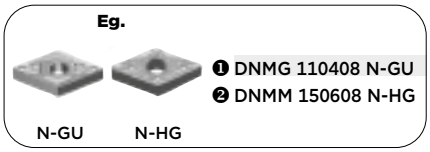


Figure shows right-handed (R) tool.

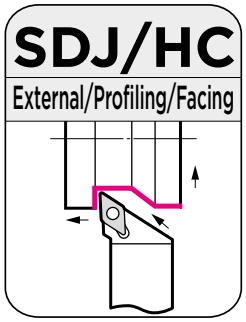
Holders

Parts

ISO Cat. No.	Stock R	Stock L	H	HF	B	LF	LH	WF	Applicable Inserts ISO Cat. No.	Applicable Inserts Ref. Page	Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
PDJN R/L1616 H11	★		16	16	16	100	30	20	DN□□1104	B23~	LCL3D-SD	LCS3TB-SD	LSD32SD	LSP3SD	LH025	❶
PDJN R/L2020 K11	★	★	20	20	20	125	30	25								
PDLN R/L2525 M11	★	★	25	25	25	150	30	32								
PDJN R/L2020 K15	★	★	20	20	20	125	34,7	25	DN□□1506	B28~	LCL4D-SD	LCS5DB-SD	LSD42SD	LSP4SD	LH030	❷
PDJN R/L2525 M15	★	★	25	25	25	150	34,7	32								
PDJN R/L3225 P15	★	★	32	32	25	170	34,7	32								

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SDJ/HC type



SEC-SD series Profiling Tool Holder - General Turning , Facing and Profiling Screw-on

Fig 1

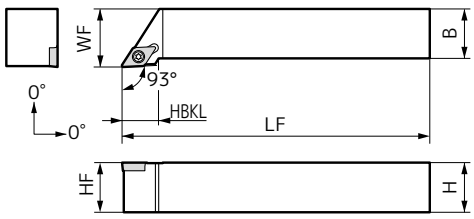
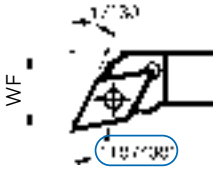


Figure shows right-handed (R) tool.

Fig 2

SDHC R/L



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head HBKL	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDJC R/L0808 H07	SDJC R/L0808-07	★		8	8	100	10	8	15			1			
SDJC R/L1010 E07		★		10	10	70	10	10				1			
SDJC R/L1010 H07	SDJC R/L1010-07	★	★	10	10	100	12	10	18	DC□□0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
SDJC R/L1212 F07		★	★	12	12	80	16	12				1			
SDJC R/L1616 H07		★	★	16	16	100	20	16				1			
SDJC R/L2020 K07		★	★	20	20	125	25	20				1			
SDJC R/L1212 H11	SDJC R/L1212-11	★	★	12	12	100	16	12	18			1			
SDJC R/L1616 H11	SDJC R/L1616-11	★	★	16	16	100	20	16	18			1			
SDJC R/L2020 K11	SDJC R/L2020-11	★	★	20	20	125	24	20	18			1			
SDJC R/L2525 M11	SDJC R/L2525M11	★	★	25	25	150	29	25	18	DC□□11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15
SDHC R/L1616 H11		★	★	16	16	100	20	16				2			
SDHC R/L2020 K11		★	★	20	20	125	25	20				2			
SDHC R/L2525 M11		★	★	25	25	150	32	25				2			

Applicable Inserts ◀·· SDJC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD, Photo, Grade — GU, AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6135M	SUMIBORON BN7125/BNC500	MU AC4015K	No Chipbreaker AC4015K	FX AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
High-precision	FF AC1030U	SI AC1030U	SC AC1030U	FF AC1030U	SI AC1030U	SC AC1030U	SUMIBORON BN7125/BNC500	—	—	SI AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

BNC500 is for ductile cast iron.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

PRGC type/PRDC type

SEC-70 series Holder - General Turning and Profiling
Lever Lock

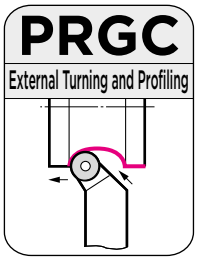


Fig 1

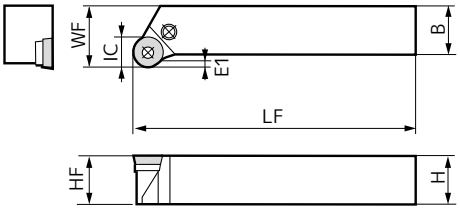


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Cutting Edge Distance E1	Inscribed Circle IC	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
PRGC R/L2020 K10	★	★	20	20	125	25	20	1.5	10	RCM□1003M0	**B86**	1	LCL10	LCS10	LSR10	LSP10	LH020
PRGC R/L2525 M10	★	★	25	25	150	32	25	1.5	10			1					
PRGC R/L2020 K12	★	★	20	20	125	25	20	2.5	12	RCM□1204M0	**B86**	1	LCL12	LCS12	LSR12	LSP10	LH025
PRGC R/L2525 M12	★	★	25	25	150	32	25	2.5	12			1					
PRGC R/L3225 P12	★	★	32	25	170	32	32	2.5	12			1					
PRGC R/L2525 M16			25	25	150	32	25	3.0	16	RCM□1606M0	**B86**	1	LCL16	LCS16	LSR16	LSP16	LH025
PRGC R/L3225 P16			32	25	170	32	32	3.0	16			1					
PRGC R/L3232 P20			32	32	170	40	32	4.0	20	RCM□2006M0	**B86**	1	LCL20	LCS20	LSR20	LSP20	LH030
PRGC R/L4040 S25			40	40	250	50	40	4.5	25	RCM□2507M0	**B86**	1	LCL25	LCS25	LSR25	LSP25	LH040
PRGC R/L5050 T32			50	50	300	63	50	5.5	32	RCM□3209M0	**B86**	1	LCL32	LCS32	LSR32	LSP32	LH050

SEC-70 series Holder - General Turning and Profiling
Lever Lock

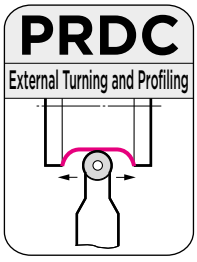
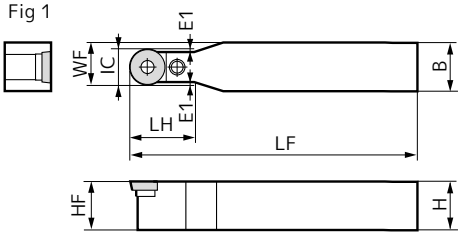


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Cutting Edge Distance E1	Inscribed Circle IC	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
PRDC N2020 M10	★	20	20	150	15.0	20	22	1.0	10	RCM□1003M0	**B86**	1	LCL10	LCS10	LSR10	LSP10	LH020
PRDC N2525 M10	★	25	25	150	17.5	25	22	1.0	10			1					
PRDC N2525 M12	★	25	25	150	18.5	25	24	1.2	12	RCM□1204M0	**B86**	1	LCL12	LCS12	LSR12	LSP10	LH025
PRDC N3225 Q12	★	32	25	180	18.5	32	24	1.2	12			1					
PRDC N3225 Q16	★	32	25	180	20.5	32	28	1.5	16	RCM□1606M0	**B86**	1	LCL16	LCS16	LSR16	LSP16	LH025
PRDC N3232 Q20	★	32	32	180	26.0	32	32	1.7	20	RCM□2006M0	**B86**	1	LCL20	LCS20	LSR20	LSP20	LH030
PRDC N4040 T25		40	40	300	32.5	40	42	2.0	25	RCM□2507M0	**B86**	1	LCL25	LCS25	LSR25	LSP25	LH040
PRDC N5050 U32		50	50	350	41.0	50	52	2.5	32	RCM□3209M0	**B86**	1	LCL32	LCS32	LSR32	LSP32	LH050

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

SRGC type

SEC-External Holder (for Round type Inserts) - General Turning and Profiling
Screw-on

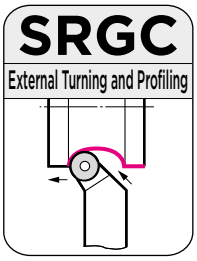


Fig 1

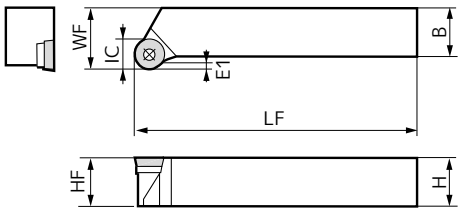


Figure shows right-handed (R) tool.

Holder

Parts

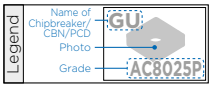
Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Distance	Inscribed Circle	Applicable Insert		Fig	Flat Insert Screw		Wrench
	R	L	H	B	LF	WF	E1	IC	ISO Cat. No.	Ref. Page			N·m	(For Torx hole)
SRGC R/L2020 K08	★	★	20	20	125	25	1.0	8	RCMT0803M0	**B86**	1	BFTX0307N	**1.6**	TRX10
SRGC R/L2525 M08	★	★	25	25	150	32	1.0	8			1			

Applicable Inserts ← PRGC type / PRDC type / SRGC type / SRDC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)			K (Cast Iron)		S (Exotic Alloy)	
	Finishing	Medium Cutting	Roughing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	Medium to Roughing
Continuous Cutting	**RE** AC8115P	**RX** AC8020P	**RX** AC8020P	**RP** AC4010K	**RP** AC4010K	**RE** AC5015S	**RP** AC5015S
General Machining	**RX** AC8025P	**RH** AC8025P	**RH** AC8035P	**RP** AC4015K	**RP** AC4015K	**RE** AC5015S	**RP** AC5015S
Interrupted Cutting	**RH** AC8025P	**RH** AC8035P	**RP** AC8035P	**RP** AC4125K	**RP** AC4125K	**RE** AC5025S	**RP** AC5025S
Recommended Cutting Conditions	☞ A10 ~			☞ A16 ~		☞ A18 ~	

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SRDC type

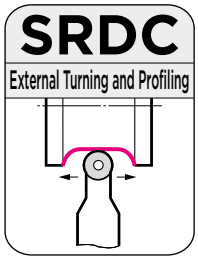
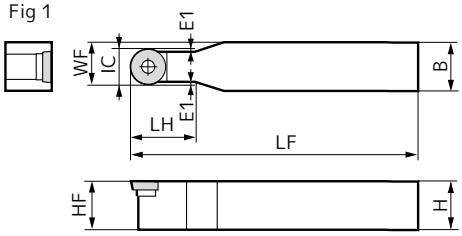


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Distance E1	Inscribed Circle IC	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SRDC N2020 K08	★	20	20	125	14.25	0.5	8	RCMT0803M0	B86	1	BFTX0307N	**1.6**	TRX10
SRDC N2525 M08	★	25	25	150	16.75	0.5	8			1			

■ Inserts



- RCOO1003M0
❶ RCOO10T3M0 N–RO
❷ RCOO1204M0 N–RO
❸ RCOO1606M0 N–RO
❹ RCOO2006M0 N–RO

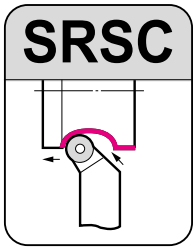
Parts

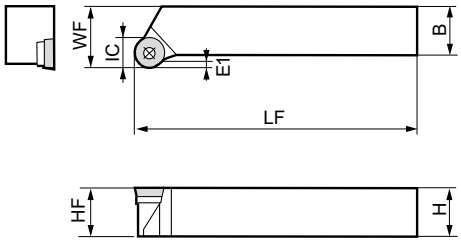
Holders

ISO Cat. No.	Stock	Dimensions (mm) H	HF	B	LF	LH	WF	E1	IC	Screw	Shim	Screw	Wrench	Wrench	Insert
SRDC N2020 K10T3	★	20	20	20	125	25	15,0	1,0	10	BFTX03510-SD 2,0	SRNS 103-SD	BW 0508F-SD	TRX 15 IP-35	LH 035	❶
SRDC N2525 M10T3	★	25	25	25	150	25	17,5	1,0	10						
SRDC N2525 M12	★	25	25	25	150	28	18,5	1,2	12	BFTX03512-SD 2,0	SRNS 123-SD				❷
SRDC N3225 P12	★	32	32	25	170	28	18,5	1,2	12						
SRDC N2525 M16		25	25	25	150	35	20,5	1,5	16	BFTX0517-SD 5,0	SRNS 164-SD	BW 0810F-SD	LT 20 IP	LH 050	❸
SRDC N3225 P16	★	32	32	25	170	35	20,5	1,5	16						
SRDC N3232 P20	★	32	32	32	170	40	26,0	1,7	20	BFTX0618-SD 7,5	SRNS 204-SD	BW 0912F-SD	LT 25 IP	LH 060	❹

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SRSC type / DSBN type





Inserts



Holder

Parts

ISO Cat. No.	Stock		Dimensions (mm)							Screw	Shim	Screw	Wrench	Wrench	Insert
	R	L	H	HF	B	LF	WF	E1	IC						
SRSC R/L 2020 K10T3	★	★	20	20	20	125	25	1,5	10	BFTX 03510-SD 2,0 (N·m)	SRNS 103-SD	BW 0508F-SD	TRX 15 IP-35	LH 035	❶
SRSC R/L 2525 M10T3	★	★	25	25	25	150	32	1,5	10						
SRSC R/L 2525 M12	★		25	25	25	150	32	2,5	12	BFTX 03512-SD 2,0 (N·m)	SRNS 123-SD				❷
SRSC R/L 3225 P12	★	★	32	32	25	170	32	2,5	12						
SRSC R/L 3225 P16	★	★	32	32	25	170	32	3,0	16	BFTX 0517-SD 5,0 (N·m)	SRNS 164-SD	BW 0810F-SD	LT 20 IP	LH 050	❸
SRSC R/L 3232 P20	★	★	32	32	32	170	40	4,0	20	BFTX 0618-SD 7,5 (N·m)	SRNS 204-SD	BW 0912F-SD	LT 25 IP	LH 060	❹



SEC-D series Holder - General Turning and Profiling Double Clamp

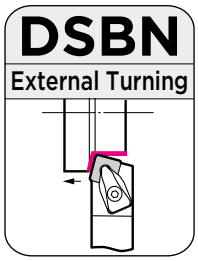


Fig 1

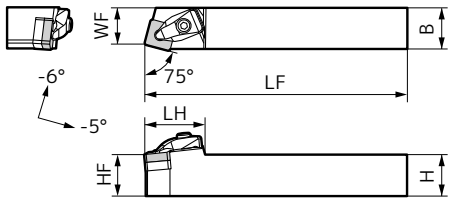


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert		Fig	Clamp Set		Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	LH	ISO Cat. No.	Ref. Page			N·m			TRX TRD (For Torx holes)	(For Hexagonal hole)	(For Hexagonal hole)
DSBN R/L2020 K12	★	★	20	20	125	17	20	36	SN□□1204	B33 ~	1	SCP2	**5.0**	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025
DSBN R/L2525 M12	★	★	25	25	150	22	25	36			1							
DSBN R/L2525 M15	★	★	25	25	150	22	25	36	SN□□1506	B37 ~	1	SCP3	**5.0**	SNS1506	BFTX0509N	TRX20(*)	LH040	LH025
DSBN R/L3232 P15	★	★	32	32	170	27	32	36			1							
DSBN R/L3232 P19	★	★	32	32	170	27	32	45	SN□□1906	B39 ~	1	SCP5	**5.0**	SNS1906	BFTX0511N	TRX20(*)	LH040	LH025
DSBN R/L4040 S19	★	★	40	40	250	35	40	45			1							
DSBN R/L4040 S2507	★	★	40	40	250	35	40	58	SN□□2507	B41	1	SCP6	**6.0**	SNS2507	BFTX0615N	TRD25(*)	LH060	—
DSBN R/L4040 S2509	★	★	40	40	250	35	40	58	SN□□2509	B42	1	SCP6	**6.0**	SNS2509	BFTX0615N	TRD25(*)	LH060	—

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

DSDN type/DSSN type

SEC-D series Holder - General Turning and Chamfering Double Clamp

DSDN
External/Chamfering

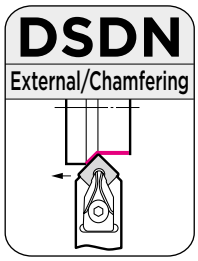
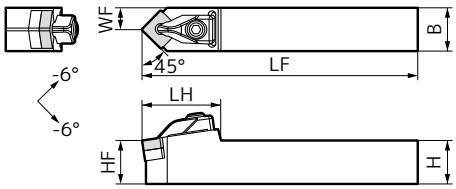
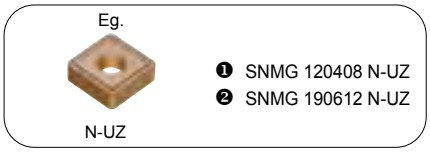


Fig 1



■ Inserts



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
															 (For Torx hole)	 (For Hexagonal hole)	 (For Hexagonal hole)
DSDN N2020 K12	★	20	20	125	10.0	20	36	SN□□1204		1	SCP2	**5.0**	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025
DSDN N2525 M12	★	25	25	150	12.5	25	36			1							
DSDN N3232 P19	★	32	32	170	16	32	50	SN□□1906		2	SCP5		SNS1906	BFTX0511N	TRX20(*)		

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

SEC-D series Holder - General Turning, Facing and Chamfering Double Clamp

DSSN
External/Facing/Chamfering



Fig 1

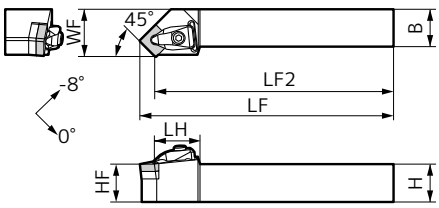


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Overall Length 2 LF2	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
																	TRX  TRD (For Torx holes)	 (For Hexagonal hole)	 (For Hexagonal hole)
DSSN R/L2020K12	★	★	20	20	133.3	125	25	20	30	SN□□1204	**B33 ~**	1	SCP2	**5.0**	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025
DSSN R/L2525M12	★	★	25	25	158.3	150	32	25	30			1							
DSSN R/L2525M15	★	★	25	25	160.2	150	32	25	30	SN□□1506	**B37 ~**	1	SCP3	**5.0**	SNS1506	BFTX0509N	TRX20(*)	LH040	LH025
DSSN R/L3232P15	★	★	32	32	180.2	170	40	32	30			1							
DSSN R/L3232P19	★	★	32	32	182.5	170	40	32	36	SN□□1906	**B39 ~**	1	SCP5	**5.0**	SNS1906	BFTX0511N	TRX20(*)	LH040	LH025
DSSN R/L4040S19	★	★	40	40	262.5	250	50	40	36			1							
DSSN R/L4040S2507	★	★	40	40	266.0	250	50	40	47	SN□□2507	**B41**	1	SCP6	**6.0**	SNS2507	BFTX0615N	TRD25(*)	LH060	—
DSSN R/L4040S2509	★	★	40	40	266.0	250	50	40	47	SN□□2509	**B42**	1		**6.0**	SNS2509	BFTX0615N	TRD25(*)	LH060	—

*Wrench for shim is sold separately from the main body.

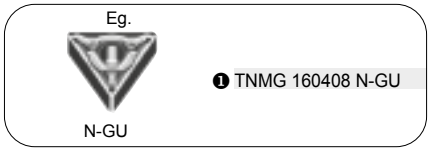
Clamp Set Parts C48

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

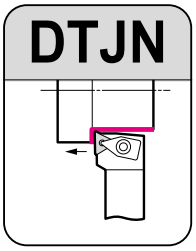
DTJN type

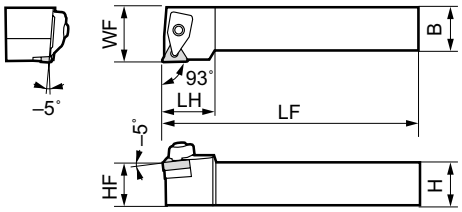


Inserts



Spare Parts





Holders

Above figures show right hand tools.

ISO Cat. No.	Stock		Dimensions (mm)						Clamp	Spring	Clamp bolt	Shim	Shim Screw	Wrench	Wrench	Insert
	R	L	H	HF	B	LF	LH	WF								
DTJN R/L 2020 K16	★		20	20	20	125	31	25	SCP1		5,0 N·m	TNS1604	BFTX0307N 2,0 N·m	TRX10(*)	LH040	❶
DTJN R/L 2525 M16	★	★	25	25	25	150	31	32								

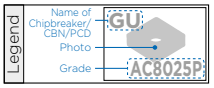
(*) Note: Wrench (TRX) for shim clamp screw is not included.

Applicable Inserts

◀·· DSBN type/DSDN type/DSSN type/PSBN type/PSDN type/PSSN type/PSKN type/ESBN type/ESDN type/ESSN type/ESKN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



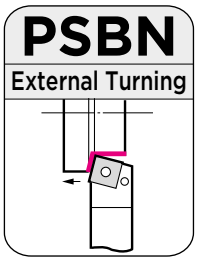
Application Range / Process	P (Steel)			M (Stainless Steel)			K (Cast Iron)			S (Exotic Alloy)			H (Hardened Steel)		Hard Brittle Materials
	Finishing	Medium Cutting	Roughing	Finishing	Medium Cutting	Roughing	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing	Medium Cutting	Roughing	Coated	Uncoated	Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A20 ~		☞ M2 ~

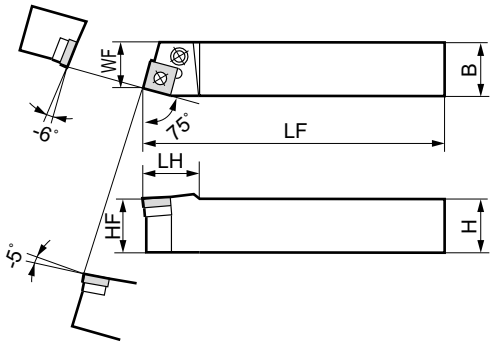
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

PSBN type

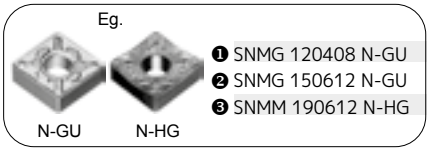


SEC-70 series Holder - General Turning and Profiling
Lever Lock





Inserts



Holder

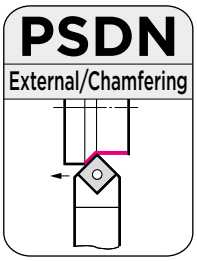
Above figures show right hand tools.

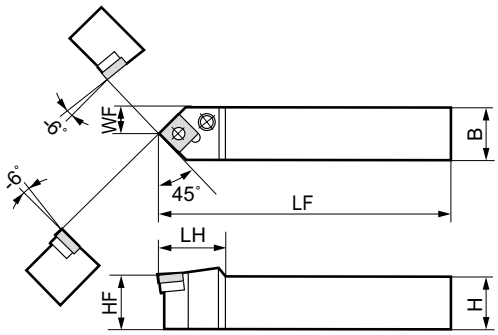
Cat. No.	Stock		Dimensions (mm)						Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
	R	L	H	HF	B	LF	LH	WF						
PSBN R/L 2020 K12	★		20	20	20	125	27,5	17	LCL4SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030	❶
PSBN R/L 2525 M12	★	★	25	25	25	150	27,5	22						
PSBN R/L 2525 M15		★	25	25	25	150	32	22	LCL5SD	LCS5B-SD	LSS53SD	LSP5SD	LH030	❷
PSBN R/L 3225 P15	★	★	32	32	25	170	32	22						
PSBN R/L 3232 P19	★	★	32	32	32	170	39,2	27	LCL6SD	LCS6B-SD	LSS63SD	LSP6SD	LH040	❸

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PSDN type

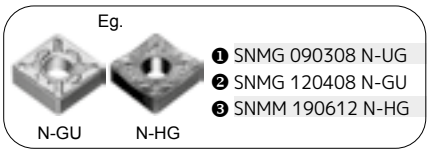






SEC-70 series Holder - General Turning and Chamfering Lever Lock

Inserts



Holder

Cat. No.	Stock	Dimensions (mm)						Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
		H	HF	B	LF	LH	WF						
PSDN N 1616 H09	★	16	16	16	100	21	8,3	LCL3SD	LCS 3TB-SD	LSS32SD	LSP3SD	LH025	❶
PSDN N 2020 K12	★	20	20	20	125	27,6	10,3	LCL4SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030	❷
PSDN N 2525 M12	★	25	25	25	150	27,6	12,8						
PSDN N 3225 P12	★	32	32	25	170	27,6	12,8						
PSDN N 3225 P19		32	32	25	170	40,6	13	LCL6SD	LCS6B-SD	LSS63SD	LSP6SD	LH040	❸
PSDN N 3232 P19	★	32	32	32	170	40,6	16,5						

Spare Parts

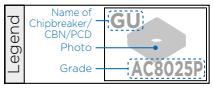


Applicable Inserts

◀·· DSBN type/DSDN type/DSSN type/PSBN type/PSDN type/PSSN type/PSKN type/ESBN type/ESDN type/ESSN type/ESKN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



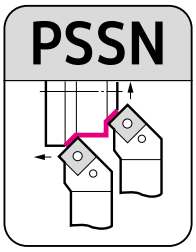
Application Range / Process	P (Steel)			M (Stainless Steel)			K (Cast Iron)			S (Exotic Alloy)			H (Hardened Steel)		Hard Brittle Materials
	Finishing	Medium Cutting	Roughing	Finishing	Medium Cutting	Roughing	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing	Medium Cutting	Roughing	Coated	Uncoated	Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A20 ~		☞ M2 ~

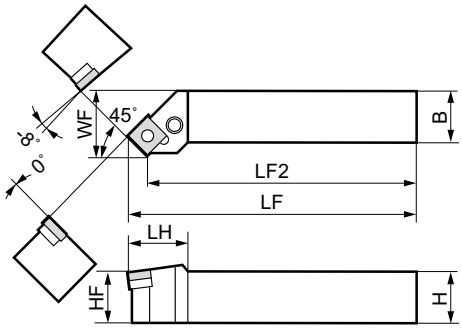
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

PSSN type / PSKN type



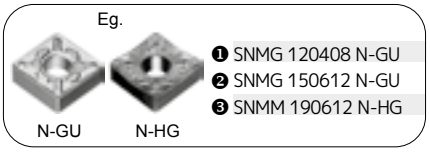
PSSN





SEC-70 series Holder - General Turning, Facing and Chamfering
Lever Lock

Inserts



Spare Parts

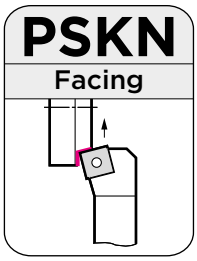
Holders

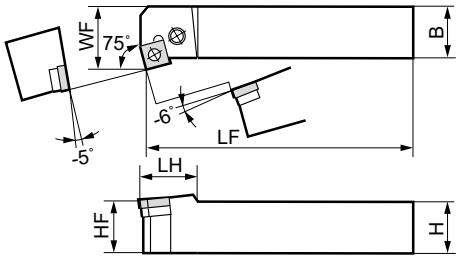
Above figures show right hand tools.

ISO Cat. No.	Stock		Dimensions (mm)							Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
	R	L	H	HF	B	LF	LF2	LH	WF						
PSSN R/L 2020 K12	★	★	20	20	20	125	116,7	29,3	25	LCL4SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030	❶
PSSN R/L 2525 M12	★	★	25	25	25	150	141,7	29,3	32						
PSSN R/L 3225 P12	★		32	32	25	170	161,7	29,3	32						
PSSN R/L 2525 M15	★	★	25	25	25	150	139,8	32	32	LCL5SD	LCS5B-SD	LSS53SD	LSP5SD	LH030	❷
PSSN R/L 3225 P15			32	32	25	170	159,8	32	32						
PSSN R/L 3232 P15	★		32	32	32	170	159,8	32	40						
PSSN R/L 3232 P19	★	★	32	32	32	170	157,5	40,2	40	LCL6SD	LCS6B-SD	LSS63SD	LSP6SD	LH040	❸



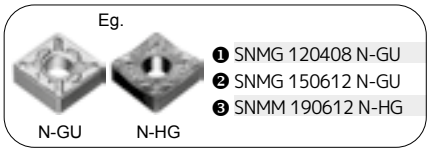
PSKN
Facing





SEC-70 series Holder - Facing
Lever Lock

Inserts



Spare Parts

Holders

Above figures show right hand tools.

ISO Cat. No.	Stock		Dimensions (mm)						Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
	R	L	H	HF	B	LF	LH	WF						
PSKN R/L 2020 K12	★		20	20	20	125	22,7	17	LCL4SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030	❶
PSKN R/L 2525 M12	★	★	25	25	25	150	22,7	32						
PSKN R/L 2525 M15			25	25	25	150	32	32	LCL5SD	LCS5B-SD	LSS53SD	LSP5SD	LH030	❷
PSKN R/L 3225 P15			32	32	25	170	32	32						
PSKN R/L 3232 P19			32	32	32	170	33,7	40	LCL6SD	LCS6B-SD	LSS63SD	LSP6SD	LH040	❸

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

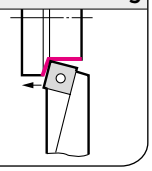
Blank: Made-to-order item
— mark: Not available

ESBN type / ESDN type



SEC-30 series Holder - General Turning
Pin Lock

ESBN
External Turning



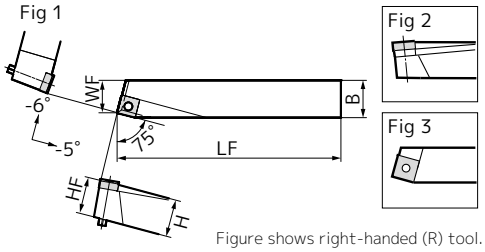


Figure shows right-handed (R) tool.

Holder

Parts

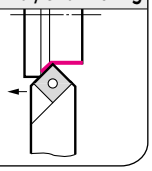
Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ESBN R/L1212F09	ESBN R/L1212	★	★	12	12	80	9.5	11.5	SN□□0903	**B32**	1	P321US	—	KY40
ESBN R/L1616H09	ESBN R/L1616H32			16	16	100	13.0	15.5			1	P322US	—	
ESBN R/L1616H12	ESBN R/L1616H43			16	16	100	13.0	15.5	SN□□1204	**B33 ~**	3	P432U	—	KY40
ESBN R/L2020K12	ESBN R/L2020			20	20	125	17.0	19.5			1	P433U	—	
ESBN R/L2020K12W	ESBN R/L2020W	★	★	20	20	125	17.0	19.5			2	P433W	ESS42	
ESBN R/L2520M12	ESBN R/L2520			25	20	150	17.0	24.5			3	P434U	—	
ESBN R/L2520M12W	ESBN R/L2520W			25	20	150	17.0	24.5			2	P434W	ESS42	
ESBN R/L2525M12	ESBN R/L2525			25	25	150	22.0	24.5			1	P434U	—	
ESBN R/L2525M12W	ESBN R/L2525W	★		25	25	150	22.0	24.5			2	P434W	ESS42	



SEC-30 series Holder - General Turning and Chamfering
Pin Lock

ESDN
External/Chamfering



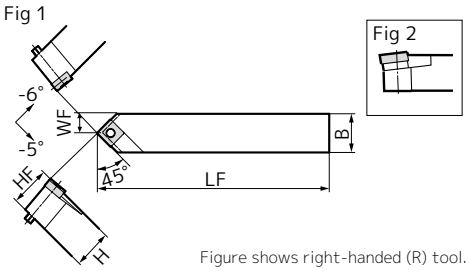


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ESDN R/L1212F09	ESDN R/L1212	★	★	12	12	80	6.0	11.5	SN□□0903	**B32**	1	P321US	—	KY40
ESDN R/L1616H09	ESDN R/L1616H32	★	★	16	16	100	8.0	15.5			1	P322US	—	
ESDN R/L2020K12	ESDN R/L2020			20	20	125	10.0	19.5	SN□□1204	**B33 ~**	1	P433U	—	KY40
ESDN R/L2020K12W	ESDN R/L2020W	★	★	20	20	125	10.0	19.5			2	P433W	ESS42	
ESDN R/L2520M12	ESDN R/L2520			25	20	150	10.0	24.5			1	P434U	—	
ESDN R/L2520M12W	ESDN R/L2520W			25	20	150	10.0	24.5			2	P434W	ESS42	
ESDN R/L2525M12	ESDN R/L2525			25	25	150	12.5	24.5			1	P434U	—	
ESDN R/L2525M12W	ESDN R/L2525W	★	★	25	25	150	12.5	24.5			2	P434W	ESS42	

Applicable Inserts

DSBN type/DSDN type/DSSN type/PSBN type/PSDN type/PSSN type/PSKN type/ESBN type/ESDN type/ESSN type/ESKN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	**FE** **T1500Z**	**GU** **AC8115P**	**MU** **AC8020P**	**EF** **AC6020M**	**EG** **AC6020M**	**EM** **AC6030M**	**SUMIBORON** BN7125/BNC500	**UZ** **AC4010K**	**GZ** **AC4010K**	**EF** **AC5015S**	**EG** **AC5015S**	**EM** **AC5015S**	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
General Machining	**SU** **AC8115P**	**GU** **AC8025P**	**MU** **AC8025P**	**EF** **AC6030M**	**EG** **AC6030M**	**EM** **AC6135M**	**SUMIBORON** BN7125/BNC500	**GZ** **AC4015K**	**GZ** **AC4015K**	**EF** **AC5015S**	**EG** **AC5015S**	**EM** **AC5025S**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA1090**
Interrupted Cutting	**SX** **AC8025P**	**UX** **AC8035P**	**MX** **AC8035P**	**EF** **AC6030M**	**EH** **AC6135M**	**EM** **AC6145M**	**SUMIBORON** BN7125/BNC500	**GZ** **AC4125K**	No Chipbreaker **AC4125K**	**EF** **AC5025S**	**EG** **AC5025S**	**EM** **AC5025S**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN350**	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A20 ~		☞ M2 ~

★ mark: Global stocked item

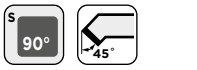
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

BNC500 is for ductile cast iron.

ESSN type / ESKN type



SEC-30 series Holder - General Turning, Facing and Chamfering
Pin Lock

ESSN
External/Facing/Chamfering

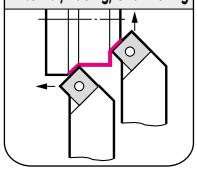


Fig 1

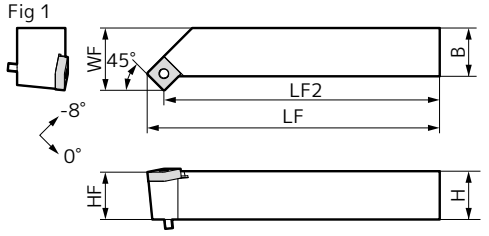


Fig 2

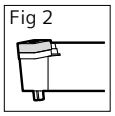


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Overall Length 2 LF2	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ESSN R/L1212F09	ESSN R/L1212	★	★	12	12	80	73.8	16	11.5	SN□□0903	**B32**	1	P321US	—	KY40
ESSN R/L1616H09	ESSN R/L1616H32	★	★	16	16	100	93.8	20	15.5			1	P322US	—	
ESSN R/L1616H12	ESSN R/L1616H43			16	16	100	91.7	20	15.5	SN□□1204	**B33 ~**	1	P432U	—	KY40
ESSN R/L2020K12	ESSN R/L2020	★	★	20	20	125	116.7	25	19.5			1	P433U	—	
ESSN R/L2020K12W	ESSN R/L2020W	★	★	20	20	125	116.7	25	19.5			2	P433W	ESS42	
ESSN R/L2520M12	ESSN R/L2520			25	20	150	141.7	25	24.5			1	P434U	—	
ESSN R/L2520M12W	ESSN R/L2520W			25	20	150	141.7	25	24.5			2	P434W	ESS42	
ESSN R/L2525M12	ESSN R/L2525			25	25	150	141.7	32	24.5			1	P434U	—	
ESSN R/L2525M12W	ESSN R/L2525W	★	★	25	25	150	141.7	32	24.5			2	P434W	ESS42	

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.



SEC-30 series Holder - Facing
Pin Lock

ESKN
Facing

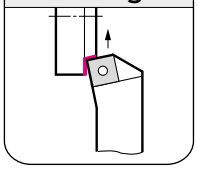


Fig 1

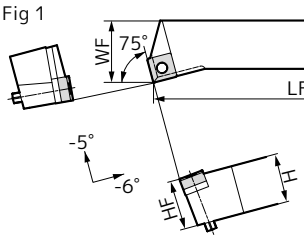


Fig 2

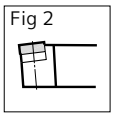


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ESKN R/L1212F09	ESKN R/L1212	★	★	12	12	80	16	11.5	SN□□0903	**B32**	1	P321US	—	KY40
ESKN R/L1616H09	ESKN R/L1616H32	★	★	16	16	100	20	15.5			1	P322US	—	
ESKN R/L1616H12	ESKN R/L1616H43			16	16	100	20	15.5	SN□□1204	**B33 ~**	1	P432U	—	KY40
ESKN R/L2020K12	ESKN R/L2020			20	20	125	25	19.5			1	P433U	—	
ESKN R/L2020K12W	ESKN R/L2020W	★	★	20	20	125	25	19.5			2	P433W	ESS42	
ESKN R/L2520M12	ESKN R/L2520			25	20	150	25	24.5			1	P434U	—	
ESKN R/L2520M12W	ESKN R/L2520W			25	20	150	25	24.5			2	P434W	ESS42	
ESKN R/L2525M12	ESKN R/L2525			25	25	150	32	24.5			1	P434U	—	
ESKN R/L2525M12W	ESKN R/L2525W	★	★	25	25	150	32	24.5			2	P434W	ESS42	

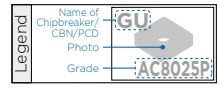
When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts

◀·· DSBN type/DSDN type/DSSN type/PSBN type/PSDN type/PSSN type/PSKN type/ESBN type/ESDN type/ESSN type/ESKN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A20 ~		☞ M2 ~

BNC500 is for ductile cast iron.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

CSRP type / CSDP type



SEC-40 series Holder - General Turning
Clamp-on

CSRP
External Turning

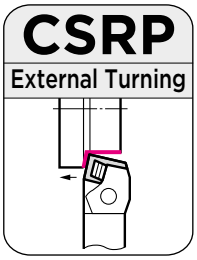


Fig 1

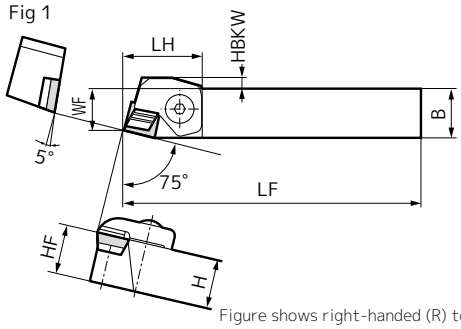


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	HBKW	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Chipbreaker	Bolt	Shim	Shim Retainer	Spring	Wrench
CSRP R/L1919 L12	FP11 R/L-33	★		19	19	140	15.5	19	34.5	5.0			1			BH0824R/L				
CSRP R/L2525 N12	FP11 R/L-44A	★		25	25	160	21.5	25	34.5	—	SP□□1203	**B95**	1	DCR/L1	CBD4R/L	BH0830R/L	SSPD422	SPP3	DSP5	LH040
CSRP R/L3225 N12	FP11 R/L-45A			32	25	160	21.5	32	34.5	—			1			BH0830R/L				
CSRP R/L2525 N15	FP11 R/L-44B	★		25	25	160	21.5	25	40.0	4.5			1			BH1030R/L				
CSRP R/L3232 N15	FP11 R/L-55			32	32	180	26.0	32	40.0	—	SP□□1504	**B96**	1	DCR/L3	CBD5R/L	BH1036R/L	SSPD522	SPP3	DSP5	LH050



SEC-40 series Holder - General Turning and Chamfering
Clamp-on

CSDP
External/Chamfering



Fig 1

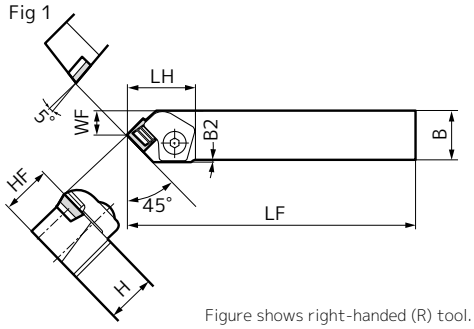


Figure shows right-handed (R) tool.

Holder

Parts

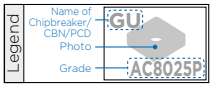
Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	B2	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Chipbreaker	Bolt	Shim	Shim Retainer	Spring	Wrench
CSDP R/L1919 L12	FP14 R/L-33	★		19	19	140	10.5	19	35	6			1			BH0824R/L				
CSDP R/L2525 N12	FP14 R/L-44A	★		25	25	160	12.5	25	35	2	SP□□1203	**B95**	1	DCR/L1	CBD4R/L	BH0830R/L	SSPD422	SPP3	DSP5	LH040
CSDP R/L3225 N12	FP14 R/L-45A			32	25	160	12.5	32	35	2			1			BH0830R/L				

Applicable Inserts ◂·· CSRP type/CSDP type/CSKP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)		K (Cast Iron)			S (Exotic Alloy)		N (Non-Ferrous)	H (Hardened Steel)
	Finishing	Medium Cutting	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	Medium to Roughing	—	Uncoated
General Machining	FK **T1500Z**	SF **AC8025P**	SUMIBORON **BN7125**	No Chipbreaker **AC4015K**	No Chipbreaker **AC4015K**	No Chipbreaker **AC5015S**	No Chipbreaker **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BN2000**
Recommended Cutting Conditions	☞ A10 ~		☞ A16 ~			☞ A18 ~		☞ A22 ~	☞ A20 ~

★mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

CSKP type

SEC-40 series Holder - Facing
Clamp-on

CSKP
Facing

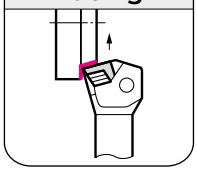


Fig 1

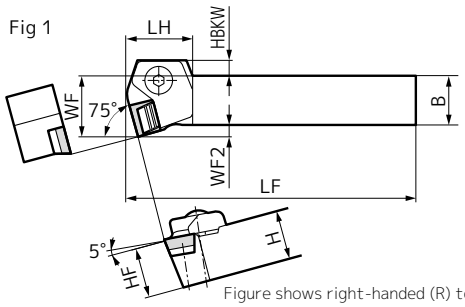


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	WF2	HBKW	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Chipbreaker	Bolt	Shim	Shim Retainer	Spring	Wrench
CSKP R/L1919 L12	FP15 R/L-33			19	19	140	25	19	22	6	7	SP□□1203	**B95**	1	DCL/R1	CBD4L/R	BH0824L/R	SSPD422	SPP3	DSP5	LH040
CSKP R/L2525 N12	FP15 R/L-44A		★	25	25	160	32	25	22	7	—			1			BH0830L/R				
CSKP R/L3225 N12	FP15 R/L-45A			32	25	160	32	32	22	7	—			1			BH0830L/R				
CSKP R/L2525 N15	FP15 R/L-44B	★		25	25	160	31	25	28	6	7	SP□□1504	**B96**	1	DCL/R3	CBD5L/R	BH1030L/R	SSPD522	SPP3	DSP5	LH050
CSKP R/L3232 Q15	FP15 R/L-55			32	32	180	38	32	28	6	—			1			BH1036L/R				

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ◂·· CSRP type/CSDP type/CSKP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD, Photo, Grade — GU, AC8025P

Application Range / Process	P (Steel)		K (Cast Iron)			S (Exotic Alloy)		N (Non-Ferrous)	H (Hardened Steel)
	Finishing	Medium Cutting	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	Medium to Roughing	—	Uncoated
General Machining	**FK** **T1500Z**	**SF** **AC8025P**	**SUMIBORON** **BN7125**	**No Chipbreaker** **AC4015K**	**No Chipbreaker** **AC4015K**	**No Chipbreaker** **AC5015S**	**No Chipbreaker** **AC5025S**	**SUMIDIA** **DA1000**	**SUMIBORON** **BN2000**
Recommended Cutting Conditions	☞ A10 ~		☞ A16 ~			☞ A18 ~		☞ A22 ~	☞ A20 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DTGN type / DTFN type



SEC-D series Holder - General Turning and Profiling
Double Clamp

DTGN
External Turning

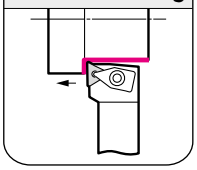


Fig 1

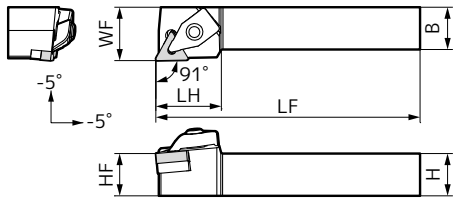


Fig 2

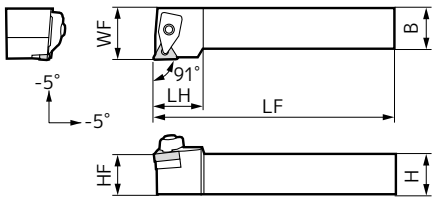


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim (For Torx hole)	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
DTGN R/L2020 K16	★	★	20	20	125	25	20	31	TN□□1604	B48 ~	1	SCP1	**5.0**	TNS1604	BFTX0307N	TRX10(*)	LH040	LH025
DTGN R/L2525 M16	★	★	25	25	150	32	25	31			2							

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C48



SEC-D series Holder - Facing
Double Clamp

DTFN
Facing

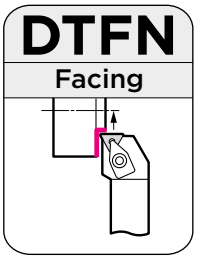


Fig 1

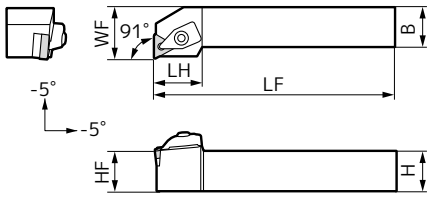


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim (For Torx hole)	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
DTFN R/L2020 K16	★	★	20	20	125	25	20	30	TN□□1604	B48 ~	1	SCP1	**5.0**	TNS1604	BFTX0307N	TRX10(*)	LH040	LH025
DTFN R/L2525 M16	★	★	25	25	150	32	25	30			1							

*Wrench for shim is sold separately from the main body.
When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

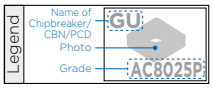
Clamp Set Parts ☞C48

Applicable Inserts

◀·· DTGN type/DTFN type/PTGN type/PTTN type/PTFN type/ETGN type/ETAN type/ETFN type/ETEN type/ETXN type/MTJN type/MTXN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE **T1500Z**	GU **AC8115P**	MU **AC8020P**	EF **AC6020M**	EG **AC6020M**	EM **AC6030M**	SUMIBORON BN7125/BNC500	UZ **AC4010K**	GZ **AC4010K**	EF **AC5015S**	EG **AC5015S**	EM **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
General Machining	SU **AC8115P**	GU **AC8025P**	MU **AC8025P**	EF **AC6030M**	EG **AC6030M**	EM **AC6135M**	SUMIBORON BN7125/BNC500	GZ **AC4015K**	GZ **AC4015K**	EF **AC5015S**	EG **AC5015S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
Interrupted Cutting	SX **AC8025P**	UX **AC8035P**	MX **AC8035P**	EF **AC6030M**	EH **AC6135M**	EM **AC6145M**	SUMIBORON BN7125/BNC500	GZ **AC4125K**	GZ **AC4125K**	EF **AC5025S**	EG **AC5025S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2135**	SUMIBORON **BN350**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~	☞ A20 ~	

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

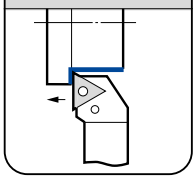
BNC500 is for ductile cast iron.

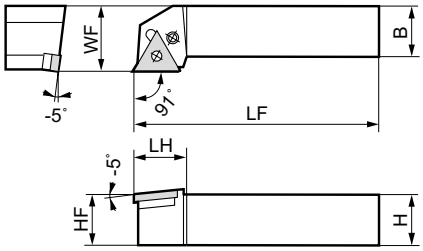
PTGN type / PTTN type



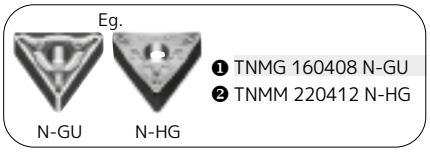
SEC-70 series Holder - General Turning and Profiling
Lever Lock

PTGN





Inserts



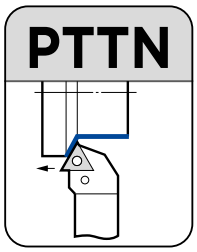
Holder

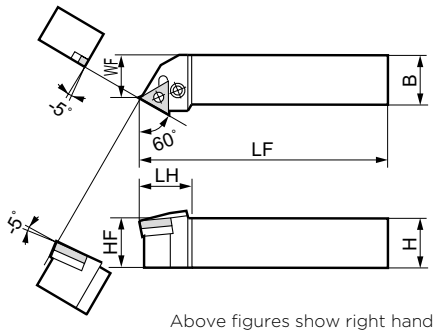
Above figures show right hand tools.

ISO Cat. No.	Stock		Dimensions (mm)						Spare Parts					
	R	L	H	HF	B	LF	LH	WF	Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
PTGN R/L1616 H16	★		16	16	16	100	20	20	LCL3SD	LCS3TB-SD	LST317SD	LSP3SD	LH025	❶
PTGN R/L2020 K16	★	★	20	20	20	125	20	25						
PTGN R/L2525 M16	★	★	25	25	25	150	22,2	32						
PTGN R/L2525 M22	★	★	25	25	25	150	28,7	32	LCL4SD	LCS42BS-SD	LST42SD	LSP4SD	LH030	❷
PTGN R/L3225 P22	★		32	32	25	170	28,7	32						
PTGN R/L3232 P22			32	32	32	170	28,7	32						

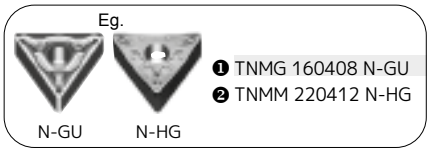
SEC-70 series Holder - General Turning and Profiling
Lever Lock

PTTN





Inserts



Holder

Above figures show right hand tools.

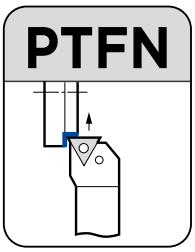
ISO Cat. No.	Stock		Dimensions (mm)						Spare Parts					
	R	L	H	HF	B	LF	LH	WF	Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
PTTN R/L2020 K16	★		20	20	20	125	25,9	17	LCL3SD	LCS3TB-SD	LST317SD	LSP3SD	LH025	❶
PTTN R/L2525 M16	★		25	25	25	150	25,9	22						
PTTN R/L3225 P22			31	32	25	170	31,9	22	LCL4SD	LCS42BS-SD	LST42SD	LSP4SD	LH030	❷

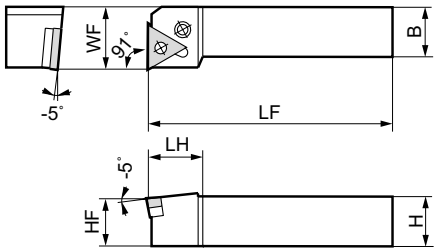
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

PTFN type

SEC-70 series Holder - Facing
Lever Lock

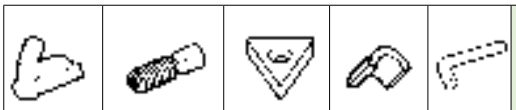




Inserts



Spare Parts



Holder

Above figures show right hand tools.

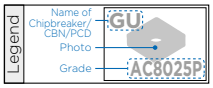
ISO Cat. No.	Stock		Dimensions (mm)						Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
	R	L	H	HF	B	LF	LH	WF						
PTFN R/L1616 H16			16	16	16	100	19,7	20	LCL3SD	LCS3TB-SD	LST317SD	LSP3SD	LH025	❶
PTFN R/L2020 K16	★	★	20	20	20	125	20,2	25						
PTFN R/L2525 M16	★	★	25	25	25	150	20,2	32						
PTFN R/L2525 M22	★		25	25	25	150	25,2	32	LCL4SD	LCS42BS-SD	LST42SD	LSP4SD	LH030	❷
PTFN R/L3225 P22	★		32	32	25	170	25,2	32						

Applicable Inserts

DTGN type/DTFN type/PTGN type/PTTN type/PTFN type/ETGN type/ETAN type/ETFN type/ETEN type/ETXN type/MTJN type/MTXN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)			M (Stainless Steel)			K (Cast Iron)			S (Exotic Alloy)			N (Non-Ferrous)	H (Hardened Steel)	
	Finishing	Medium Cutting	Roughing	Finishing	Medium Cutting	Roughing	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing	Medium Cutting	Roughing	—	Coated	Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	SUMIBORON BNC2115	SUMIBORON BN1000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	GZ AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2135	SUMIBORON BN350
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~	☞ A20 ~	

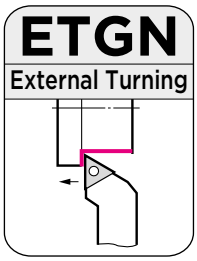
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

BNC500 is for ductile cast iron.

ETGN type / ETAN type



SEC-30 series Holder - General Turning
Pin Lock



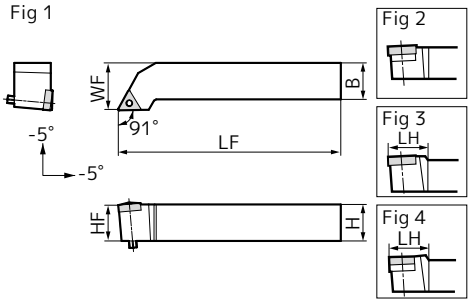


Figure shows right-handed (R) tool.

Holder

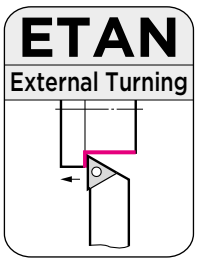
Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ETGN R/L1212 F11	ETGN R/L1212	★	★	12	12	80	16	11.5	—	TN□□1103	**B46**	1	P221US	—	KY25
ETGN R/L1616 H1603	ETGN R/L1616H32	★	★	16	16	100	20	15.5	—	TN□□1603	**B47 ~**	1	P322US	—	KY40
ETGN R/L1616 H1604	ETGN R/L1616H33	★	★	16	16	100	20	15.5	—	TN□□1604	**B48 ~**	1	P332US	—	KY40
ETGN R/L2020 K1603	ETGN R/L2020K32			20	20	125	25	19.5	—	TN□□1603	**B47 ~**	1	P323US	—	KY40
ETGN R/L2020 K1603W	ETGN R/L2020K32W			20	20	125	25	19.5	—			2	P323WS	EST32	
ETGN R/L2020 K1604	ETGN R/L2020K33	★	★	20	20	125	25	19.5	—	TN□□1604	**B48 ~**	1	P333US	—	KY40
ETGN R/L2020 K1604W	ETGN R/L2020K33W	★	★	20	20	125	25	19.5	—			2	P333WS	EST32	
ETGN R/L2520 M1604	ETGN R/L2520			25	20	150	25	24.5	—			1	P334US	—	
ETGN R/L2520 M1604W	ETGN R/L2520W			25	20	150	25	24.5	—			2	P334WS	EST32	
ETGN R/L2525 M1604	ETGN R/L2525M33			25	25	150	32	24.5	—			1	P334US	—	
ETGN R/L2525 M1604W	ETGN R/L2525M33W	★	★	25	25	150	32	24.5	—			2	P334WS	EST32	
ETGN R/L2525 M22	ETGN R/L2525M43			25	25	150	32	24.5	30	TN□□2204	**B53 ~**	3	P434U	—	KY40
ETGN R/L2525 M22W	ETGN R/L2525M43W	★	★	25	25	150	32	24.5	30			4	P434W	EST43	



SEC-30 series Holder - General Turning
Pin Lock



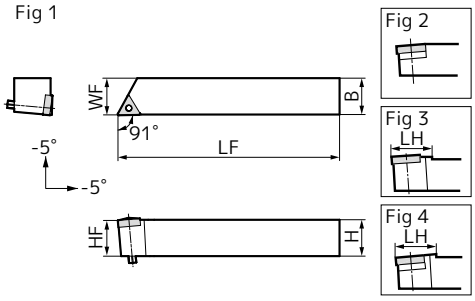


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ETAN R/L1212 F11	ETAN R/L1212	★	★	12	12	80	12	11.5	—	TN□□1103	**B46**	1	P221US	—	KY25
ETAN R/L1616 H1603	ETAN R/L1616H32			16	16	100	16	15.5	—	TN□□1603	**B47 ~**	1	P322US	—	KY40
ETAN R/L1616 H1604	ETAN R/L1616H33	★	★	16	16	100	16	15.5	—	TN□□1604	**B48 ~**	1	P332US	—	KY40
ETAN R/L2020 K1603	ETAN R/L2020K32			20	20	125	20	19.5	—	TN□□1603	**B47 ~**	1	P323US	—	KY40
ETAN R/L2020 K1603W	ETAN R/L2020K32W			20	20	125	20	19.5	—			2	P323WS	EST32	
ETAN R/L2020 K1604	ETAN R/L2020K33			20	20	125	20	19.5	—	TN□□1604	**B48 ~**	1	P333US	—	KY40
ETAN R/L2020 K1604W	ETAN R/L2020K33W	★	★	20	20	125	20	19.5	—			2	P333WS	EST32	
ETAN R/L2520 M1604	ETAN R/L2520			25	20	150	20	24.5	—			1	P334US	—	
ETAN R/L2520 M1604W	ETAN R/L2520W			25	20	150	20	24.5	—			2	P334WS	EST32	
ETAN R/L2525 M1604	ETAN R/L2525M33			25	25	150	25	24.5	—			1	P334US	—	
ETAN R/L2525 M1604W	ETAN R/L2525M33W	★	★	25	25	150	25	24.5	—			2	P334WS	EST32	
ETAN R/L2525 M22	ETAN R/L2525M43			25	25	150	25	24.5	30	TN□□2204	**B53 ~**	3	P434U	—	KY40
ETAN R/L2525 M22W	ETAN R/L2525M43W	★	★	25	25	150	25	24.5	30			4	P434W	EST43	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

ETFN type

SEC-30 series Holder - Facing
Pin Lock

ETFN
Facing

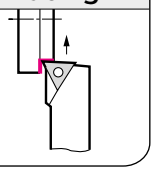


Fig 1

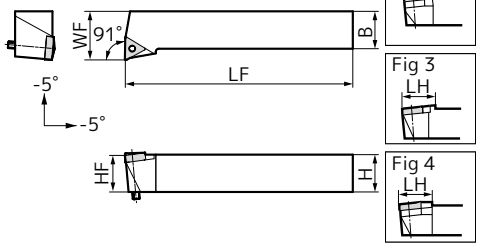


Fig 2



Fig 3

Fig 4

Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ETFN R/L1212F11	ETFN R/L1212	★	★	12	12	80	16	11.5	—	TN□□1103	**B46**	1	P221US	—	KY25
ETFN R/L1616H1603	ETFN R/L1616H32			16	16	100	20	15.5	—	TN□□1603	**B47 ~**	1	P322US	—	KY40
ETFN R/L1616H1604	ETFN R/L1616H33	★	★	16	16	100	20	15.5	—	TN□□1604	**B48 ~**	1	P332US	—	KY40
ETFN R/L2020K1603	ETFN R/L2020K32			20	20	125	25	19.5	—	TN□□1603	**B47 ~**	1	P323US	—	KY40
ETFN R/L2020K1603W	ETFN R/L2020K32W			20	20	125	25	19.5	—			2	P323WS	EST32	
ETFN R/L2020K1604	ETFN R/L2020K33			20	20	125	25	19.5	—	TN□□1604	**B48 ~**	1	P333US	—	KY40
ETFN R/L2020K1604W	ETFN R/L2020K33W	★	★	20	20	125	25	19.5	—			2	P333WS	EST32	
ETFN R/L2520M1604	ETFN R/L2520			25	20	150	25	24.5	—			1	P334US	—	
ETFN R/L2520M1604W	ETFN R/L2520W			25	20	150	25	24.5	—			2	P334WS	EST32	
ETFN R/L2525M1604	ETFN R/L2525M33			25	25	150	32	24.5	—			1	P334US	—	
ETFN R/L2525M1604W	ETFN R/L2525M33W	★	★	25	25	150	32	24.5	—			2	P334WS	EST32	
ETFN R/L2525M22	ETFN R/L2525M43			25	25	150	32	24.5	30	TN□□2204	**B53 ~**	3	P434U	—	KY40
ETFN R/L2525M22W	ETFN R/L2525M43W	★	★	25	25	150	32	24.5	30			4	P434W	EST43	

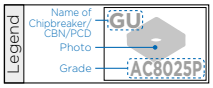
When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts

◀·· DTGN type/DTFN type/PTGN type/PTTN type/PTFN type/ETGN type/ETAN type/ETFN type/ETEN type/ETXN type/MTJN type/MTXN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE **T1500Z**	GU **AC8115P**	MU **AC8020P**	EF **AC6020M**	EG **AC6020M**	EM **AC6030M**	SUMIBORON BN7125/BNC500	UZ **AC4010K**	GZ **AC4010K**	EF **AC5015S**	EG **AC5015S**	EM **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
General Machining	SU **AC8115P**	GU **AC8025P**	MU **AC8025P**	EF **AC6030M**	EG **AC6030M**	EM **AC6135M**	SUMIBORON BN7125/BNC500	GZ **AC4015K**	GZ **AC4015K**	EF **AC5015S**	EG **AC5015S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
Interrupted Cutting	SX **AC8025P**	UX **AC8035P**	MX **AC8035P**	EF **AC6030M**	EH **AC6135M**	EM **AC6145M**	SUMIBORON BN7125/BNC500	GZ **AC4125K**	GZ **AC4125K**	EF **AC5025S**	EG **AC5025S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2135**	SUMIBORON **BN350**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~	☞ A20 ~	

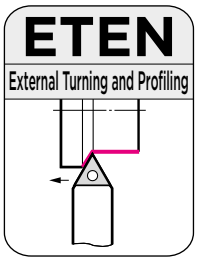
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

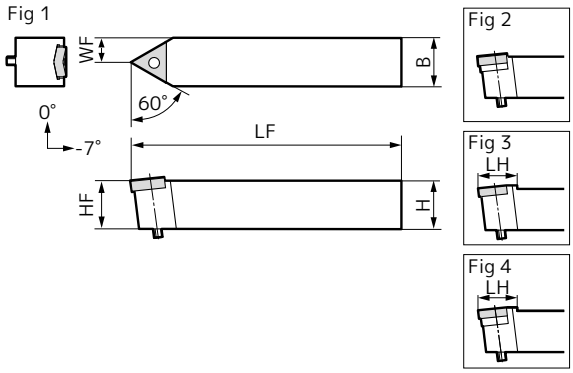
BNC500 is for ductile cast iron.

ETEN type / ETXN type



SEC-30 series Holder - General Turning and Profiling
Pin Lock





Holder

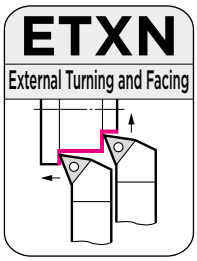
Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ETEN N1212F11	ETEN N1212	★	12	12	80	6.0	11.5	—	TN□□1103	**B46**	1	P221US	—	KY25
ETEN N1616H1603	ETEN N1616H32		16	16	100	8.0	15.5	—	TN□□1603	**B47 ~**	1	P322US	—	KY40
ETEN N1616H1604	ETEN N1616H33	★	16	16	100	8.0	15.5	—	TN□□1604	**B48 ~**	1	P332US	—	KY40
ETEN N2020K1603	ETEN N2020K32		20	20	125	10.0	19.5	—	TN□□1603	**B47 ~**	1	P323US	—	KY40
ETEN N2020K1603W	ETEN N2020K32W		20	20	125	10.0	19.5	—			2	P323WS	EST32	
ETEN N2020K1604	ETEN N2020K33	★	20	20	125	10.0	19.5	—	TN□□1604	**B48 ~**	1	P333US	—	KY40
ETEN N2020K1604W	ETEN N2020K33W	★	20	20	125	10.0	19.5	—			2	P333WS	EST32	
ETEN N2520M1604	ETEN N2520		25	20	150	10.0	24.5	—			1	P334US	—	
ETEN N2520M1604W	ETEN N2520W		25	20	150	10.0	24.5	—			2	P334WS	EST32	
ETEN N2525M1604	ETEN N2525M33		25	25	150	12.5	24.5	—			1	P334US	—	
ETEN N2525M1604W	ETEN N2525M33W	★	25	25	150	12.5	24.5	—			2	P334WS	EST32	
ETEN N2525M22	ETEN N2525M43		25	25	150	12.5	24.5	30	TN□□2204	**B53 ~**	3	P434U	—	KY40
ETEN N2525M22W	ETEN N2525M43W	★	25	25	150	12.5	24.5	30			4	P434W	EST43	



SEC-30 series Holder - General Turning and Facing
Pin Lock



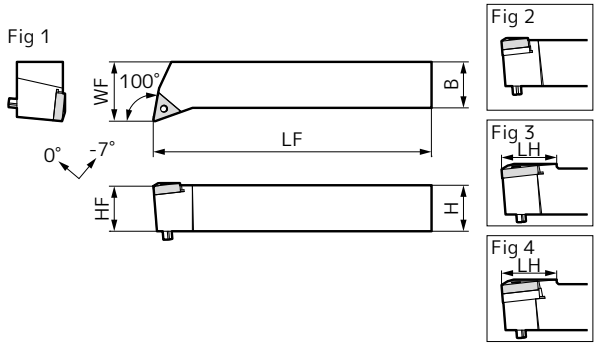


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Pin	Shim	Wrench
ETXN R/L1212F11	ETXN R/L1212	★	★	12	12	80	16	11.5	—	TN□□1103	**B46**	1	P221US	—	KY25
ETXN R/L1616H1603	ETXN R/L1616H32			16	16	100	20	15.5	—	TN□□1603	**B47 ~**	1	P322US	—	KY40
ETXN R/L1616H1604	ETXN R/L1616H33	★	★	16	16	100	20	15.5	—	TN□□1604	**B48 ~**	1	P332US	—	KY40
ETXN R/L2020K1603	ETXN R/L2020K32			20	20	125	25	19.5	—	TN□□1603	**B47 ~**	1	P323US	—	KY40
ETXN R/L2020K1603W	ETXN R/L2020K32W			20	20	125	25	19.5	—			2	P323WS	EST32	
ETXN R/L2020K1604	ETXN R/L2020K33	★	★	20	20	125	25	19.5	—	TN□□1604	**B48 ~**	1	P333US	—	KY40
ETXN R/L2020K1604W	ETXN R/L2020K33W	★	★	20	20	125	25	19.5	—			2	P333WS	EST32	
ETXN R/L2520M1604	ETXN R/L2520			25	20	150	25	24.5	—			1	P334US	—	
ETXN R/L2520M1604W	ETXN R/L2520W			25	20	150	25	24.5	—			2	P334WS	EST32	
ETXN R/L2525M1604	ETXN R/L2525M33			25	25	150	32	24.5	—			1	P334US	—	
ETXN R/L2525M1604W	ETXN R/L2525M33W	★	★	25	25	150	32	24.5	—			2	P334WS	EST32	
ETXN R/L2525M22	ETXN R/L2525M43			25	25	150	32	24.5	30	TN□□2204	**B53 ~**	3	P434U	—	KY40
ETXN R/L2525M22W	ETXN R/L2525M43W	★	★	25	25	150	32	24.5	30			4	P434W	EST43	

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MTJN type / MTXN type



SEC-M series Holder - General Turning and Profiling
Clamp-on + Pin Lock

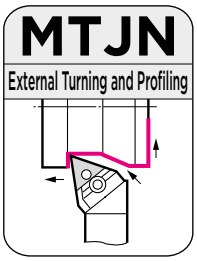


Fig 1

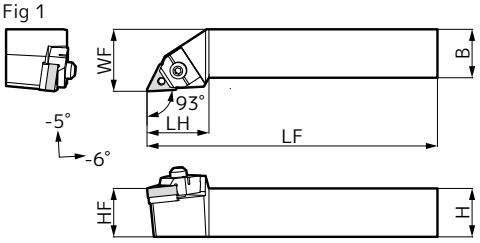


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

	ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	Applicable Inserts: ISO Cat. No.	Applicable Inserts: Ref. Page	Fig	Clamp Plate	Pin	Shim	Bolt	Bolt: N·m	Nut	Retaining Ring	Wrench for Bolt	Wrench for Nut
*	**MTJN R/L2020K16**	MTJN R/L2020-33	★	★	20	20	125	25	20	32	TN□□1604		1	MMW30	MP317S	STW323	BHA0525	**4.0**	CPM32N	ER04	LH030 (For Hexagonal hole)	LH030 (For Hexagonal hole)
**	**MTJN R/L2525M16**	MTJN R/L2525-33	★	★	25	25	150	32	25	32			1		MP320S							
**	**MTJN R/L2525M22**	MTJN R/L2525-43	★	★	25	25	150	32	25	38	TN□□2204		1	MMW40	MP420	STW434	BHA0625	**4.5**	CPM43N	ER05	LH040	LH030
	MTJN R/L3225P22	MTJN R/L3225-43	★	★	32	25	170	32	32	38			1		MP420							

When using CIS standard inserts, the pin for holders marked * is MP317 and the pin for holders marked ** is MP320.



SEC-M series Holder - General Turning and Facing
Clamp-on + Pin Lock

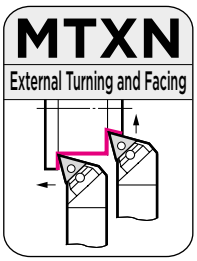


Fig 1

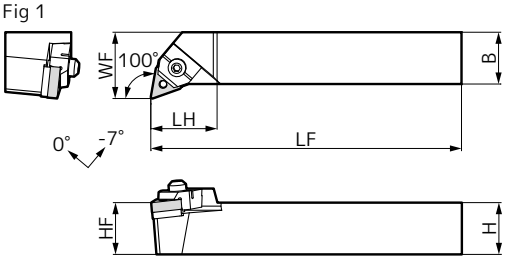


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

	ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	LH	Applicable Inserts: ISO Cat. No.	Applicable Inserts: Ref. Page	Fig	Clamp Plate	Pin	Shim	Bolt	Bolt: N·m	Nut	Retaining Ring	Wrench for Bolt	Wrench for Nut
*	**MTXN R/L2020K16**	MTXN R/L2020-33	★	★	20	20	125	25	20	32	TN□□1604		1	MMW30	MP317S	STW323	BHA0525	**4.0**	CPM32N	ER04	LH030 (For Hexagonal hole)	LH030 (For Hexagonal hole)
**	**MTXN R/L2525M16**	MTXN R/L2525-33	★	★	25	25	150	32	25	32			1		MP320S							
	MTXN R/L2525M22	MTXN R/L2525-43	★	★	25	25	150	32	25	38	TN□□2204		1	MMW40	MP420	STW434	BHA0625	**4.5**	CPM43N	ER05	LH040	LH030

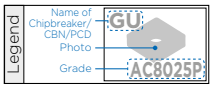
When using CIS standard inserts, the pin for holders marked * is MP317 and the pin for holders marked ** is MP320.
When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts

◂·· DTGN type/DTFN type/PTGN type/PTTN type/PTFN type/ETGN type/ETAN type/ETFN type/ETEN type/ETXN type/MTJN type/MTXN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE **T1500Z**	GU **AC8115P**	MU **AC8020P**	EF **AC6020M**	EG **AC6020M**	EM **AC6030M**	SUMIBORON BN7125/BNC500	UZ **AC4010K**	GZ **AC4010K**	EF **AC5015S**	EG **AC5015S**	EM **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
General Machining	SU **AC8115P**	GU **AC8025P**	MU **AC8025P**	EF **AC6030M**	EG **AC6030M**	EM **AC6135M**	SUMIBORON BN7125/BNC500	GZ **AC4015K**	GZ **AC4015K**	EF **AC5015S**	EG **AC5015S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
Interrupted Cutting	SX **AC8025P**	UX **AC8035P**	MX **AC8035P**	EF **AC6030M**	EH **AC6135M**	EM **AC6145M**	SUMIBORON BN7125/BNC500	GZ **AC4125K**	GZ **AC4125K**	EF **AC5025S**	EG **AC5025S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2135**	SUMIBORON **BN350**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~	☞ A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)
BNC500 is for Ductile cast iron.

CTGP type/CTAP type



SEC-40 series Holder - General Turning
Clamp-on

CTGP
External Turning

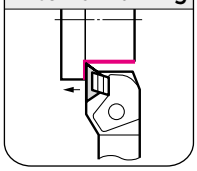


Fig 1

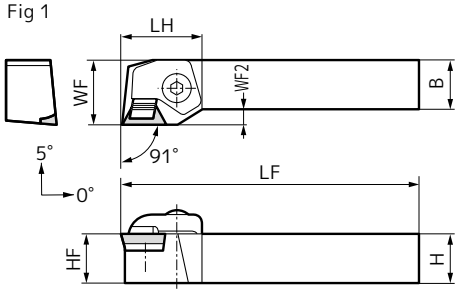


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Chipbreaker	Bolt	Shim	Shim Retainer	Spring	Wrench (For Hexagonal hole)
CTGP R/L1919 L16	FP22 R/L-33	★		19	19	140	25	19	34.5	6	TP□□1603	**B109**	1	DCR/L2	CBD4R/L	BH0824R/L	STPD322	SPP3	DSP5	LH040
CTGP R/L2525 N22	FP22 R/L-44B	★		25	25	160	32	25	41	7	TP□□2204	**B113**	1	DCR/L3	CBD5R/L	BH1030R/L	STPD422	SPP3	DSP5	LH050



SEC-40 series Holder - General Turning
Clamp-on

CTAP
External Turning

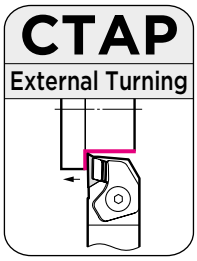


Fig 1

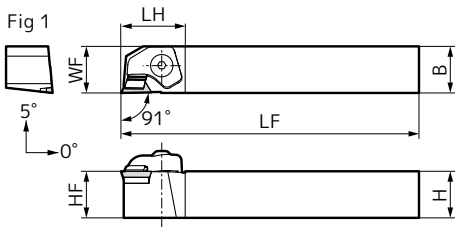


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Chipbreaker	Bolt	Shim	Shim Retainer	Spring	Wrench (For Hexagonal hole)
CTAP R/L2525 N16	FP21 R/L-44A	★		25	25	160	25	25	34.5	TP□□1603	**B109**	1	DCR/L2	CBD4R/L	BH0830R/L	STPD322	SPP3	DSP5	LH040
CTAP R/L3225 N16	FP21 R/L-45A			32	25	160	25	32	34.5			1							
CTAP R/L3232 Q22	FP21 R/L-55			32	32	180	32	32	41	TP□□2204	**B113**	1	DCR/L3	CBD5R/L	BH1036R/L	STPD422	SPP3	DSP5	LH050

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

CTFP type

SEC-40 series Holder - Facing
Clamp-on

CTFP
Facing

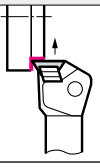


Fig 1

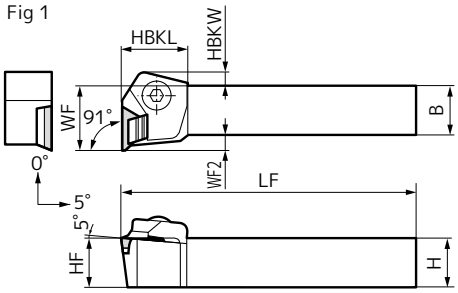


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	H	B	LF	WF	HF	HBKL	WF2	HBKW	Applicable Inserts ISO Cat. No.	Applicable Inserts Ref. Page	Fig	Clamp Plate	Chipbreaker	Bolt	Shim	Shim Retainer	Spring	Wrench
CTFP R/L1919 L16	FP25 R/L-33	★		19	19	140	25	19	26	6	8	TP□□1603	**B109**	1	DCL/R2	CBD4L/R	BH0824L/R	STPD322	SPP3	DSP5	LH040
CTFP R/L2525 N16	FP25 R/L-44A	★		25	25	160	32	25	26	7	—			1			BH0830L/R				
CTFP R/L3225 N16	FP25 R/L-45A			32	25	160	32	32	26	7	—			1	DCL/R2						
CTFP R/L2525 N22	FP25 R/L-44B	★		25	25	160	32	25	33	7	7	TP□□2204	**B113**	1	DCL/R3	CBD5L/R	BH1030L/R	STPD422	SPP3	DSP5	LH040
CTFP R/L3232 Q22	FP25 R/L-55			32	32	180	39	32	33	7	—			1	DCL/R3	CBD5L/R	BH1036L/R				

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ◂·· CTGP type/CTAP type/CTFP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD, Photo, Grade (GU / AC8025P)

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-Ferrous)	H (Hardened Steel)
General Machining	FK **T1500Z**	SF **AC8025P**	SUMIBORON **BN7125**	No Chipbreaker **AC4015K**	No Chipbreaker **AC4015K**	No Chipbreaker **AC5015S**	No Chipbreaker **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BN2000**
Recommended Cutting Conditions	☞ A10 ~		☞ A16 ~			☞ A18 ~		☞ A22 ~	☞ A20 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

DVJN-J/JE type / DVJN type



SEC-D series Holder - General Turning and Profiling
Internal Coolant Supply, Double Clamp

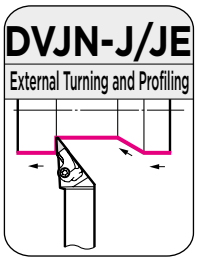


Fig 1

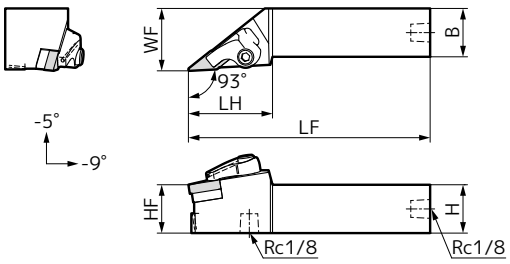


Figure shows right-handed (R) tool.

Fig 2

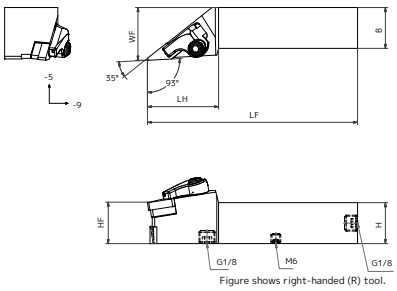


Figure shows right-handed (R) tool.

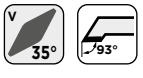
Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Cap Screw	N·m	Spring	O-ring	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Plug
DVJN R/L2020 K16J	★	★	20	20	125	25	20	43	VN□□1604	B58 ~	1	JVR/L-01	CP-M5-20-1	**5.0**	CSP12J	SS060	VNS1604	BFTX0307N	TRX10(*)	LH040	LH025	XP02
DVJN R/L2525 K16J	★	★	25	25	125	32	25	43														
DVJN R/L2020 X16JE	★	★	20	20	113,5	25	20	43			2								TRX15(*)			XP03-E
DVJN R/L2525 X16JE	★	★	25	25	128,5	32	25	43														

*Wrench for shim is sold separately from the main body.



SEC-D series Holder - General Turning and Profiling
Double Clamp

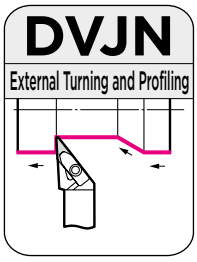


Fig 1

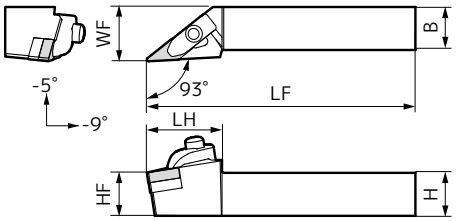


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DVJN R/L2020K16	★	★	20	20	125	25	20	35	VN□□1604	B58 ~	1	SCP-4	**5.0**	VNS1604	BFTX0307N	TRX10(*)	LH040	LH025
DVJN R/L2525M16	★	★	25	25	150	32	25	35			1							

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DVVN type / DVQN type



SEC-D series Holder - General Turning and Profiling
Double Clamp

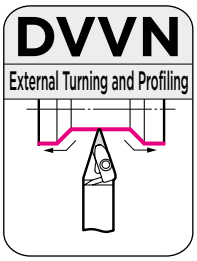
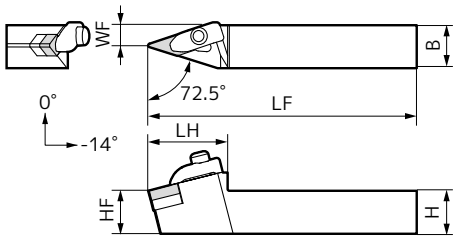


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
															(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DVVN N2020K16	★	20	20	125	10.0	20	37	VN□□1604	B58 ~	1 1	SCP4	**5.0**	VNS1604	BFTX0307N	TRX10(*)	LH040	LH025
DVVN N2525M16	★	25	25	150	12.5	25	37										

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C48



SEC-D series Holder - General Turning, Profiling and Necking
Double Clamp



Fig 1

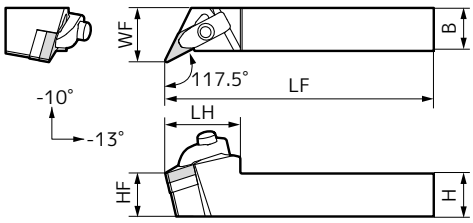


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
																(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DVQN R/L2020K16	★	★	20	20	125	25	20	35	VN□□1604	B58 ~	1 1	SCP4	**5.0**	VNS1604	BFTX0307N	TRX10(*)	LH040	LH025
DVQN R/L2525M16	★	★	25	25	150	32	25	35										

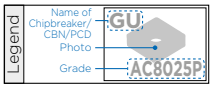
*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C48

Applicable Inserts ◂·· DVJN-J type / DVJN type / DVVN type / DVQN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	EF AC6020M	EG AC6020M	SUMIBORON BN7125/BNC500	UZ AC4010K	EF AC5015S	EG AC5015S	SUMIDIA DA1000	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	EF AC6030M	EG AC6030M	SUMIBORON BN7125/BNC500	GZ AC4015K	EF AC5015S	EG AC5015S	SUMIDIA DA1000	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	EF AC6030M	EG AC6135M	SUMIBORON BN7125/BNC500	GZ AC4125K	EF AC5025S	EG AC5025S	SUMIDIA DA1000	SUMIBORON BNC2135	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A16 ~		☞ A18 ~		☞ A22 ~	☞ A20 ~		☞ M2 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

SVLC type / SVJC type



SEC-SV series Mini Holder - General Turning and Profiling Screw-on

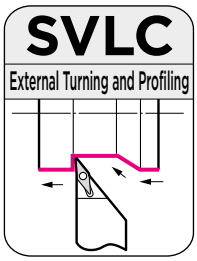


Fig 1

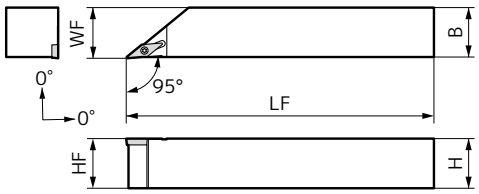


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SVLC R/L1010 H11	★	★	10	10	100	10.5	10	VC□□1103	**B119 ~**	1	BFTX02508NV	**1.5**	TRX08
SVLC R/L1212 H11	★	★	12	12	100	12.5	12			1			
SVLC R/L1616 H11	★	★	16	16	100	16.5	16			1			
SVLC R/L2020 K11*	★	★	20	20	125	20.5	20			1			
SVLC R/L2525 M11	★	★	25	25	150	25.5	25			1			

* Old Cat. No. SVLC R/L 2020-H11



SEC-SV series Profiling Tool Holder - External Profiling Screw-on

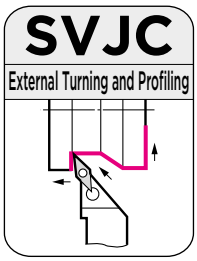


Fig 1

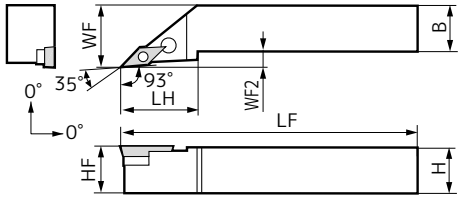


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Nut	Shim	Flat Insert Screw	N·m	Wrench (For Torx hole)	Wrench for Nut (For Hexagonal hole)
SVJC R/L2020 K16	SVJC R/L2020-33	★	★	20	20	125	25	20	41	5	VC□□1604	**B120 ~**	1	VP20	CPV33N	SVP32	BFTX03508	**2.0**	TRX10	LH025
SVJC R/L2525 M16	SVJC R/L2525-33	★	★	25	25	150	32	25	41	7			1	VP25						
SVJC R/L3225 P16	SVJC R/L3225-33	★	★	32	25	170	32	32	41	7			1	VP32						

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SVVC type / SVPC type



SEC-SV series Profiling Tool Holder - External Profiling Screw-on

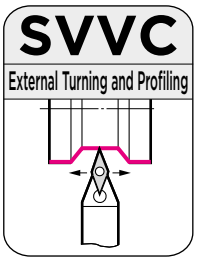
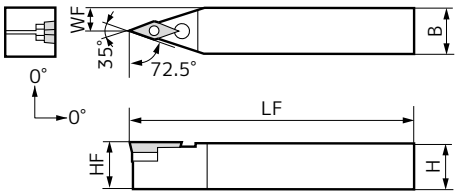


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Nut	Shim	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)	Wrench for Nut (For Hexagonal hole)
SVVC N2020 K16	SVVC N2020-33	★	20	20	125	10.0	20	VC□□1604	B120 ~	1	VP20	CPV33N	SVP32	BFTX03508	**2.0**	TRX10	LH025
SVVC N2525 M16	SVVC N2525-33	★	25	25	150	12.5	25			1	VP25						
SVVC N3225 P16	SVVC N3225-33	★	32	25	170	12.5	32			1	VP32						



SEC-SV series Profiling Tool Holder - General Turning, Facing, Profiling and Necking Screw-on

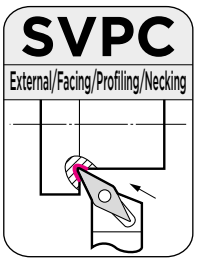


Fig 1

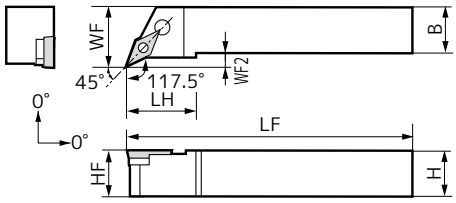


Figure shows right-handed (R) tool.

Holder

Parts

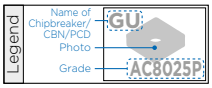
Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Nut	Shim	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)	Wrench for Nut (For Hexagonal hole)
SVPC R/L1010 H11	—	★	★	10	10	100	14.5	10	–	4.5			1							
SVPC R/L1212 H11	—	★	★	12	12	100	16.5	12	–	4.5	VC□□1103	B119 ~	1	—	—	—	BFTX02508NV	**1.5**	TRX08	—
SVPC R/L1616 H11	—	★	★	16	16	100	20.5	16	–	4.5			1							
SVPC R/L2020 K16	SVPC R/L2020-33	★	★	20	20	125	25	20	35	5.0			1	VP20						
SVPC R/L2525 M16	SVPC R/L2525-33	★	★	25	25	150	32	25	35	7.0	VC□□1604	B120 ~	1	VP25	CPV33N	SVP32	BFTX03508	**2.0**	TRX10	LH025
SVPC R/L3225 P16	SVPC R/L3225-33			32	25	170	32	32	35	7.0			1	VP32						

Applicable Inserts ◂·· SVLC type / SVJC type / SVVC type / SVPC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SU** **AC5015S**	**SU** **AC5025S**	**SUMIDIA** **DA1000**	**AG** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA1090**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC5015S**	**SUMIDIA** **DA1000**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A18 ~		☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item

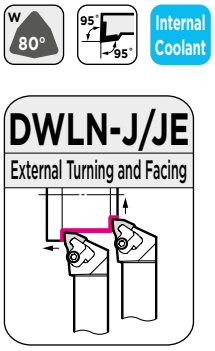
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

DWLN-J type / DWLN type



SEC-D series Holder - General Turning and Facing
Internal Coolant Supply, Double Clamp

Fig 1

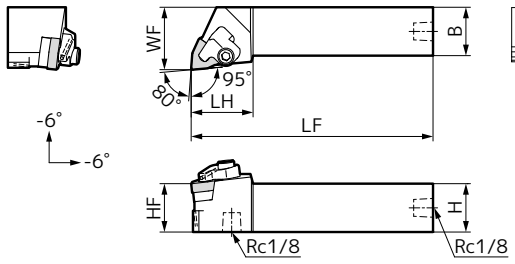


Figure shows right-handed (R) tool.

Fig 2

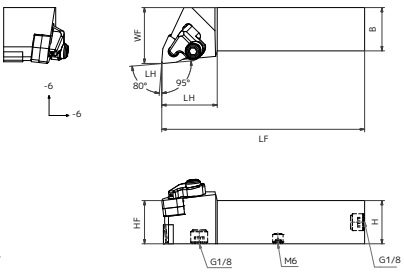


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert		Fig	Clamp Plate	Cap Screw		Spring	O-ring	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Plug
	R	L	H	B	LF	WF	HF	LH	ISO Cat. No.	Ref. Page									(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)	
DWLN R/L2020K08 J	★	★	20	20	125	25	20	32	WN□□0804	B63 ~	1	JCR/L-01	CP-M5-20-1	5.0	CSP12J	SS060	WNS0804	BFTX0409N	TRX15(*)	LH040	LH025	XP02
DWLN R/L2525K08 J	★	★	25	25	125	32	25	32														
DWLN R/L2020X08 JE	★	★	20	20	102,0	25	20	32			2											XP03-E
DWJNR/L2525X08 JE	★	★	25	25	117,0	32	25	32														

*Wrench for shim is sold separately from the main body.

SEC-D series Holder - General Turning and Facing
Double Clamp

Fig 1

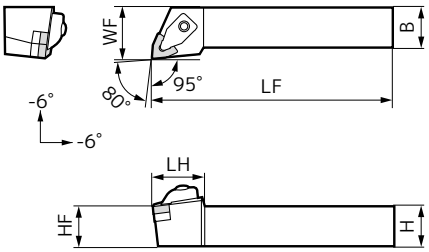


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert		Fig	Clamp Set		Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	LH	ISO Cat. No.	Ref. Page						(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DWLN R/L2020 K08	★	★	20	20	125	25	20	32	WN□□0804	B63 ~	1	SCP2	5.0	WNS0804	BFTX0409N	TRX15(*)	LH040	LH025
DWLN R/L2525 M08	★	★	25	25	150	32	25	32			1							

*Wrench for shim is sold separately from the main body.
When using handed chipbreaker inserts for facing,
the holder and insert are opposite handed.

Clamp Set Parts ☞C48

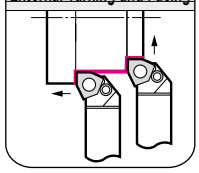
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

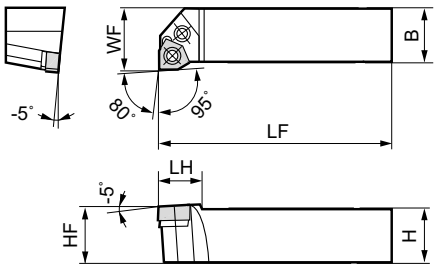
PWLN type / MWLN type



PWLN

External Turning and Facing





SEC-70 series Holder - General Turning and Facing
Lever Lock

Inserts

Eg.



N-SU

❶ WNMG 060408 N-SU

Holder

Above figures show right hand tools.

ISO Cat. No.	Stock R	Stock L	H	HF	B	LF	LH	WF	Lever pin	Clamp bolt	Shim	Shim pin	Wrench	Insert
PWLN R/L 2020 K06 (PWLN R/L 2020-33)			20	20	20	125	27	25	LCL3SD	LCS3TB-SD	LSW317	LSP3SD	LH025	❶
PWLN R/L 2525 M06			25	25	25	150	27	32						

Parts



MWLN

External/Facing/Profiling

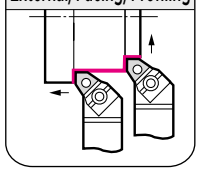


Fig 1

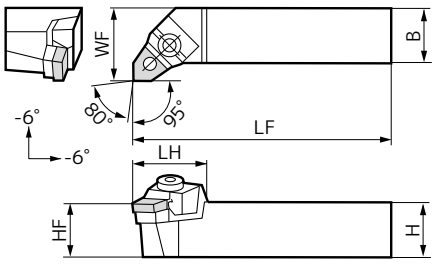


Figure shows right-handed (R) tool.

SEC-M series Holder - General Turning, Facing, and Profiling
Clamp-on + Pin Lock

Holder

Parts

Dimensions (mm)

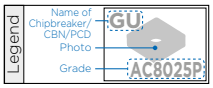
ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Pin	Shim	Bolt	N·m	Nut	Retaining Ring	Wrench for Bolt	Wrench for Nut
MWLN R/L2020 K08	MWLN R/L2020-43	★	★	20	20	125	25	20	32	WN□□0804	B63 ~	1	MWW40	MP416	SWW433	BHA0625	4.5	CPM43S	ERO5	LH040 (For Hexagonal hole)	LH030 (For Hexagonal hole)
MWLN R/L2525 M08	MWLN R/L2525-43	★	★	25	25	150	32	25	32			1		MP420				CPM43N			
MWLN R/L3225 P08	MWLN R/L3225-43	★	★	32	25	170	32	32	32			1		MP420				CPM43N			

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ◂·· DWLN-J type / DWLN type / PWLN type / MWLN type

1st Recommended Insert

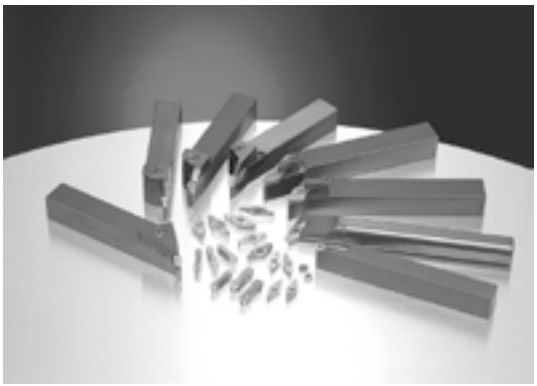
- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN2000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~		☞ A18 ~			☞ A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

MV series / GD series Profiling Tool Holders



■ General Features

With a wide range of insert shapes (35° diamond shaped type, dogbone type and round type) available in both cemented carbide and polycrystalline diamond grades, we are able to provide superior performance for a vast variety of applications and cutting conditions.

■ Features and Applications

- **The 35° diamond shaped inserts** support a wide range of applications from roughing to finishing.
  With newly designed holders for higher clamping rigidity and AW-type chipbreakers that reduce cutting resistance, stable roughing operations are achieved.
- Wide variety of **dogbone inserts**
  AW type chipbreakers, with their high-raked design and newly designed dedicated tool holder, support a wide variety of tooling (straight, 15° angle, 45° angle)
- **AW type Chipbreaker** for smooth chip control
- **AG type Chipbreaker** for no chip adhesion on a mirror finish

■ AW type Chipbreaker

● **35° Diamond type**



VCGT220520N-AW (H1)

● **Dogbone Insert**



MDE4R-AW (H1)



MDE4R-AW (DA2200)

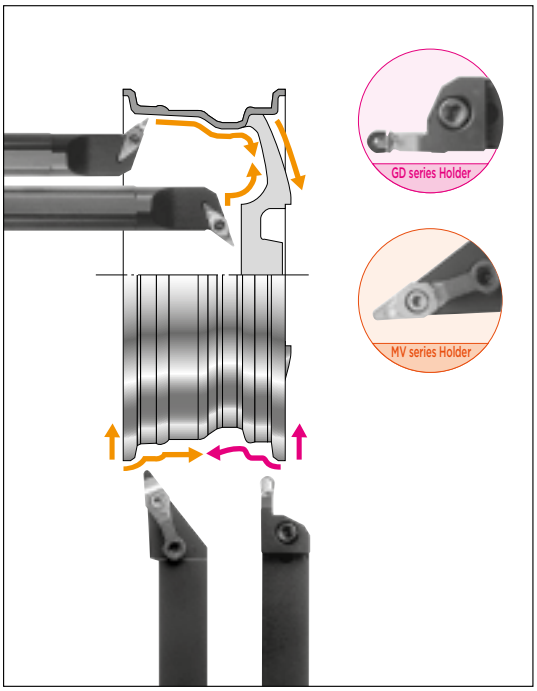
■ AG type Chipbreaker

● **35° Diamond type**



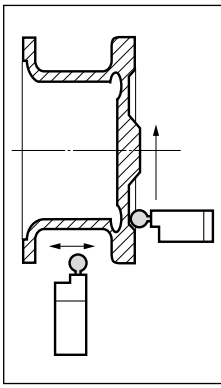
VCGT160408N-AG (H1)

■ Series Tool type



Product Name	Cat. No.	Page
SEC-GD series Holders	GDE R/L2525-600W/S	C46
	GDE R/L2525-800W/S	
	GDE R/L2525-615W/S	
	GDE R/L2525-815W/S	
	GDE R/L2525-645W/S	C47
	GDE R/L2525-845W/S	
SEC-SV series Holders	SVJC R/L2525M16	C40
	SVVC N2525M16	C41
	SVPC R/L2525M16	
SEC-MV series Holders	MVXC R/L2525Q22-20	C45
	MVXC R/L2525Q22-30	
	MVPC R/L2525Q22-20	
	MVPC R/L2525Q22-30	
SEC-D series Holders	DVJN R/L2525 M16	C38
	DVVN N2525 M16	C39
	DVQN R/L2525 M16	

■ Application Examples

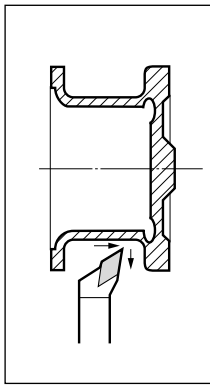


● **Cutting Conditions**

Tool Holder Cat. No.: GDEL2525-800W
Insert Cat. No.: MDE4R-AW
Grade: H1
n = 2,000min^{-1}
f = 0.4 to 0.6mm/rev
ap = 2.0mm Wet

● **Usage Results**

Excellent chip control of AW chipbreaker guarantees an increase in productivity.

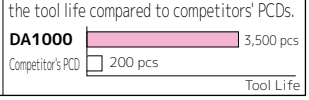


● **Cutting Conditions**

Tool Holder Cat. No.: SVJCL2525M16
Insert Cat. No.: VCMT160412
Grade: DA1000
vc = 2,500m/min
f = 0.35mm/rev
ap = 0.2mm Wet

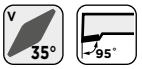
● **Usage Results**

Will not fracture and provides over 17 times the tool life compared to competitors' PCDs.



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

MV series Profiling Tool Holders



SEC-35° Diamond type - General Turning, Profiling and Necking
Screw-on + Clamp-on

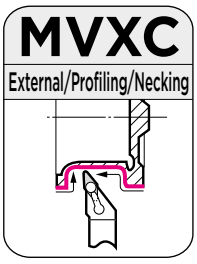


Fig 1

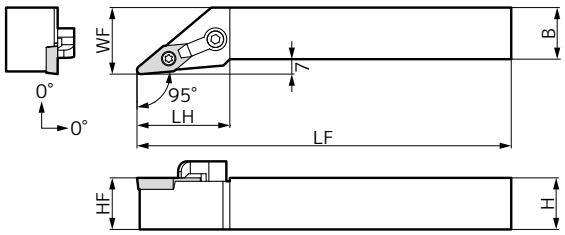


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Fig	Clamp Plate	Double Screw	Flat Insert Screw	Wrench (For Torx hole)	Wrench for Clamp (For Hexagonal hole)
■ **MVXC R/L2525Q22 20**	MVXC R/L2525-2220	★	★	25	25	180	32	25	45	1	CCM8-LONG	WB8-24	BFTX0515N	TRX20	LH040
□ **MVXC R/L2525Q22 30**	MVXC R/L2525-2230	★	★	25	25	180	32	25	45	1					

■ mark: Corner Radius 2.0mm Insert, □ mark: Corner Radius 3.0mm Insert



SEC-35° Diamond type - Internal Boring, Profiling and Necking
Screw-on + Clamp-on

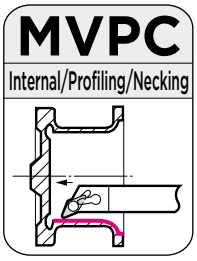


Fig 1

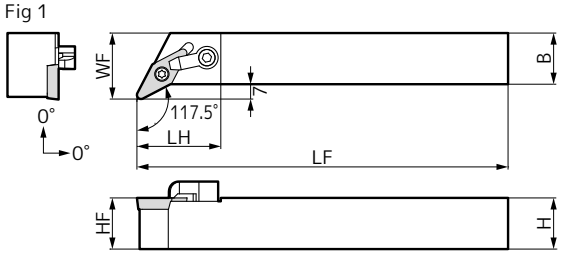


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Fig	Clamp Plate	Double Screw	Flat Insert Screw	Wrench (For Torx hole)	Wrench for Clamp (For Hexagonal hole)
■ **MVPC R/L2525Q22 20**	MVPC R/L2525-2220	★	★	25	25	180	32	25	41	1	CCM8-LONG	WB8-24	BFTX0515N	TRX20	LH040
□ **MVPC R/L2525Q22 30**	MVPC R/L2525-2230	★	★	25	25	180	32	25	41	1					

■ mark: Corner Radius 2.0mm Insert, □ mark: Corner Radius 3.0mm Insert When performing internal machining, clearance modification to the bottom of the cutting edge is required.

Insert (35° Diamond type)

(Cemented Carbide/ SUMIDIA) Dimensions (mm)

Shape	Cat. No.	G10E	H1	DA1000	DA2200	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Holder
AW	**VCGT 220520 NAW**	—	★	—	—	12.70	5.56	2.0	★ MVXC type (holder pictured above) MVPC type (holder pictured above)
	VCGT 220530 NAW	—	★	—	—	12.70	5.56	3.0	☆
AG	**VCGT 220530 NAG**	—	★	—	—	12.70	5.56	3.0	☆
	VCMT 220520	—	—	★	▲	12.70	5.56	2.0	★
	VCMT 220530	—	—	★	▲	12.70	5.56	3.0	☆
AW	**VCGT 160408 NAW**	—	★	—	—	9.525	4.76	0.8	SVJC type C40 SVVC type C41 SVPC type C41
	VCGT 160412 NAW	—	★	—	—	9.525	4.76	1.2	
AG	**VCGT160408 NAG**	—	★	—	—	9.525	4.76	0.8	
	VCGT160412 NAG	—	★	—	—	9.525	4.76	1.2	
	VCMT 160404 NF	—	—	★	▲	9.525	4.76	0.4	
	VCMT 160408 NF	—	—	★	▲	9.525	4.76	0.8	
	VCMT 160412 NF	—	—	★	▲	9.525	4.76	1.2	
	VCMT 160408	—	—	★	▲	9.525	4.76	0.8	
	VCMT 160412	—	—	★	▲	9.525	4.76	1.2	
WF	**VCMT 160412 WF**	—	—	★	▲	9.525	4.76	1.2	
UP	**VNMG 160404 NUP**	★	—	—	—	9.525	4.76	0.4	DVJN type C38 DVVN type C39 DVQN type C39
	VNMG 160408 NUP	★	—	—	—	9.525	4.76	0.8	
	VNMX 160404 NF	—	—	★	▲	9.525	4.76	0.4	
	VNMX 160408 NF	—	—	★	▲	9.525	4.76	0.8	
	VNMX 160412 NF	—	—	★	▲	9.525	4.76	1.2	
	VNMX 160404	—	—	★	▲	9.525	4.76	0.4	
	VNMX 160408	—	—	★	▲	9.525	4.76	0.8	
	VNMX 160412	—	—	★	▲	9.525	4.76	1.2	

VNMG1604OON-UP (UP type Chipbreaker) is available in AC820P, AC830P, AC6030M, AC6040M and AC630M grades.

★mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

GD series Profiling Tool Holders

Dogbone Insert type - External Turning and Profiling
Clamp-on

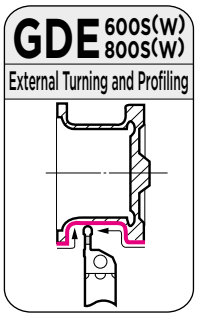


Fig 1

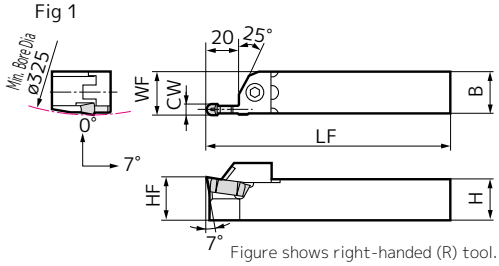


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Width of Cut CW	Group No.	Fig	Carbide Piece Clamp Plate	Special Steel Clamp Plate	Cap Screw	Wrench (For Hexagonal hole)
GDE R/L2525600 S	★	★	25	25	150	26	25	6	1	1	—	GDS600R/L	BX0625	LH050
GDE R/L2525800 S	★	★	25	25	150	26	25	8	2	1		GDS800R/L		
GDE R/L2525600 W	★	★	25	25	150	26	25	6	1	1	GDW600R/L	—		
GDE R/L2525800 W	★	★	25	25	150	26	25	8	2	1	GDW800R/L			

Refer to MDE series insert group numbers on page C47 for applicable inserts.

Dogbone Insert type - Facing and Internal Profiling
Clamp-on

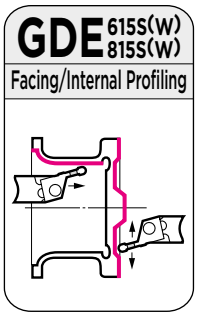


Fig 1

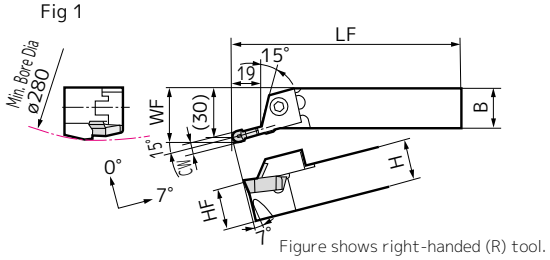


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Width of Cut CW	Group No.	Fig	Carbide Piece Clamp Plate	Special Steel Clamp Plate	Cap Screw	Wrench (For Hexagonal hole)
GDE R/L2525615 S	★	★	25	25	150	32.2	25	6	1	1	—	GDS615R/L	BX0625	LH050
GDE R/L2525815 S			25	25	150	33.2	25	8	2	1		GDS815R/L		
GDE R/L2525615 W	★	★	25	25	150	32.2	25	6	1	1	GDW615R/L	—		
GDE R/L2525815 W	★		25	25	150	33.2	25	8	2	1	GDW815R/L			

Refer to MDE series insert group numbers on page C47 for applicable inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

GD series Profiling Tool Holders

Dogbone Insert type - Internal Profiling
Clamp-on

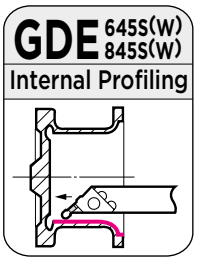


Fig 1

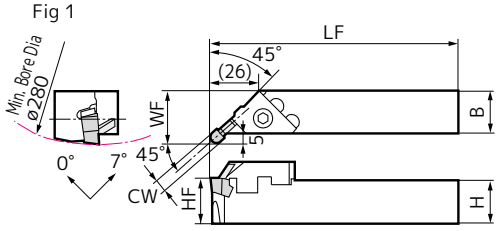


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Width of Cut CW	Group No.	Fig	Carbide Piece Clamp Plate	Special Steel Clamp Plate	Cap Screw	Wrench (For Hexagonal hole)
GDE R/L252645 S	★	★	25	25	150	30	25	6	1	1	—	GDS645R/L	BX0625	LH050
GDE R/L2525845 S			25	25	150	30	25	8	2	1		GDS845R/L		
GDE R/L2525645 W			25	25	150	30	25	6	1	1	GDW645R/L	—		
GDE R/L2525845 W			25	25	150	30	25	8	2	1	GDW845R/L			

Refer to MDE series insert group numbers below for applicable inserts.

Insert (Dogbone type)

(Carbide/ SUMIDIA)

Shape	Cat. No.	Stock H1	Stock DA2200	Overall Length L	Thickness S	Corner Radius RE	Width of Cut CW	Group No.	Fig
 AW	**MDE3R AW**	★	—	26	8.5	3.0	6	1	1
	MDE4R AW	★	—	30	8.5	4.0	8	2	
	**MDE3R**	—	★	26	8.5	3.0	6	1	2
	MDE4R	—	★	30	8.5	4.0	8	2	
 AW	**MDE3R AW**	—	★	26	8.5	3.0	6	1	3
	MDE4R AW	—	★	30	8.5	4.0	8	2	

Fig 1

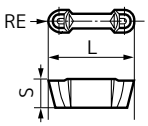


Fig 2

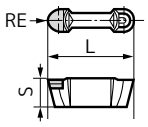
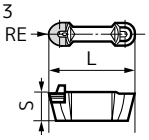


Fig 3



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Clamp Set Parts

Parts

Applicable Clamp Set Cat. No.	Spring 	Stock	Cap Screw 	Stock	N·m
SCP1	CSP08	★	CP-M5-20-1	★	
SCP2	CSP08	★	CP-M5-20-1	★	
SCP3	CSP08	★	CP-M5-20-1	★	5.0
SCP4	CSP25	★	CP-M5-20-1	★	
SCP5	CSP08	★	CP-M5-20-1	★	
SCP6	CSP12	★	CP-M8-25-1	★	6.0

CP-M5-20-1 can also be fastened from the other end of the screw.

N·m Recommended Tightening Torque (N·m)

Small Lathe Tools

SumiSmall D

D1 to D50

Boring Bars ☞ E1 ~ Grooving / Cut-off / Threading Tools ☞ F1 ~

Small Lathe Tools Selection Guide D2
Small Lathe Tools SumiSmall D4
Insert Grade Selection Guide D6
Chipbreaker Selection D7

External Holders

Indexable Head Type Quick Change Tool Holders	New	APM series D8
SEC-PB Tool Holders		SPB series D24
SEC-Mini Tool Holders Zero Offset Holders		PCLC-X type / SCLC-X type / SCAC-X type D26
		PDJC-X type / SDJC-X type D27
		SDAC-X type / SDPC-X type D28
		SVJC-X type / PTXN-X type D29
SEC-Mini Tool Holders PC series / SC series		PCLC type / SCLC type D30
		SCAC type D31
SEC-MINI Tool Holders PD series / SD series		PDJC type / SDJC / SDHC type D32
		SDAC type D33
		SDNC type D34
SEC-MINI Tool Holders SS series		SSBC type D36
SEC-MINI Tool Holders ST series		STGC type / STAC type D37
		SVJB type / SVPB type D38
		SVVB type D39
SEC-Mini Tool Holders SV series (7° Positive)		SVLC type / SVPC type D40
SEC-Mini Tool Holders SV series (11° Positive)		SVLP type / SVPP type D41
SEC-Round Shank Tool Holders		RS-SCL type D42
		RS-SDU type / RS-SDX type D43
		RS-SVX type / RS-SVVP type D44
		RS-PTXN type D45
SEC-Wide-Cut Holders		SGW series D46
SEC-Mini Tool Holders	Expansion	SBT series / PBT series D48
SEC-Front Turning Tool Holders		SFT series D50

E Boring Bars

Multi-functional Small Lathe Tools E16
SEC-Boring Bars (for Bottom Facing) E18
SEC-Boring Bars (for Profiling) E26
SEC-Boring Bars (for Through Boring) E34
SEC-Boring Bars (for Stop Boring) E40
SEC-MINI Boring Bars E64

F Grooving / Cut-off / Threading Tools

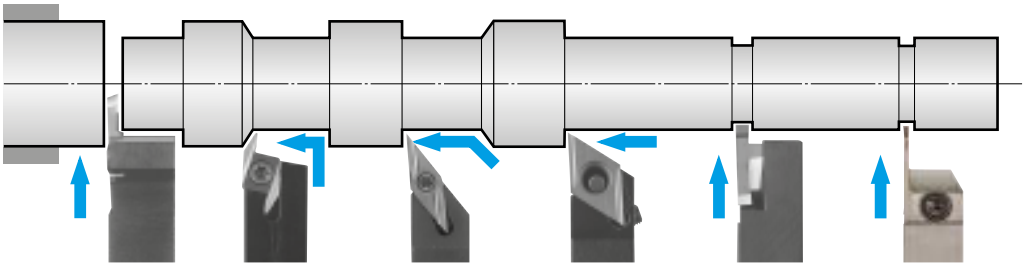
SEC-Grooving Tools (External) F4
SEC-Grooving Tools (Internal) F58
SEC-Small Diameter Cut-off Tool Holders F88
SEC-Threading Tools (External) F112, F120
SEC-Threading Tools (Internal) F112, F125

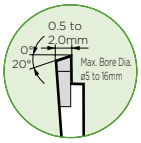
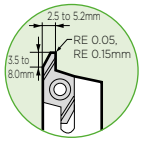
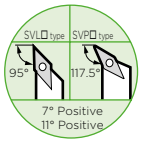
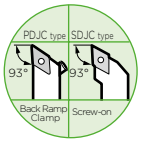
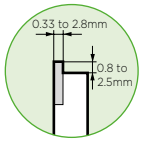
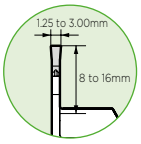
Stock Markings and Symbols

★ mark: Global stocked item
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Blank: Made-to-order item
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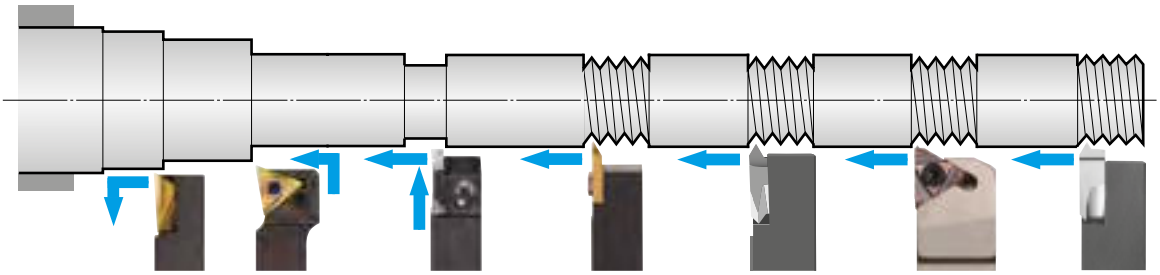
Small Lathe Tools Selection Guide

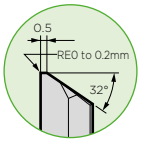
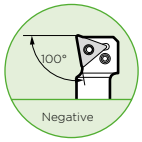
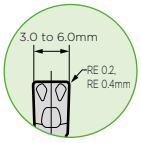
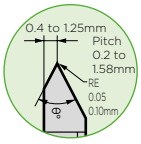
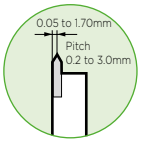
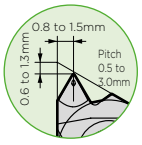
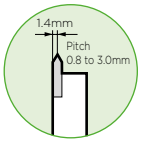
External Turning (1)



Application / Model / Page	Cut-off	Back Turning	Profiling	General External Turning	Grooving	Grooving / Cut-off
	SCT series	SBT series (Expansion) PBT series	SV series	PD/SD series	GWC series (Expansion) TGA type Insert	GND series (Expansion)
	F88 ~	D48	D40 ~	D32, D33	F4	F12 ~
Cutting Edge Shape						
	Indexable Head D17 ~	Indexable Head D15 ~	Indexable Head D14 ~	Indexable Head D18 ~	Indexable Head D20 ~	

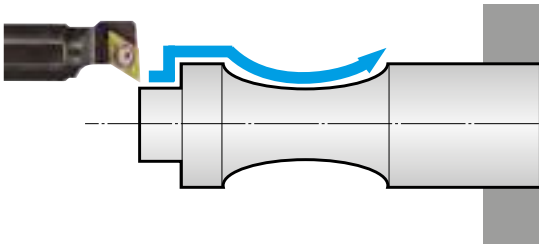
External Turning (2)



Application / Model / Page	Turning	Turning	Grooving Traverse Cutting	Threading	Grooving	Threading	Threading
	SFT series	PTXN-X type	SGE series	STH series	GWC series (New) TTE type Insert	SSTE series	THE series
	D50	D29	F56	F120	F4	F112 ~	F124
Cutting Edge Shape							
					Indexable Head D18 ~		

External Turning (3)

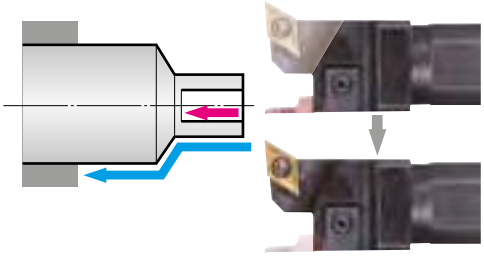
External turning made possible with holder sleeves.



Application / Model / Page	Round Shank Holder
	RS series
	D42 to D45

Multi-functional Tool

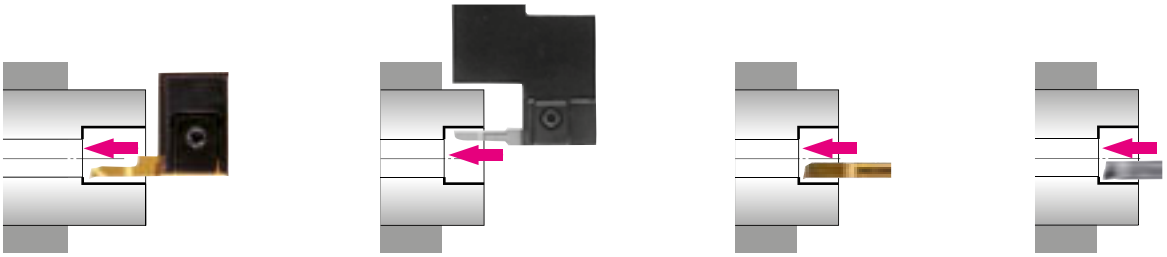
A single holder capable of performing two operations.



Application / Model / Page	Twin Head Holder	
	I.D. + O.D. CKBE type	I.D. + I.D. CKBB type
	E16	E16

Small Lathe Tools Selection Guide

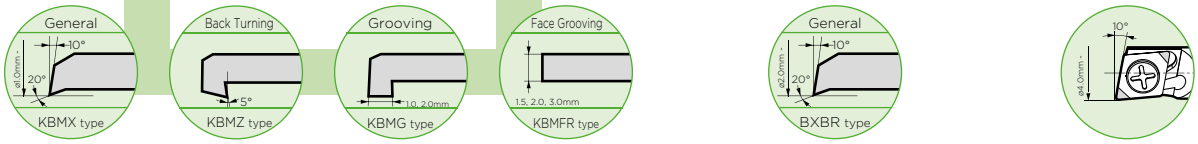
Internal Boring (1) Machining of very small diameters ø1mm and above



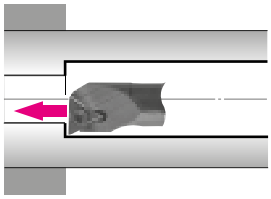
Application / Model / Page

Very Small Dia. Boring		Very Small Dia. Boring	Solid Carbide Bar	Small Hole Boring Bars
Square Shank	Round Shank	Square Shank L type Gang type Toolpost		
CKB series	S-CKB type / S-CKB-S type	CKBS type	BXBR series	SEXC series Expansion
E68	E70	E69	E74	E78

Cutting Edge Shape



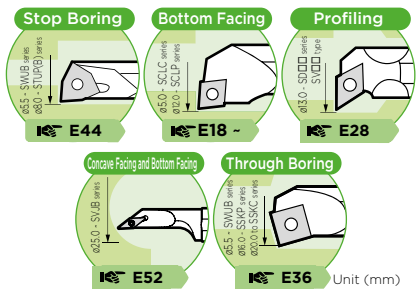
Internal Boring (2) Machining of small diameters ø5mm and above



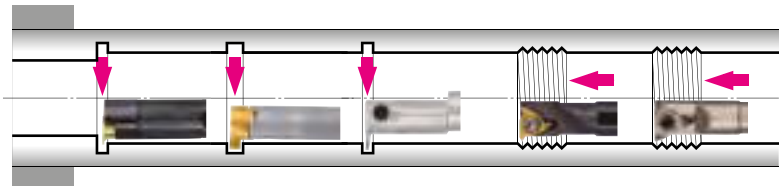
Application / Model / Page

Boring
SW type /ST type /SC type /SD type /SV type /SS type
E18 to E65

Cutting Edge Shape



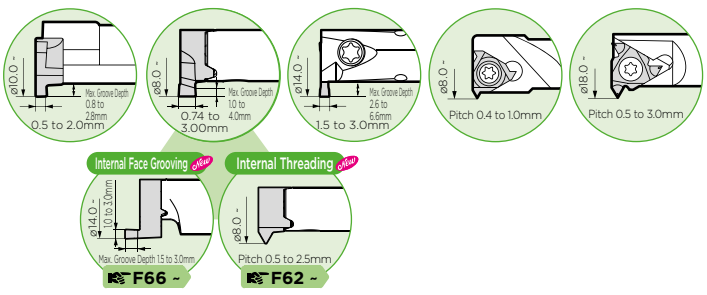
Internal Grooving and Threading



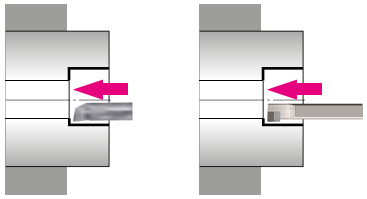
Application / Model / Page

Internal Grooving	Internal Grooving Internal Threading	Internal Grooving	Internal Threading	Internal Threading
SGIT series	SSH series Expansion	GNDIS series Expansion	STHI series	SSTI series
F59	F60 ~	F48 ~	F126	F112 ~

Cutting Edge Shape



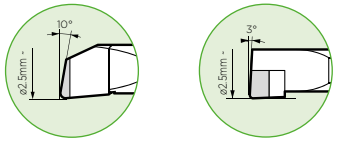
Small Hole Boring Bars (CBN)



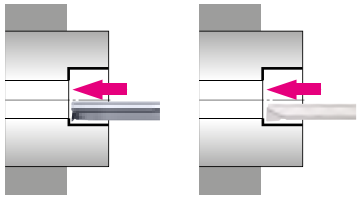
Application / Model / Page

Small Hole Boring Bars	Small Hole Boring Bars
SUMIBORON	SUMIBORON
BSME series	BNBX series
E77	E80

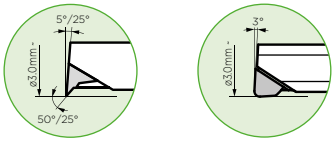
Cutting Edge Shape



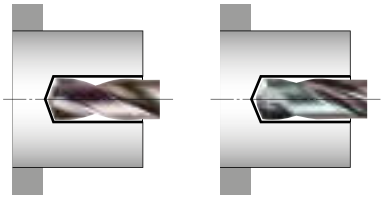
Small Hole Boring Bars (PCD/Binderless PCD)



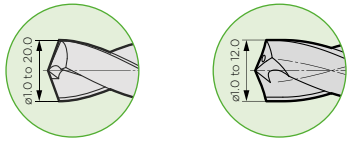
Small Hole Boring Bars	Small Hole Boring Bars
SUMIDIA	SUMIDIA BINDERLESS
DABB series	DABX series New
E84	E85



Drilling



General-purpose	For Aluminum Alloy
MULTIDRILL NeXEO	MULTIDRILL
MDE series	MDA series
J9	J103



SumiSmall

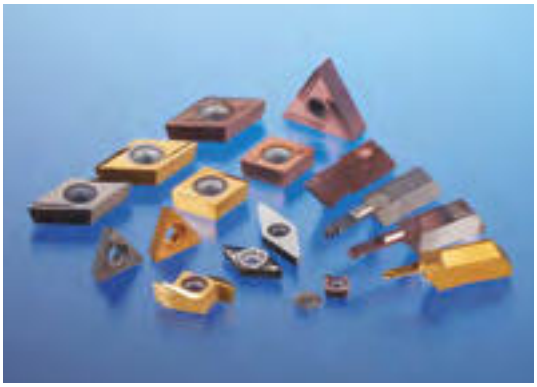


■ General Features

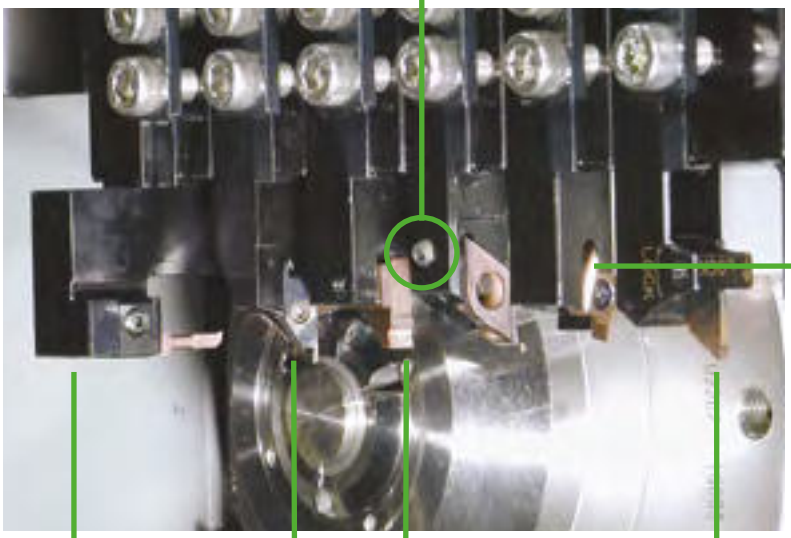
In 1984, Sumitomo Electric Hardmetal first released the SEC-MINI Tool Holder series for small product machining in small NC autolathes. Through these years of experience, new tool designs including our side lever lock tool holder were developed to meet various machining requirements such as back turning, profiling and cut-off; we continually strive to enhance the series.

SumiSmall

■ Full Lineup of Grades from Carbide to PCD



☞D6 ~



■ Special Tools for Small Lathes to Cover Various types of Machining

● MINI Boring Bar CKB series

Min. bore diameter ø1 to ø5mm



☞E68 ~

● Very Small Diameter Part Turning Tool SPB series

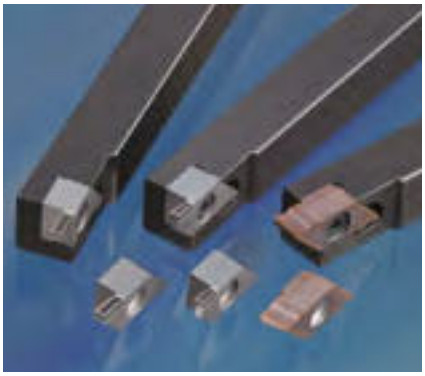
Best suited for very small parts with diameter of less than ø10mm



☞D24 ~

● Wide-Cut Holders SGW series

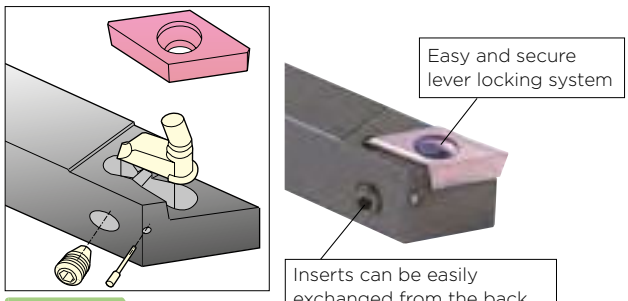
Ideal for high-efficiency machining of long parts, eliminating chip control issues



☞D46

■ A Wide Selection of Easy-to-Use Holders

● PC/PD type Back Clamp Tool Holders



☞D30, D32

● Back-Turning Tool Holder SBT series / PBT series Expansion

Sharp cutting edge produces good surface finish
Maximum machining step 8.0mm, width of cut 2.5mm



☞D48 Indexable Heads ☞D17 ~

● Cut-off Tool SCT type

Inserts can be changed easily even from the back, simply by loosening the screw
Maximum cut-off diameters: ø5mm, ø12mm, ø16mm



☞F88 ~

● Indexable Head Type Quick Change Holder APM series New

Mounting/removing the head alone reduces machine downtime when replacing inserts. A polygon taper shape is used for the fitting part, achieving indexing repeatability within 5µm ☞D8 ~



● Zero Offset Holders *Products with part number suffix "-X" Expansion

Tool compensation not required for small gang-type lathes ☞D26 ~



● Twin Head Holder

Multi-functional Autolathe Tool
One holder performing 2 different operat ☞E16 ~



● Round Shank Holder RS series

External turning made possible with holder sleeves ☞D42 ~



● SEC-Grooving Tool SSH type Expansion

Internal coolant supply enables superb chip control, while the tough carbide body allows stable machining, supporting internal grooving of ø8mm up
Introducing series for internal face grooving and threading ☞F60 ~



● SEC-Grooving Tools GND series Expansion

Lineup includes shanks for small lathes with internal coolant supply
Suitable for grooving widths 1.25mm and up
Grade for non-ferrous metal machining DL1500 now part of the series ☞F12 ~



Insert Grade Selection Guide



In 1984, Sumitomo Electric Hardmetal first released the SEC-MINI Tool Holder series for small product machining in small NC autolathes.
A full range of insert grades including AC530U and AC1030U as well as Cermet T1500A, Cemented Carbide BL130, SUMIBORON BN2000, and SUMIDIA DA1000 are available to meet a variety of machining requirements.
In addition to the high-precision grade ACZ150, AC1030U has been added to support an even wider range of precision application requirements, from automotive to electrical component machining.

■ Insert Grade Selection Guide

Insert Grades	Application Range			Applicable Work Material					
				P	M	K	N	S	H
	High-precision	Finishing to Light Cutting	Medium Cutting	General Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Heat-Resistant Alloy	Hardened Steel
Coated Carbide (PVD)	ACZ150			◎	◎		○		
	AC5015S			○	◎	○		◎	
	AC5025S			○	◎	○		◎	
	AC530U			◎	◎	○	○	○	
	AC1030U			◎	◎	○	○	○	
Uncoated Cermet Coated Cermet	T1000A			◎	○	◎	○		
	T1500A/T1500Z			◎	○	○	○		
Cemented Carbide	BL130			○	○	○	○		
	H1			○	○	○	◎		
	EH510			○	○	○	○	◎	
CBN (SUMIBORON)	BN1000/BN2000								◎
	BN7125					◎		○	
PCD (SUMIDIA)	DA1000						◎		

◎ 1st Recommendation ○ 2nd Recommendation

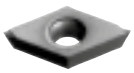
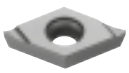
■ Recommended Cutting Conditions

Work Material / Tool Grade	P Free-Cutting Steel		P Carbon Steel		M Stainless Steel		S Heat-Resistant Alloy		H Hardened Steel		N Aluminum Alloy		N Brass	
	vc(m/min)	f(mm/rev)	vc(m/min)	f(mm/rev)	vc(m/min)	f(mm/rev)	vc(m/min)	f(mm/rev)	vc(m/min)	f(mm/rev)	vc(m/min)	f(mm/rev)	vc(m/min)	f(mm/rev)
ACZ150	50 to 200	0.02 to 0.10	50 to 150	0.01 to 0.08	50 to 150	0.01 to 0.05					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
AC5015S	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10	30 to 100	0.02 to 0.10					70 to 300	0.05 to 0.20
AC5025S	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10	30 to 100	0.02 to 0.10					70 to 300	0.05 to 0.20
AC530U	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10							70 to 300	0.05 to 0.20
AC1030U	50 to 200	0.02 to 0.15	50 to 150	0.02 to 0.10	50 to 150	0.02 to 0.10							70 to 300	0.05 to 0.20
T1000A	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
T1500A	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
T1500Z	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
BN1000									120 to 300	0.03 to 0.15				
BN2000									50 to 200	0.03 to 0.20				
BN7125							50 to 200	0.05 to 0.25						
DA1000											70 to 300	0.02 to 0.10	70 to 300	0.02 to 0.10

Chipbreaker Selection

■ Insert series

● Insert Precision Selection Guide

	E Class	G Class	M Class
Insert Class			
Height Tolerance	±0.025mm	±0.13mm	±0.13mm
Features	Peripheral faces are ground Thickness tolerances are tighter than G class inserts	Peripheral faces are ground	Peripheral faces have a sintered finish
Applications	High-precision to finishing	Finishing to Light Cutting	Roughing to Light Cutting
Cat. No.	CCET09T302R-FX DCET0702018L-FY	CCGT09T304R-FX DCGT11T302MN-SI(*)	CCMT09T304N-LU DCMT070208N-SU

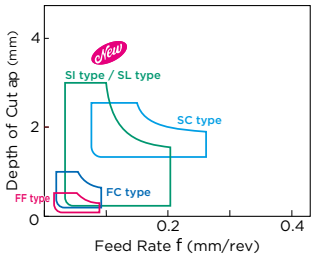
● Chipbreaker Selection

	Representative example	Features
Molded type	FC type  SI type  AG type 	3D chipbreaker with good chip evacuation and sharp cutting edge.
Parallel type	FX type 	Best suited for general-purpose external finishing with larger depths of cut.
Wide type	FYS type  FY type 	Suppresses burrs in necking operation. Suppresses chattering during facing and external turning operations.

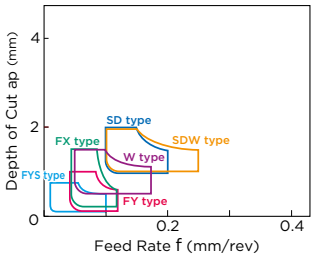
(*) Catalogue numbers with a feed direction symbol prefixed with "M" means that the product has a corner radius with negative tolerance.

■ Application Range of Chipbreakers for Finishing to Light Cutting

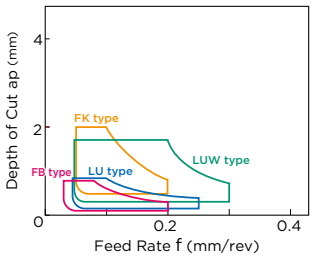
● G Class Chipbreaker



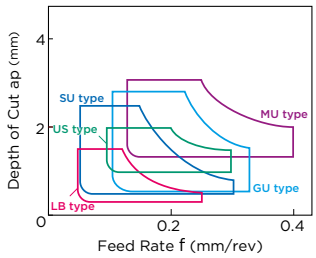
● G Class Ground type



● M Class Finishing to Light Cutting



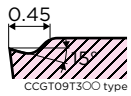
● M Class Light Cutting



■ Chipbreakers for Finishing to Light Cutting

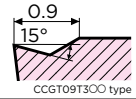
Positive type G Class

FF type — P M K N S H — Realises outstanding chip control in fine cutting conditions

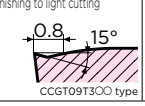
Sharp Edge specifications — Relief Angle 5° 7° — CCGT09T3OO type

FC type — P M K N S H — Peripheral ground 3D chipbreaker with good chip control and cutting edge sharpness

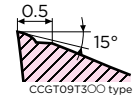
Sharp Edge specifications — Relief Angle 7° 11° — CCGT09T3OO type

SI type — P M K N S H — Sharp-edged chipbreaker for a wide range of applications from finishing to light cutting

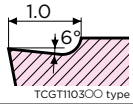
Sharp Edge specifications — Relief Angle 7° 11° — CCGT09T3OO type

SL type — P M K N S H — Sharp-edged chipbreaker with high machining quality for a wide range of applications from finishing to light cutting

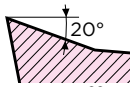
Sharp Edge specifications — Relief Angle 7° 11° — CCGT09T3OO type

SC type — P M K N S H — Two-stepped chipbreaker for light cutting

Sharp Edge specifications — Relief Angle 7° — TCGT1103OO type

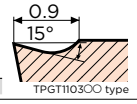
AG type — P M K N S H — Al chipbreaker for mirror finishing without chip adhesion

Sharp Edge specifications — Relief Angle 7° — CCGT09T3OO type

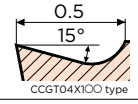
Positive type G Class (Ground type)

FX type — P M K N S H — Parallel chipbreaker with sharp edge

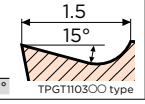
Sharp Edge — Relief Angle 5° 7° 11° — TPGT1103OO type

FYS type — P M K N S H — Fine cutting chipbreaker with sharp edge

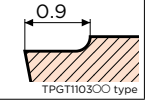
Sharp Edge — Relief Angle 5° 7° — CCGT04X1OO type

FY type — P M K N S H — Wide chipbreaker with sharp edge

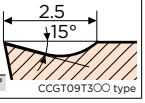
Sharp Edge — Relief Angle 5° 7° 11° — TPGT1103OO type

SD type — P M K N S H — Stepped parallel ground type

Sharp Edge specifications — Relief Angle 7° 11° — TPGT1103OO type

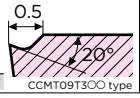
AY type — P M K N S H — High-quality ground Al chipbreaker for excellent surface finish

Sharp Edge — Relief Angle 5° 7° 11° — CCGT09T3OO type

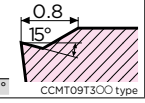
Positive type M Class

FB type — P M K N S H — Finishing chipbreaker for mild steel turning with excellent chip control and surface finish

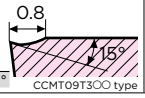
Relief Angle 5° 7° 11° — CCMT09T3OO type

LU type — P M K N S H — Chip control significantly improved in fine cutting

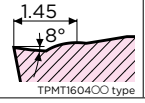
Relief Angle 5° 7° 11° — CCMT09T3OO type

LB type — P M K N S H — Light-cutting chipbreaker with sharp edge and good chip control

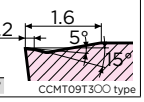
Relief Angle 5° 7° 11° — CCMT09T3OO type

SU type — P M K N S H — General-purpose chipbreaker with excellent cutting edge sharpness

Relief Angle 7° 11° — TPMT1604OO type

GU type — P M K N S H — General-purpose chipbreaker: 1st Recommendation

Relief Angle 5° 7° 11° — CCMT09T3OO type

Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

APM series

VIDEO OF CUTTING

New



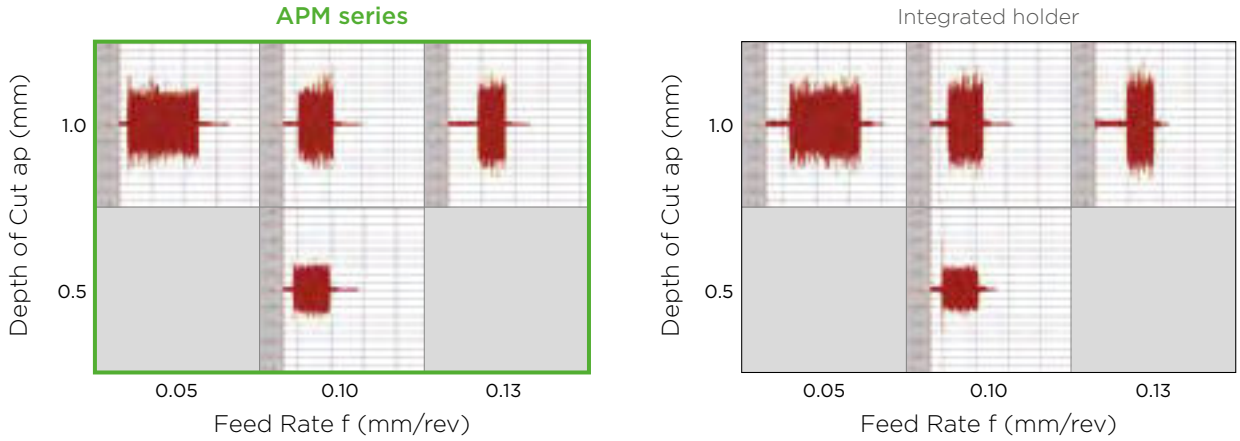
■ Features

- **Tool changeover time reduced**
  Mounting / removing the head alone improves workability and safety when changing the insert, reducing machine downtime at changeovers thus increasing productivity
- **Excellent head change repeatability**
  High-accuracy polygon taper shape achieves change repeatability within 5µm
- **Lineup of 10, 12 and 16mm shank sizes support a wide range of CNC autolathes, etc.**
- **Supports front turning, back turning, grooving, and cut-off**
- **Internal coolant supply design, supports coolant supply without hose**

■ Cutting Performance

● Low vibration

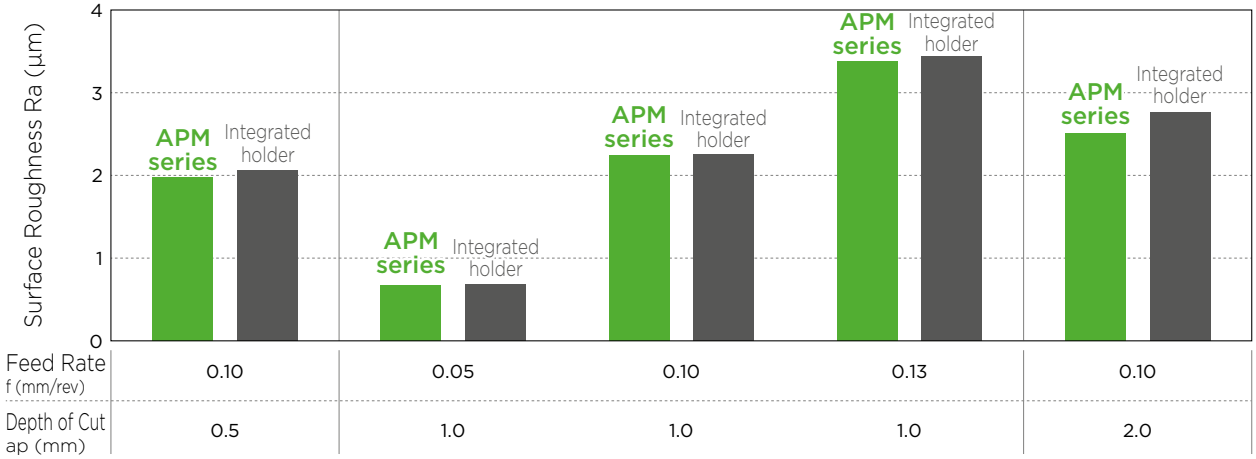
The APM series realises low vibration performance equivalent to that of integrated holders



Work Material: X42Cr13 Tool Shank: APM-R1212X84J Head: APM12-SDJCR11T3J Insert: DCGT11T302MN-SI (AC1030U)
Cutting Conditions: vc = 80m/min f = 0.05, 0.10, 0.13mm/rev ap=0.5, 1.0mm Wet

● Machined surface roughness

The APM series realises machined surface roughness equivalent to that of integrated holders



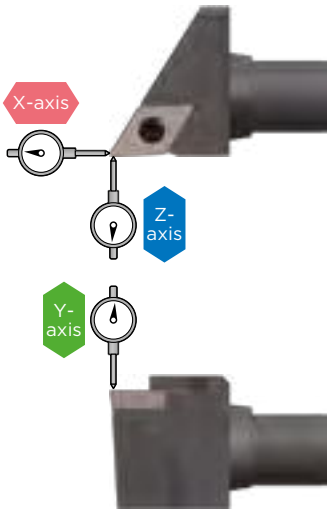
Work Material: X42Cr13 Tool Shank: APM-R1212X84J Head: APM12-SDJCR11T3J Insert: DCGT11T302MN-SI (AC1030U)
Cutting Conditions: vc = 80m/min f = 0.05, 0.10, 0.13mm/rev ap=0.5, 1.0, 2.0mm Wet

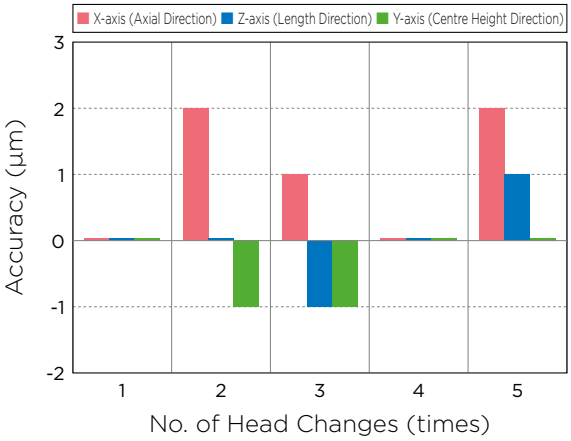
APM series

■ Head Change Repeatability

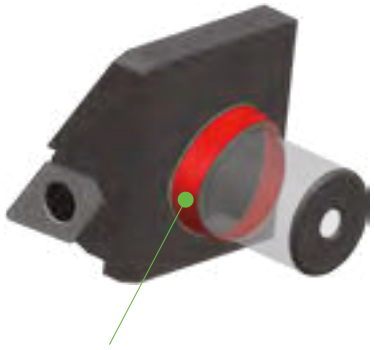
Polygon taper shape achieves change repeatability within 5µm

Related screen 1 Related screen 2





*Measured using the same shank, the same head, and the same insert corner

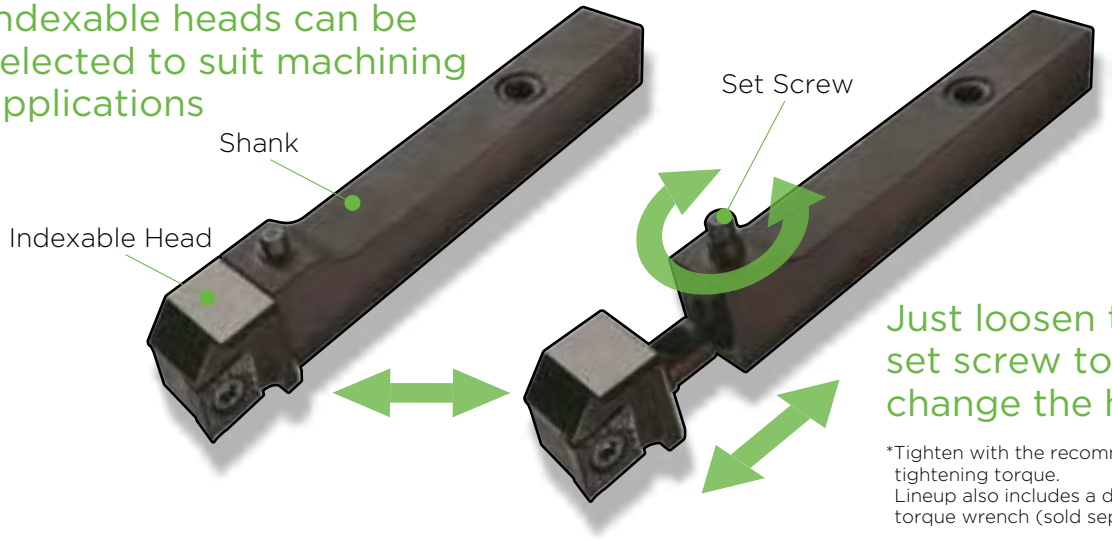


Polygon Taper Shape

■ Head Change Structure

Related screen 3

Indexable heads can be selected to suit machining applications



Just loosen the set screw to change the head

*Tighten with the recommended tightening torque.
Lineup also includes a dedicated torque wrench (sold separately).

■ APM series Combination Examples

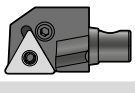
Indexable Head

For ISO Turning Inserts

Positive
SCLC type
SDJC type
SVJB type
SVJC type
SVJP type

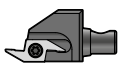


Negative
PTGN type

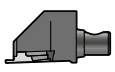


For Dedicated Inserts

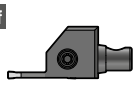
Back Turning
SBT type



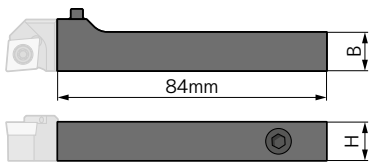
Grooving / Threading
GWC type



Grooving / Cut-off
GNDM type
GNDL type



Shank

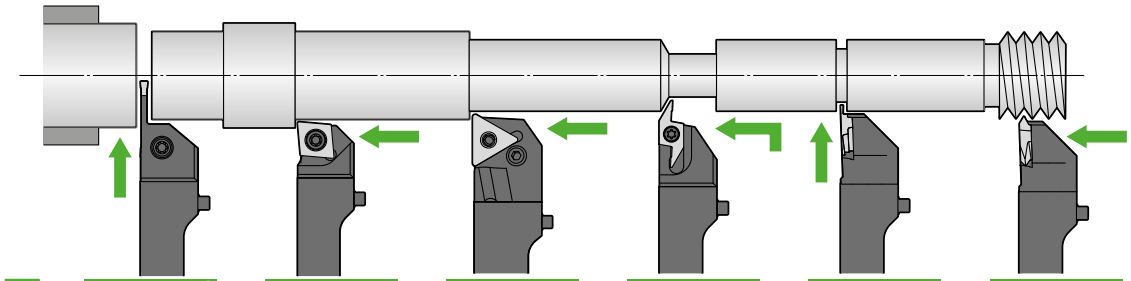


APM-R1010X84J	Height H: 10mm	Width B: 10mm
APM-R1212X84J	Height H: 12mm	Width B: 12mm
APM-R1616X84J	Height H: 16mm	Width B: 16mm

The product appearance may vary in colour, but these variations do not affect the performance.

APM series

■ Head Lineup



Application / Model / Size	Grooving / Cut-off	General External Turning (Positive)	General External Turning (Negative)	Back Turning	Grooving	Threading
	GNDM type GNDL type	SC type / SD type SV type	PT type	SBT type	GWC type TGA type Insert	GWC type TTE type Insert
Applicable Size	10mm 12mm 16mm	10mm 12mm 16mm	10mm 12mm 16mm	10mm 12mm 16mm	10mm 12mm 16mm	10mm 12mm 16mm
	D20 ~	D14, D15	D16	D17	D18 ~	D18 ~
Insert Shape	1.25 to 3.00mm RE = 0.05 to 0.4mm Full RE = 1.0 to 1.5mm up to 16mm	SCLC type 95° SDJC type 93° SVJ□ type 93°	PTGN type 90°	2.5 to 5.2mm RE = 0.05 up 0.15mm 3.5 to 8.0mm	0.33 to 3.00mm RE = 0.05 to 0.10mm (0.20mm) up to 2.5mm	0.05 to 1.70mm 0.65 to 2.5mm Pitch 0.2 to 3.0mm
	Max. Cut-off Dia. up to ø32mm	SCLC type: Positive 7° SDJC type: Positive 7° SVJ□ type: Positive 5°/7°/11°	PTGN type: Negative			Applicable Thread Symbol M W G/Rp/W

■ Tooling Selection

Application	External Turning				
	General Turning / Facing	General Turning / Profiling		General Turning	Back Turning
Insert Shape	80° Diamond type (Positive) C	55° Diamond type (Positive) D	35° Diamond type (Positive) V	Triangular type (Negative) T	Dedicated Insert (BT type)
Clamp Mechanism					
Screw-on	SCLC type D14	SDJC type D14	SVJB type / SVJC type SVJP type D15	—	SBT type D17
Lever Lock	—	—	—	PTGN type D16	—

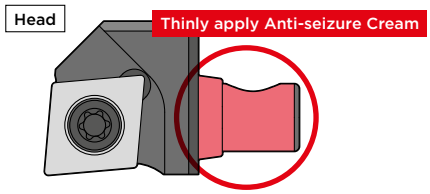
Application	External Grooving / Threading / Cut-off		
	Grooving	Threading	Grooving / Cut-off
Insert Shape	Dedicated Insert (TGA type)	Dedicated Insert (TTE type)	Dedicated Insert (GCM type / GCG type)
Clamp Mechanism			
Screw-on	GWC type D18 ~	GWC type D18 ~	—
Clamp-on	—	—	GNDM type GNDL type D20 ~

Quick Change Holder APM series Precautions for Use

■ Anti-seizure Cream (APM-P)

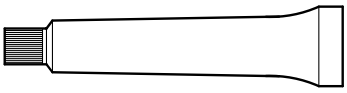
When removing the head, it may be difficult to take out even when the set screw has been loosened.
As a countermeasure, use dedicated Anti-seizure Cream APM-P to enable smooth removal.

Application Method



After cleaning the polygon taper and shaft on the indexable head,
apply a thin layer of dedicated Anti-seizure Cream APM-P with a rag or similar.
*Anti-seizure Cream (APM-P) has been applied before packaging.

Anti-seizure Cream

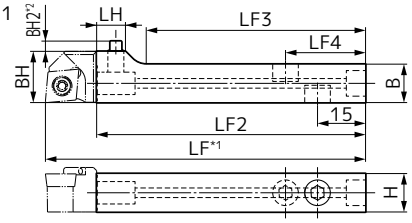
Cat. No.	Stock	
APM-P	★	

Anti-seizure Cream is sold separately.

APM series

New Indexable Shank Internal Coolant

Fig 1



SumiSmall

Shank

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF2	Width BH	Protrusion Width BH2	Head LH	Length LF3	Length LF4	Applicable Size	Fig	Set Screw	N·m	Plug	Torque Wrench
APM-R1010X84J	★	10	10	84	13.5	3	9	69.0	25	10	1	BTT0507H	**3.0**	APM-M8P	TRDRS3530 (*)
APM-R1212X84J	★	12	12	84	16.0	3	9	68.5	25	12	1	BTT0510H			
APM-R1616X84J	★	16	16	84	20.0	4	10	68.0	27	16	1	BTT0611H	**4.0**	APM-G1/8P	TRDRS4540 (*)

Select shanks and heads with matching applicable size. *1 See head tables for specific LF dimensions (set dimensions).
*2 When using separately sold set screws (torx type: BTTOOOOT), BH2 = 0mm.
*Torque wrench is sold separately from the shank.

Fig 1 (Standard hex type)



Fig 2 (Torx type)



Parts (Set Screw)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Overall Length	Applicable Shank	N·m	Fig
BTT 0507H	★	SW3.5	10.0	APM-R1010X84J	**3.0**	1
BTT 0510H	★	SW3.5	12.5	APM-R1212X84J	**3.0**	1
BTT 0611H	★	SW4.5	14.5	APM-R1616X84J	**4.0**	1
BTT 0507T	★	T10	7.0	APM-R1010X84J	**3.0**	2
BTT 0510T	★	T10	9.5	APM-R1212X84J	**3.0**	2
BTT 0611T	★	T20	10.5	APM-R1616X84J	**4.0**	2

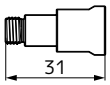
Suffix H: Hex (included with shank: use the torque wrench below or a commercially available wrench)
T: Torx (sold separately: use a commercially available wrench)

Set Screw Torque Wrench

Cat. No.	Stock	Screw Standard	Torque Value (N·m)	Applicable Shank	
TRDRS3530	★	SW3.5	**3.0**	APM-R1010X84J APM-R1212X84J	 (For hex)
TRDRS4540	★	SW4.5	**4.0**	APM-R1616X84J	

Torque wrench is sold separately. Dedicated for set screw part number suffix H (hex type).

Fig 1



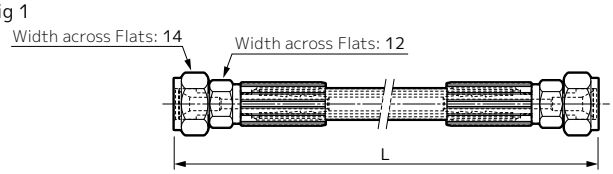
Piping Parts (Adapter)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	External Diameter	Applicable Shank	Fig
J-M8-G1/8-U	★	M8	G1/8	ø15	APM-R1010X84J APM-R1212X84J	1
J-G1/8-G1/8-U	★	G1/8	G1/8	ø18	APM-R1616X84J	1

Adapter is sold separately.

Fig 1



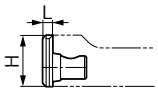
Piping Parts (Hose)

Dimensions (mm)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Fig 1



Parts (Stopper Plug)

Dimensions (mm)

Cat. No.	Stock	L	H	Applicable Shank	Fig
APM10-PLUG	★	2.2	13.4	APM-R1010X84J	1
APM12-PLUG	★	3.0	15.9	APM-R1212X84J	1
APM16-PLUG	★	4.0	19.9	APM-R1616X84J	1

Use the stopper plug to protect the shank joint part when the head is not mounted. (Sold separately)

Fig 1



Piping Parts (Plug)

Cat. No.	Stock	Screw Standard	Applicable Shank	Fig
APM-M8P	★	M8	APM-R1010X84J APM-R1212X84J	1
APM-G1/8P	★	G1/8	APM-R1616X84J	1

The shank is shipped with two plugs mounted.

Fig 1

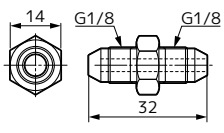


Fig 2

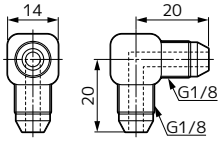


Fig 3

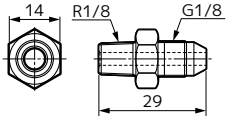
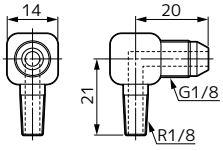


Fig 4



Piping Parts (Connector)

Dimensions (mm)

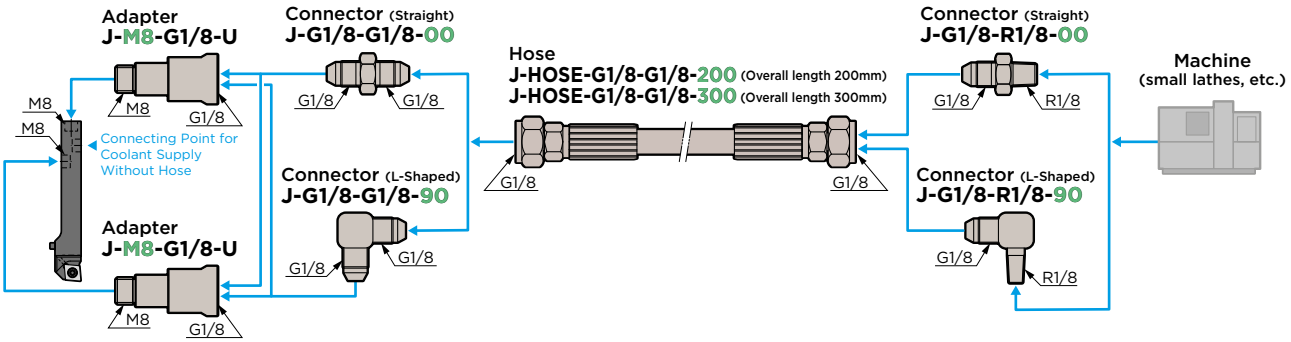
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-G1/8-00	★	G1/8	G1/8	1
J-G1/8-G1/8-90	★	G1/8	G1/8	2
J-G1/8-R1/8-00	★	G1/8	R1/8	3
J-G1/8-R1/8-90	★	G1/8	R1/8	4

Connectors are sold separately.

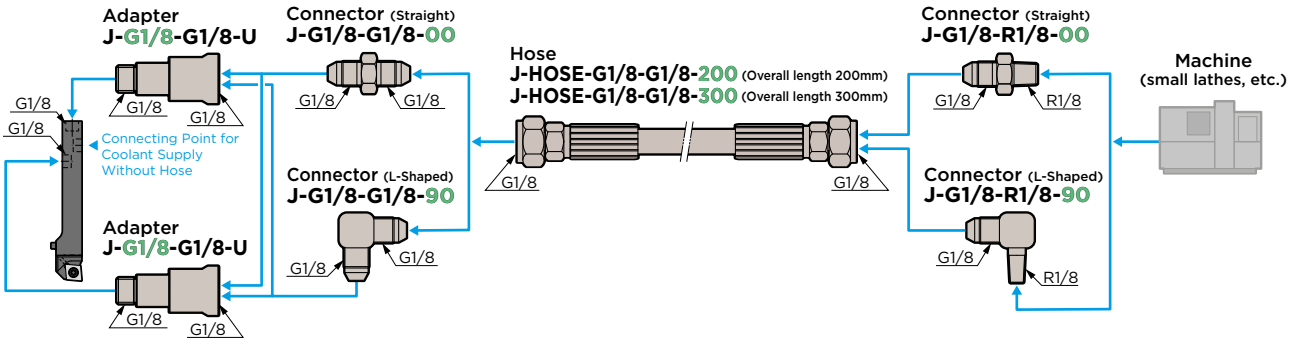
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

■ Piping Method for Hoses, Connectors, and Adapters

APM series Shank
APM-R1010X84J (10mm square) / APM-R1212X84J (12mm square)

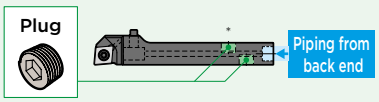


APM series Shank
APM-R1616X84J (16mm square)



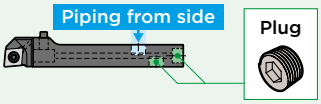
· Use an adapter suited to the machine specifications.
· Apply sealant such as commercial sealing tape to the piping connection parts.
· See figures below for plug mounting when piping. (For Plug Cat. No. 10/12mm square: **APM-M8P**, 16mm square: **APM-G1/8P**)

Piping from back end (as default)

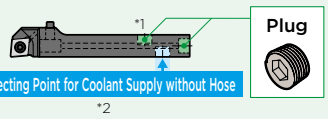


*The plug may protrude a few millimetres when mounted on the side.

Piping from side



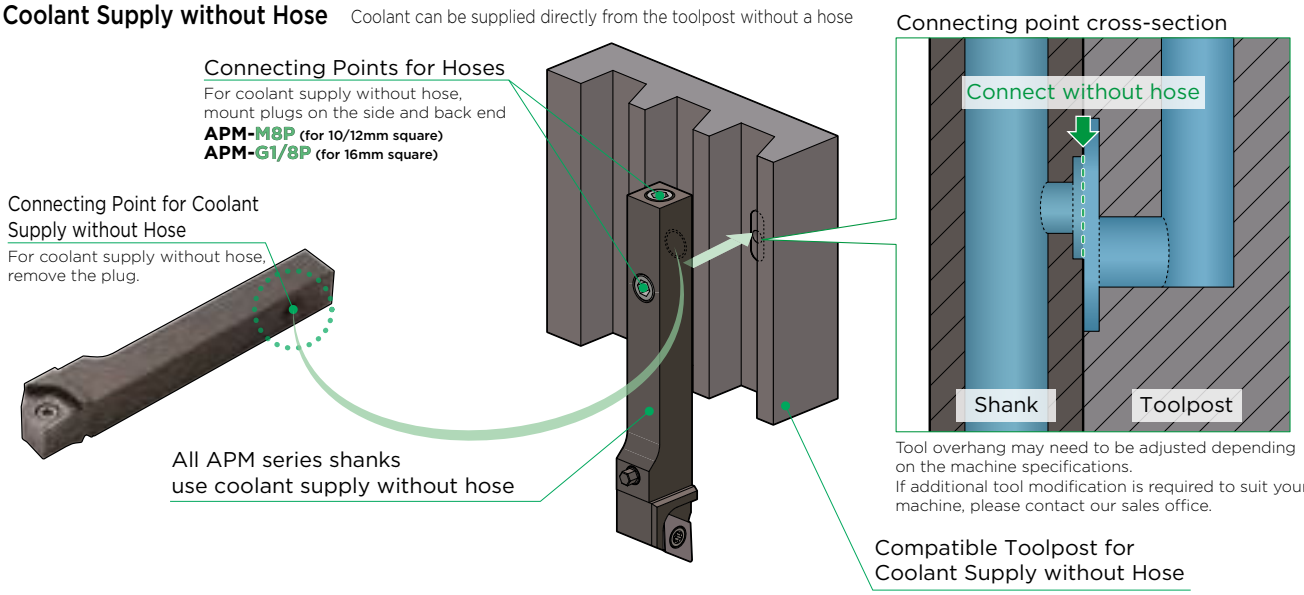
Coolant Supply without Hose



*1 The plug may protrude a few millimetres when mounted on the side.
*2 The plug is mounted as default, so remove it for use with coolant supply without hose.

Coolant Supply without Hose

Coolant can be supplied directly from the toolpost without a hose



Tool overhang may need to be adjusted depending on the machine specifications.
If additional tool modification is required to suit your machine, please contact our sales office.

Note: When using external coolant supply, attach a plug at the back end as well.

APM series

New | Positive | External | C 80° | 95° | Zero Offset | Indexable Head | Internal Coolant

External Turning, Internal Coolant Supply
Screw-on

SCLC

External Turning and Facing

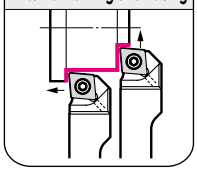


Fig 1

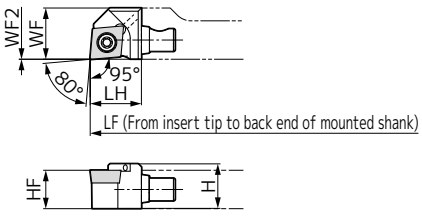


Figure shows right-handed (R) tool.

SumiSmall

Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Applicable Size	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
APM10-SCLC R0602J	★	11.9	16	13.5	10	0	100	CC□T0602	**B68 ~**	10	1	BFTX02506N	**1.5**	TRX08 (*)
APM12-SCLC R0602J	★	13.9	16	16.0	12	0	100			12	1			
APM16-SCLC R0602J	★	17.9	16	20.0	16	0	100			16	1			
APM10-SCLC R09T3J	★	11.9	16	13.5	10	0	100	CC□T09T3	**B71 ~**	10	1	BFTX0409N	**3.4**	TRX15 (*)
APM12-SCLC R09T3J	★	13.9	16	16.0	12	0	100			12	1			
APM16-SCLC R09T3J	★	17.9	16	20.0	16	0	100			16	1			

Refer to shank selection on page D12 for applicable shanks.
*Wrenches are sold separately from heads.

New | Positive | External | D 55° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning, Internal Coolant Supply
Screw-on

SDJC

External Turning and Profiling

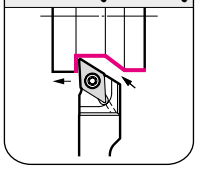


Fig 1

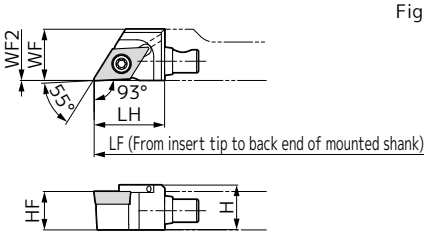


Fig 2

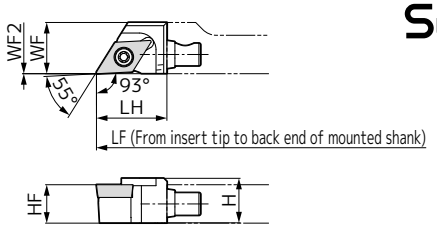


Figure shows right-handed (R) tool.

SumiSmall

Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Applicable Size	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
APM10-SDJC R0702J	★	11.9	16	13.5	10	0	100	DC□T0702	**B78 ~**	10	1	BFTX02506N	**1.5**	TRX08 (*)
APM12-SDJC R0702J	★	13.9	16	16.0	12	0	100			12	1			
APM16-SDJC R0702J	★	17.9	16	20.0	16	0	100			16	1			
APM10-SDJC R11T3J	★	11.9	20	13.5	10	0	104	DC□T11T3	**B82 ~**	10	1	BFTX0409N	**3.4**	TRX15 (*)
APM12-SDJC R11T3J	★	13.9	22	16.0	12	0	106			12	2			
APM16-SDJC R11T3J	★	17.9	22	20.0	16	0	106			16	2			

Refer to shank selection on page D12 for applicable shanks.
*Wrenches are sold separately from heads.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

New | Positive | External | V 35° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning, Internal Coolant Supply
Screw-on

SVJB

General Turning and Profiling

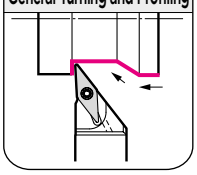


Fig 1

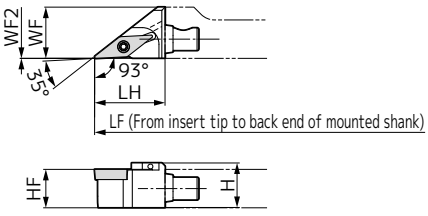


Figure shows right-handed (R) tool.

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Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Applicable Size	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
APM10-SVJB R1103J	★	11.9	22	13.5	10	0	106	VB□T1103	B116～	10	1	BFTX02508NV	**1.5**	TRX08 (*)
APM12-SVJB R1103J	★	13.9	22	16.0	12	0	106			12	1			
APM16-SVJB R1103J	★	17.9	22	20.0	16	0	106			16	1			

Refer to shank selection on page D12 for applicable shank. * Wrenches are sold separately from heads.

New | Positive | External | V 35° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning, Internal Coolant Supply
Screw-on

SVJC

General Turning and Profiling

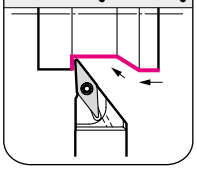


Fig 1

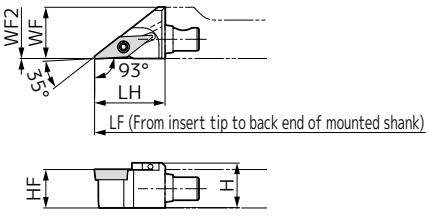


Figure shows right-handed (R) tool.

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Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Applicable Size	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
APM10-SVJC R1103J	★	11.9	22	13.5	10	0	106	VC□T1103	B119～	10	1	BFTX02508NV	**1.5**	TRX08 (*)
APM12-SVJC R1103J	★	13.9	22	16.0	12	0	106			12	1			
APM16-SVJC R1103J	★	17.9	22	20.0	16	0	106			16	1			

Refer to shank selection on page D12 for applicable shank. * Wrenches are sold separately from heads.

New | Positive | External | V 35° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning, Internal Coolant Supply
Screw-on

SVJP

General Turning and Profiling

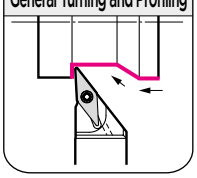


Fig 1

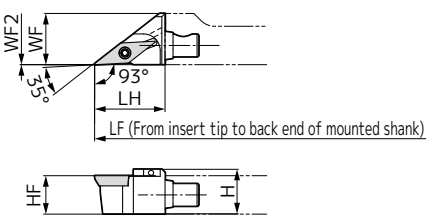


Figure shows right-handed (R) tool.

SumiSmall

Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Applicable Size	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
APM10-SVJP R1103J	★	11.9	22	13.5	10	0	106	VP□T1103	**B123**	10	1	BFTX02508NV	**1.5**	TRX08 (*)
APM12-SVJP R1103J	★	13.9	22	16.0	12	0	106			12	1			
APM16-SVJP R1103J	★	17.9	22	20.0	16	0	106			16	1			

Refer to shank selection on page D12 for applicable shanks.
* Wrenches are sold separately from heads.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

New | Negative | External | T 60° | 90° | Zero Offset | Indexable Head | Internal Coolant

External Turning, Internal Coolant Supply
Lever Lock

PTGN
External Turning

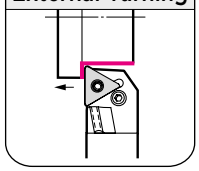


Fig 1

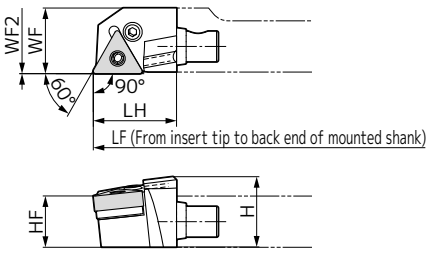


Figure shows right-handed (R) tool.

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Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Applicable Size	Fig	Lever Pin	Bolt	Bolt N·m	Shim	Shim Retainer	Wrench
														N·m			 (For hexagonal hole)
APM16-PTGN R1604J	★	22	26	20.5	16	0.5	110	TN□□1604	**B48 ~**	16	1	LCL3APM	LCS3APM	**3.5**	LST317APM	LSP3APM	LH025 (*)

Refer to shank selection on page D12 for applicable shanks.
* Wrenches are sold separately from heads.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

New | External | Back Turning | Indexable Head | Internal Coolant

Back Turning, Internal Coolant Supply
Screw-on

SBT
Back Turning

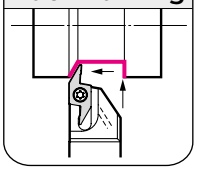


Fig 1

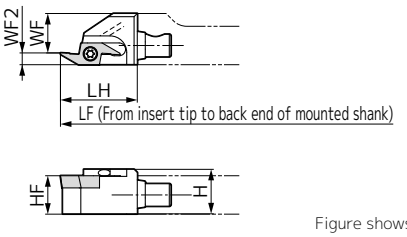


Figure shows right-handed (R) tool.

SumiSmall

Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Applicable Insert Cat. No.	Applicable Size	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
APM10-SBT R-35J	★	11.9	22	11.0	10	2.5	106	BTR**35**○○	10	1	BFTX0307N	**2.0**	TRX10 (*)
APM12-SBT R-35J	★	13.9	22	13.5	12	2.5	106		12	1			
APM16-SBT R-35J	★	17.9	22	17.5	16	2.5	106		16	1			
APM10-SBT R-55J	★	11.9	22	9.8	10	3.7	106	BTR**55**○○	10	1	BFTX0307N	**2.0**	TRX10 (*)
APM12-SBT R-55J	★	13.9	24	12.3	12	3.7	108		12	1			
APM16-SBT R-55J	★	17.9	24	16.3	16	3.7	108		16	1			
APM12-SBT R-80J	★	13.9	30	10.8	12	5.2	114	BTR**80**○○	12	1	BFTX0307N	**2.0**	TRX10 (*)
APM16-SBT R-80J	★	17.9	30	14.8	16	5.2	114		16	1			

Refer to shank selection on page D12 for applicable shanks.
* Wrenches are sold separately from heads.

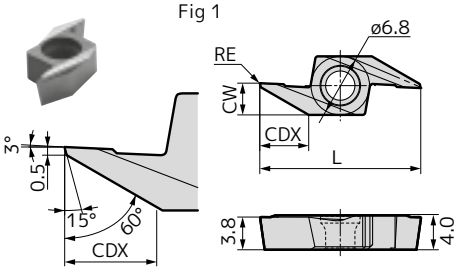
Expansion

Insert (Coated Carbide / DLC / Cermet)

Dimensions (mm)

Cat. No.	AC5015S	AC5025S	AC1030U	AC530U	ACZ150	DL1500	T1500A	Overall Length L	Maximum Depth of Cut CDX	Width of Cut CW	Corner Radius RE	Applicable Head	Fig
BT R3505	★	★	★	★	★	★	★	15	3.5	2.5	0.05	APM○○-SBTR-**35**J	1
BT R3508 New	★	★	★			★	★	15	3.5	2.5	0.08		1
BT R3515	★	★	★	★	★	★	★	15	3.5	2.5	0.15		1
BT R5505	★	★	★	★	★	★	★	19	5.5	3.7	0.05	APM○○-SBTR-**55**J	1
BT R5508 New	★	★	★			★	★	19	5.5	3.7	0.08		1
BT R5515	★	★	★	★	★	★	★	19	5.5	3.7	0.15		1
BT R8005	★	★	★	★	★		—	24	8.0	5.2	0.05	APM○○-SBTR-**80**J	1
BT R8008 New	★	★	★				—	24	8.0	5.2	0.08		1
BT R8015	★	★	★	★	★		—	24	8.0	5.2	0.15		1

Fig 1



Recommended Cutting Conditions

Work Material	P Free-Cutting Steel		P Carbon Steel		M Stainless Steel		S Exotic Alloy		N Non-Ferrous Metal	
Process	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut
Insert Grades	AC1030U/ACZ150 T1500A		AC1030U/AC530U/ACZ150 T1500A		AC1030U/AC5015S/AC5025S AC530U/ACZ150		AC5015S/AC5025S		DL1500	
Cutting Speed vc (m/min)	50 to 150		50 to 150		50 to 150		20 to 80		150 to 300	
Feed Rate f (mm/rev)	0.02 to 0.10	0.02 to 0.15	0.02 to 0.05	0.02 to 0.10	0.02 to 0.04	0.02 to 0.06	0.01 to 0.03	0.01 to 0.04	0.02 to 0.05	0.02 to 0.10

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

New | External | Grooving | Threading | Zero Offset | Indexable Head | Internal Coolant

External Shallow Grooving
Screw-on

GWC
External Grooving

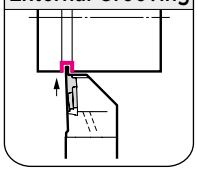


Fig 1

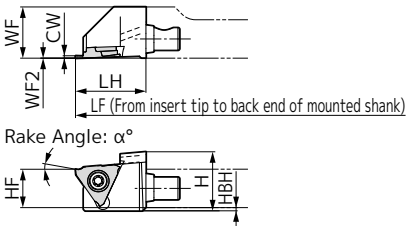
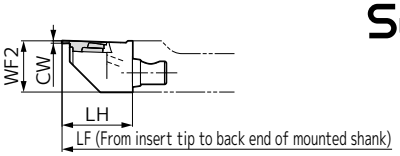


Fig 2



SumiSmall

Head

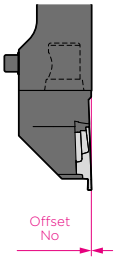
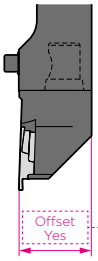
Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Offset WF2	Overall Length LF	Width of Cut CW	Maximum Groove Depth	Applicable Size	Applicable Insert Cat. No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
APM10-GWC R-R3J	★	18.3	20	13.5	10	3	0	104	0.33 to 3.00	0.8 to 2.5	10		1			
APM12-GWC R-R3J	★	18.4	22	16.0	12	1	0	106	0.33 to 3.00	0.8 to 2.5	12	TGAR3···	1	BFTX0409N	**3.4**	TRX15 (*)
APM16-GWC R-R3J	★	21.4	22	20.0	16	—	0	106	0.33 to 3.00	0.8 to 2.5	16		1			
APM10-GWC R13.5-L3J	★	18.3	20	—	10	3	13.5	104	0.33 to 3.00	0.8 to 2.5	10		2			
APM12-GWC R16-L3J	★	18.4	22	—	12	1	16.0	106	0.33 to 3.00	0.8 to 2.5	12	TGAL3···	2	BFTX0409N	**3.4**	TRX15 (*)
APM16-GWC R20-L3J	★	21.4	22	—	16	—	20.0	106	0.33 to 3.00	0.8 to 2.5	16		2			

Refer to shank selection on page D12 for applicable shanks. Refer to page D19 for applicable inserts.
Right-handed (part number suffix: -R3J) heads are used with right-handed (R) inserts.
* Wrenches are sold separately from heads.

Selecting GWC series Heads

Integrated holder	Right-handed (R)	Left-handed (L)
APM series	Right-handed (R) **No** Offset	Right-handed (R) **With** Offset
APM series Shank	**APM-R○○X84J** (Common)	
GWC series Head	**APM○○-GWC R-R3J**	**APM○○-GWC R○○○-L3J** (Offset Dimensions)
Applicable Insert	**TGA R3○○○**	**TGA L3○○○**
GWC series Head Mounted Appearance	 Shank: Common Head: No Offset Right-handed Insert: Right-handed Offset No	 Shank: Common Head: With Offset Right-handed Insert: Left-handed Offset Yes

Rake Angle When Mounted on Head (α°)

Coated Carbide	Carbide	DLC	Coated Cermet	Cermet
AC5015S AC5025S AC530U	H1	DL1500	T2500Z	T1500A
10°	20°	10°	10°	5°

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

Fig. 1 (Grooving)

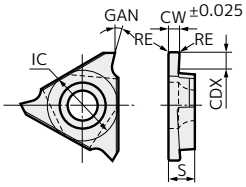


Fig 2 (Threading)

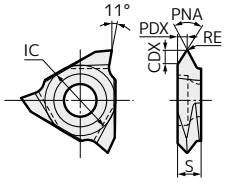


Figure shows right-handed (R) tool.

Rake Angle by Grade (Grooving)

Grade		Cutting Edge Shape	GAN
Coated Carbide	AC5015S	Honing	15°
Coated Carbide	AC5025S	Honing	15°
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp Edged	25°
DLC	DL1500	Sharp Edged	25°
Coated Cermet	T2500Z	Honing	15°
Cermet	T1500A	Sharp Edged	10°

* For the rake angle when mounted on the head, refer to page D18.

Expansion

Insert (Grooving) (Coated Carbide / Cemented Carbide / DLC / Cermet)

Dimensions (mm)

Cat. No.*	AC5015S		AC5025S		AC530U		H1		DL1500		T2500Z		T1500A		Width of Cut	Maximum Groove Depth	Corner Radius	Inscribed Circle	Thickness	Applicable Head	Fig
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	CW	CDX	RE	IC	S		
TGA R/L3033(E)					★	★	★	★			★	★	★	★	0.33	0.8	0.05	9.525	3.18		1
TGA R/L3043(E) New					★	★							★	★	0.43	0.8	0.05	9.525	3.18		1
TGA R/L3050(E)					★	★	★	★	★	★	★	★	★	★	0.50	1.2	0.05	9.525	3.18		1
TGA R/L3053(E) New					★	★							★	★	0.53	1.2	0.05	9.525	3.18		1
TGA R/L3065(E) New					★	★							★	★	0.65	1.2	0.05	9.525	3.18		1
TGA R/L3075(E)					★	★	★	★	★	★	★	★	★	★	0.75	2.0	0.1*	9.525	3.18		1
TGA R/L3080(E) New					★	★							★	★	0.80	2.0	0.1*	9.525	3.18		1
TGA R/L3095(E)					★	★	★	★			★	★	★	★	0.95	2.0	0.1*	9.525	3.18		1
TGA R/L3100(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★	1.00	2.0	0.1*	9.525	3.18		1
TGA R/L3110(E)	★	★	★	★	★	★					★	★	★	★	1.10	2.0	0.1*	9.525	3.18		1
TGA R/L3120(E) New					★	★							★	★	1.20	2.0	0.1*	9.525	3.18		1
TGA R/L3125(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★	1.25	2.0	0.1*	9.525	3.18		1
TGA R/L3130(E) New					★	★							★	★	1.30	2.0	0.1*	9.525	3.18	APMOO-GWCR-R3J	1
TGA R/L3135(E)					★	★					★	★	★	★	1.35	2.0	0.1*	9.525	3.18		1
TGA R/L3140(E) New					★	★							★	★	1.40	2.0	0.1*	9.525	3.18		1
TGA R/L3145(E)					★	★	★	★			★	★	★	★	1.45	2.0	0.1*	9.525	3.18	APMOO-GWCR···-L3J	1
TGA R/L3150(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★	1.50	2.0	0.1*	9.525	3.18		1
TGA R/L3160(E) New					★	★							★	★	1.60	2.0	0.1*	9.525	3.18		1
TGA R/L3165(E)					★	★					★	★	★	★	1.65	2.0	0.1*	9.525	3.18		1
TGA R/L3175(E)					★	★					★	★	★	★	1.75	2.0	0.1*	9.525	3.18		1
TGA R/L3185(E)					★	★	★	★			★	★	★	★	1.85	2.0	0.1*	9.525	3.18		1
TGA R/L3200(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★	2.00	2.5	0.1*	9.525	3.18		1
TGA R/L3220(E)					★	★					★	★	★	★	2.20	2.5	0.1*	9.525	3.18		1
TGA R/L3230(E)					★	★	★	★			★	★	★	★	2.30	2.5	0.1*	9.525	3.18		1
TGA R/L3250(E)					★	★	★	★			★	★	★	★	2.50	2.5	0.1*	9.525	3.18		1
TGA R/L3265(E)					★	★					★	★	★	★	2.65	2.5	0.1*	9.525	3.18		1
TGA R/L3270(E)					★	★					★	★	★	★	2.70	2.5	0.1*	9.525	3.18		1
TGA R/L3280(E)					★	★					★	★	★	★	2.80	2.5	0.1*	9.525	3.18		1
TGA R/L3300(E) New	★	★	★	★	★	★			★	★			★	★	3.00	2.5	0.1*	9.525	3.18		1

* Add E as the part number suffix for T1500A. Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) heads.
* : T1500A is RE = 0.2

Recommended Cutting Conditions

Work Material	P General Steel			M Stainless Steel		S Exotic Alloy	N Non-Ferrous Metal	
Insert Grades	AC530U	T2500Z	T1500A	AC5015S AC5025S	AC530U	AC5015S AC5025S	H1	DL1500
Cutting Speed vc (m/min)	50 to 200	100 to 180	100 to 180	50 to 200	50 to 200	20 to 80	up to 300	up to 300
Feed Rate f (mm/rev)	0.02 to 0.10	0.05 to 0.10	0.05 to 0.08	0.02 to 0.10	0.02 to 0.10	0.01 to 0.03	0.05	0.15

Insert (Threading, 60°/55° General-purpose Threads) (Coated Carbide / DLC / Cermet)

Dimensions (mm)

Cat. No.	AC5015S		AC5025S		AC1030U		DL1500		T1500A		Pitch		Corner Radius	X Direction	Depth of Cut	Included Angle	Inscribed Circle	Thickness	Applicable Head	Fig
	R	L	R	L	R	L	R	L	R	L	mm	Threads/Inch	RE	PDX	CDX	PNA	IC	S		
TTE R/L36002075	★	★	★	★	★	★	★	★	★	★	0.20 to 0.75	80 to 32	0.05	0.55	0.65	60	9.525	3.18	APMOO-GWCR-R3J	2
TTE R/L36005125	★	★	★	★	★	★	★	★	★	★	0.50 to 1.25	56 to 20	0.05	1.00	1.30	60	9.525	3.18		2
TTE R/L3601015	★	★	★	★	★	★	★	★	★	★	1.00 to 1.50	24 to 16	0.10	1.30	1.80	60	9.525	3.18		2
TTE R/L3601530	★	★	★	★	★	★	★	★	★	★	1.50 to 3.00	16 to 8	0.20	1.70	2.40	60	9.525	3.18	APMOO-GWCR···-L3J	2
TTE R/L3554816	★	★	★	★	★	★	★	★	★	★	—	48 to 16	0.05	1.00	1.50	55	9.525	3.18		2
TTE R/L3552008	★	★	★	★	★	★	★	★	★	★	—	20 to 8	0.10	1.50	2.40	55	9.525	3.18		2

Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) heads.

The inserts on this page can also be used with SEC-Grooving Tool GWC type.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

New | External | Grooving | Zero Offset | Indexable Head | Internal Coolant

* For traverse cutting (groove expansion), use a multi-functional or profiling insert.

External Multi-purpose type (Grooving, Traversing and Profiling)
Clamp-on

GNDM

External Grooving (for Small Lathes)

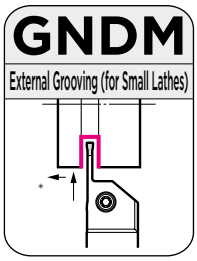


Fig 1

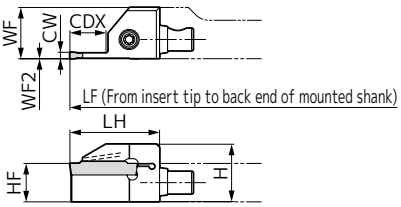
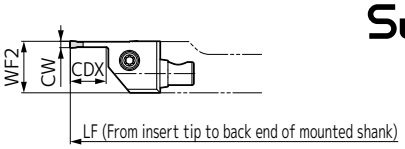


Fig 2



SumiSmall

Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Size	Fig	Flat Insert Screw	N·m	Wrench
															
APM16-GNDMR-213J	★	21.9	**28.5**	20	16	0	112	**2.00**	**13.0**	**26**	16	1	BX0515	**4.0**	LH040 (*)
APM16-GNDMR-313J	★	21.9	**28.5**	20	16	0	112	**3.00**	**13.0**	**26**	16	1			
APM16-GNDMR20-213J	★	21.9	**28.5**	—	16	20	112	**2.00**	**13.0**	**26**	16	2			
APM16-GNDMR20-313J	★	21.9	**28.5**	—	16	20	112	**3.00**	**13.0**	**26**	16	2			

Refer to shank selection on page D12 for applicable shanks. Select heads and inserts with matching width of cut CW.
Refer to page D21 for applicable inserts. Refer to page D22 for head feed direction selection. * Wrenches are sold separately from heads.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page D22.

New | External | Grooving | Zero Offset | Indexable Head | Internal Coolant

External Deep Grooving and Cut-off
Clamp-on

GNDL

External Grooving (for Small Lathes)

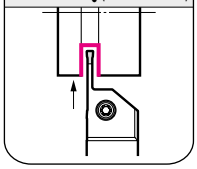


Fig 1

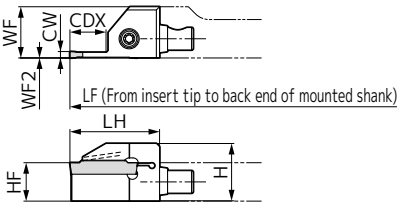
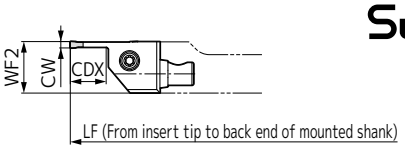


Fig 2



SumiSmall

Head

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Overall Length LF	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Size	Fig	Flat Insert Screw BFTX0412N / BX0515	N·m	Wrench LT15-10(*) / LH040(*)
APM10-GNDLR-1.2509J	★	13.9	22	13.5	10	0	106	**1.25**	**9.0**	**18**	10	1	BFTX0412N	**3.0**	LT15-10 (*)
APM10-GNDLR-1.509J	★	13.9	22	13.5	10	0	106	**1.50**	**9.0**	**18**	10	1			
APM10-GNDLR-209J	★	13.9	22	13.5	10	0	106	**2.00**	**9.0**	**18**	10	1			
APM10-GNDLR-309J	★	13.9	22	13.5	10	0	106	**3.00**	**9.0**	**18**	10	1			
APM10-GNDLR13.5-1.2509J	★	13.9	22	—	10	13.5	106	**1.25**	**9.0**	**18**	10	2			
APM10-GNDLR13.5-1.509J	★	13.9	22	—	10	13.5	106	**1.50**	**9.0**	**18**	10	2			
APM10-GNDLR13.5-209J	★	13.9	22	—	10	13.5	106	**2.00**	**9.0**	**18**	10	2			
APM10-GNDLR13.5-309J	★	13.9	22	—	10	13.5	106	**3.00**	**9.0**	**18**	10	2			
APM12-GNDLR-1.2512J	★	17.9	28	16	12	0	112	**1.25**	**12.0**	**24**	12	1	BFTX0412N	**3.0**	LT15-10 (*)
APM12-GNDLR-1.512J	★	17.9	28	16	12	0	112	**1.50**	**12.0**	**24**	12	1			
APM12-GNDLR-213J	★	17.9	28	16	12	0	112	**2.00**	**13.0**	**26**	12	1			
APM12-GNDLR-313J	★	17.9	28	16	12	0	112	**3.00**	**13.0**	**26**	12	1			
APM12-GNDLR16-1.2512J	★	17.9	28	—	12	16	112	**1.25**	**12.0**	**24**	12	2			
APM12-GNDLR16-1.512J	★	17.9	28	—	12	16	112	**1.50**	**12.0**	**24**	12	2			
APM12-GNDLR16-213J	★	17.9	28	—	12	16	112	**2.00**	**13.0**	**26**	12	2			
APM12-GNDLR16-313J	★	17.9	28	—	12	16	112	**3.00**	**13.0**	**26**	12	2			
APM16-GNDLR-1.2512.5J	★	21.9	**28.5**	20	16	0	117	**1.25**	**12.5**	**25**	16	1	BX0515	**4.0**	LH040 (*)
APM16-GNDLR-1.512.5J	★	21.9	**28.5**	20	16	0	117	**1.50**	**12.5**	**25**	16	1			
APM16-GNDLR-216J	★	21.9	33	20	16	0	117	**2.00**	**16.0**	**32**	16	1			
APM16-GNDLR-316J	★	21.9	33	20	16	0	117	**3.00**	**16.0**	**32**	16	1			
APM16-GNDLR20-1.2512.5J	★	21.9	**28.5**	—	16	20	117	**1.25**	**12.5**	**25**	16	2			
APM16-GNDLR20-1.512.5J	★	21.9	**28.5**	—	16	20	117	**1.50**	**12.5**	**25**	16	2			
APM16-GNDLR20-216J	★	21.9	33	—	16	20	117	**2.00**	**16.0**	**32**	16	2			
APM16-GNDLR20-316J	★	21.9	33	—	16	20	117	**3.00**	**16.0**	**32**	16	2			

Refer to shank selection on page D12 for applicable shanks. Select heads and inserts with matching width of cut CW.
Refer to page D21 for applicable inserts. Refer to page D22 for head feed direction selection. * Wrenches are sold separately from heads.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page D22.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

APM series

Expansion

Inserts for GNDM-J type / GNDL-J type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

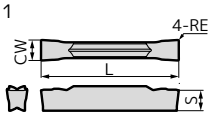


Fig 2 (Figure shows right-handed (R) tools.)

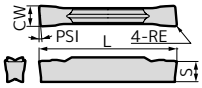


Fig 3

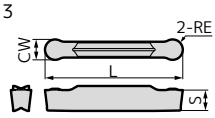
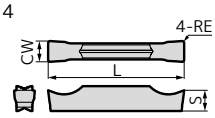


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
										Width of Cut	Tolerance					
GCM N3002-MG	★	★		★	★	★		★	—	**3.0**	±0.03	0.2	21.1	3.8	5	1
GCM N3004-MG	★	★	▲	★	★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6	5	1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
GCM N3004-ML	★	★		★	★	★		★	★	**3.0**	±0.03	0.4	21.1	3.8		1

Grooving / Cut-off

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
										Width of Cut	Tolerance					
GCM N2002-GG		★	▲		★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8	5	1
GCM N3004-GG		★	▲		★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N2002-GL		★	▲		★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6		1
GCM N2004-GL		★			★	★		★	—	**2.0**	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GL		★	▲		★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8		1
GCM N3004-GL		★			★	★		★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N125005-GF	—	—	—	—	—	—	—	★	—	**1.25**	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★	—	**1.5**	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	**2.0**	±0.03	0.2	21.1	3.6	5	1
GCM N2004-GF	—	—	—	—	★	★		★	★	**2.0**	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
GCM N3004-GF		★			★	★		★	★	**3.0**	±0.03	0.4	21.1	3.8		1

Cut-off (Handed Edge)

Dimensions (mm)

Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle PSI	Width of Cut CW		Corner Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
									Width of Cut	Tolerance					
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	**2.0**	±0.03	0.2	21.1	3.6		2
GCM L2002-CG-05	★	▲	★	★	★	★	—	5°	**2.0**	±0.03	0.2	21.1	3.6	5	2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	**3.0**	±0.03	0.2	21.3	3.8		2
GCM L3002-CG-05	★	▲	★	★	★	★	—	5°	**3.0**	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	**2.0**	±0.08	0.03	22.4	3.6		2
GCM L20003-CF-10	—	—	★	★	—	—	★	10°	**2.0**	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	**3.0**	±0.08	0.03	22.4	3.8		2
GCM L30003-CF-10	—	—	★	★	—	—	★	10°	**3.0**	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	**2.0**	±0.08	0.03	22.4	3.6	5	2
GCM L20003-CF-15	—	—	★	★	—	—	★	15°	**2.0**	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	**3.0**	±0.08	0.03	22.4	3.8		2
GCM L30003-CF-15	—	—	★	★	—	—	★	15°	**3.0**	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
										Width of Cut	Tolerance					
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	**3.0**	±0.03	1.5	21.1	3.8	5	3

Profiling / Radius Grooving / Necking

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
									Width of Cut	Tolerance					
GCM N2010-RN	—	—	—	—	★	★	★	★	**2.0**	±0.03	1.0	21.7	3.6	5	3
GCM N3015-RN	★	★	▲	★	★	★	★	★	3.0	±0.03	1.5	22.6	3.8		3

Non-Ferrous Metals

Dimensions (mm)

Cat. No.	H10	DL1500							Width of Cut CW		Corner Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
									Width of Cut	Tolerance					
GCG N2002-GA	★	★							**2.0**	±0.025	0.2	21.1	3.6	5	4
GCG N3002-GA	★	★							3.0	±0.025	0.2	21.1	3.8		4

Part Number Suffix Code (Chipbreakers)

Type	Code	Application	Type	Code	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low-feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection D23 Recommended Cutting Conditions D22

Select heads and inserts with matching width of cut (CW).

The inserts on this page can also be used with SEC-Grooving Tool / Cut-off Tool GND type.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

APM series

GND series Head Lineup

MG: Multi-functional / General-purpose type | ML: Multi-functional / Low-feed type | GG: Grooving / General-purpose type | GL: Grooving / Low-feed type | GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type | CF: Cut-off / Low cutting force type | RG: Profiling / General-purpose type | RN: Facing / Necking / General-purpose type | GA: Non-Ferrous Metal / General-purpose type

Type	Shank Size (mm) Height H	Width B	Width of Cut (mm)	Model	Max. Groove Depth (mm)	Ref. Page	MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
For Small Lathes	10	10	1.25 1.5	GNDL-J	9	D20					◎					
			2	GNDL-J	9	D20		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDL-J	9	D20	○	○	◎	◎	◎	◎	◎	◎	○	◎
	12	12	1.25 1.5	GNDL-J	12	D20					◎					
			2	GNDL-J	12.5	D20		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDL-J	12.5	D20	○	○	◎	◎	◎	◎	◎	◎	○	◎
	16	16	1.25 1.5	GNDL-J	12.5	D20					◎					
			2	GNDM-J	12.5	D20		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDL-J	16	D20		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDM-J	12.5	D20	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL-J	16	D20	○	○	◎	◎	◎	◎	◎	◎	○	◎

: In Stock

◎: Best ○: Suitable

GND series Head Recommended Cutting Conditions (Feed Rate / Depth of Cut)

Width of Cut (mm)	Recommended Cutting Conditions: Grooving / Cut-off (Necking)	Recommended Cutting Conditions: Traverse Cutting	Corner Radius (mm)	Applicable Insert
1.25	Chipbreaker: GF; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6	—	0.05	GF
1.5	Chipbreaker: GF; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6	—	0.05	GF
2.0	Chipbreaker: ML GG GL GF CG CF RN GA; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6	Depth of Cut ap (mm) 1.0 2.0 3.0 4.0; ML GA RN; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7	0.03	CF
			0.2	ML GG GL GF CG GA
			0.4	GL GF
			1.0	RN
3.0	Chipbreaker: MG ML GG GL GF CG CF RG RN GA; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6	Depth of Cut ap (mm) 1.0 2.0 3.0 4.0; ML MG RG/RN GA; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7	0.03	CF
			0.2	MG ML GG GL GF CG GA
			0.4	MG ML GG GL GF
			1.5	RG RN

In cut-off applications, reduce the feed rate to around 30% to 50% near the centre of the workpiece.

GND series Head Recommended Cutting Conditions (Cutting Speed by Work Material)

Work Material	P Carbon Steel / Alloy Steel					M Stainless Steel			K Cast Iron				S Exotic Alloy		N Non-Ferrous Metal
Tool Grades	AC8025P	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	T2500A	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	AC8025P	AC425K	AC5015S AC520U	AC5025S AC530U AC1030U	AC5015S AC520U	AC5025S AC530U AC1030U	H10 DL1500
Cutting Speed vc (m/min)	80 to 250	80 to 200	80 to 200	50 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60	150 to 300

Selecting GND series Heads

Integrated Holder	Right-handed (R)	Left-handed (L)
APM series	Right-handed (R) No Offset	Right-handed (R) With Offset
APM series Shank	APM-R○○X84J (Common)	
GND series Head	APM○○-GND□ R-○○○○J	APM○○-GND□ R○○○-○○○○J (Offset Dimensions)
Applicable Insert	Common	
GND series Head Mounted Appearance	Shank: Common Head: No Offset Right-handed Insert: Common No Offset	Shank: Common Head: With Offset Right-handed Insert: Common Yes Offset

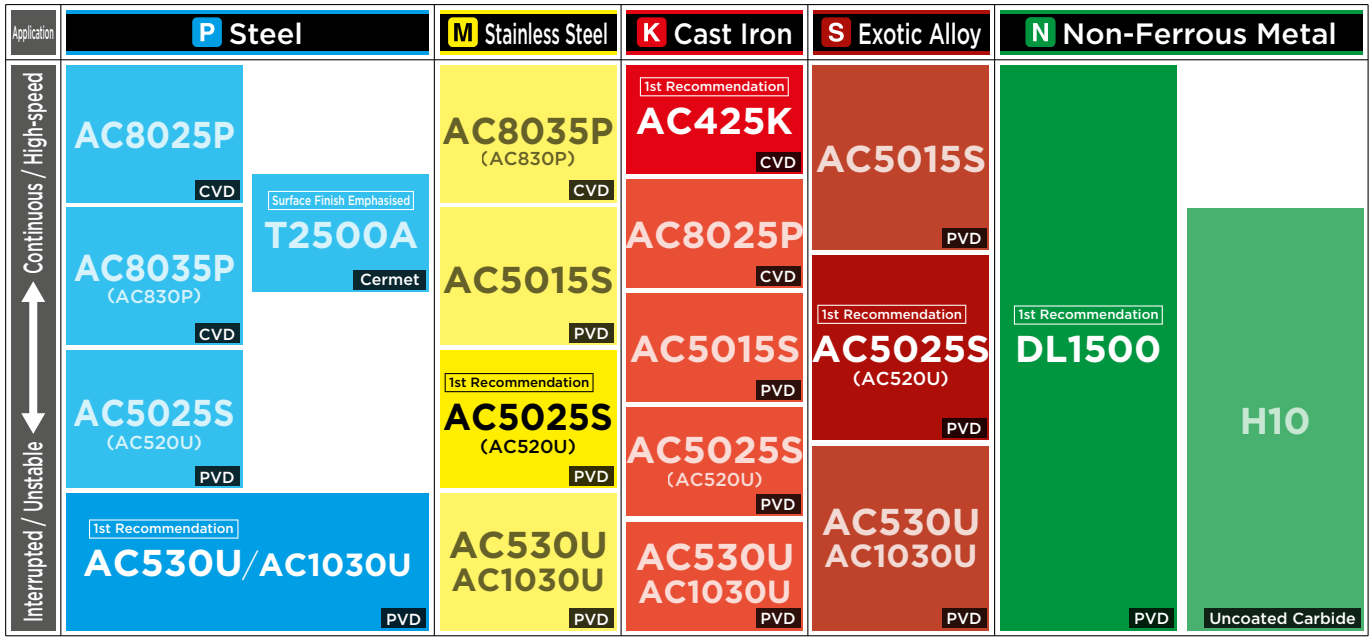
APM series

Chipbreaker Selection Guide for Inserts with GND series Heads





Grade Selection Guide for Inserts with GND series Heads



SPB series



■ Features

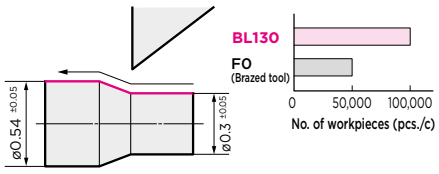
- High rigidity type tools for gang-type NC lathes
- Inserts for various applications can be used on a single holder
- Can also be used on turret-type toolposts
- BL130 has wear resistance similar to coated grades and sharpness similar to uncoated grades
- Ultra-fine grained cemented carbide grade F1, typically used for brazed tools, is now available for indexable inserts

■ Grade Application

Insert Grade \ Applicable Work Material	General Steel/SK Material	Stainless Steel: Austenitic	Stainless Steel: Martensitic Ferritic	Brass/ Aluminum Alloy
BL130	○	○	◎	○
F1	○	◎	○	○

■ Application Examples

Watch component



Tool: BL130 (PBVFN1102R)
Work Material: SUS420F
Cutting Conditions:
vc = 7 to 11m/min
f = 0.006mm/rev

Very Small Diameter Part Turning
Screw-on

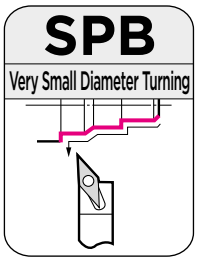


Fig 1

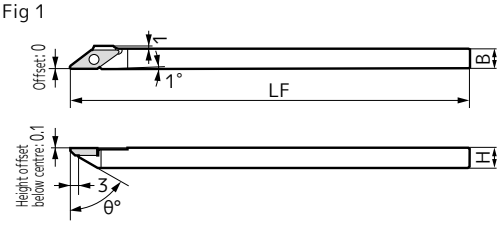


Fig 2

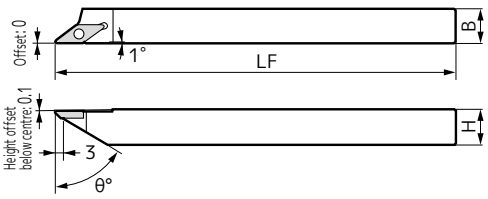


Fig 3

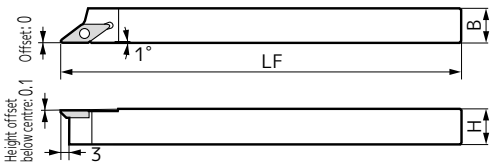


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Toolpost	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Relief Angle θ°	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Turret type	**SPB R/L0707 70**		★	7	7	140	70	1	BFTX02505N	**1.1**	LT08-06
	SPB R/L0808 60	★		8	8	140	60	2	BFTX02506N	**1.5**	
	SPB R/L0808 70		★	8	8	140	70	2	BFTX02505N	**1.1**	
	SPB R/L0909 70		★	9.5	9.5	140	70	2	BFTX02505N	**1.1**	
	SPB R/L1010 60	★		10	10	140	60	2	BFTX02506N	**1.5**	
	SPB R/L1212 60	★		12	12	140	60	2	BFTX02506N	**1.5**	
Gang type	**SPB R/L0808**	★	—	8	8	140	—	3	BFTX02506N	**1.5**	LT08-06
	SPB R/L1010	★	—	10	10	140	—	3	BFTX02506N	**1.5**	
	SPB R/L1212	★	—	12	12	140	—	3	BFTX02506N	**1.5**	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SPB series

Inserts

(▭ Cemented Carbide)

Front Turning Insert

Dimensions (mm)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Effective Length	Wiper Edge	Fig
PBVFW 1102 R/L	★				1.0	Yes	1
PBVFN 1102 R/L	★				1.0	No	2

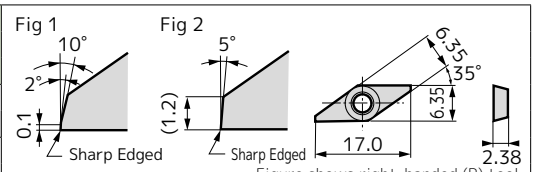


Figure shows right-handed (R) tool.

( ) is a reference value

Back Turning Insert

Dimensions (mm)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Effective Length	Wiper Edge	Fig
PBVBW 1102 R/L	★				1.0	Yes (2°)	1
PBVBN 1102 R/L	★				1.0	No (5°)	2

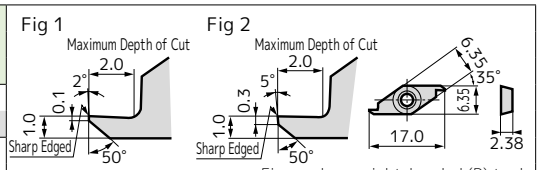


Figure shows right-handed (R) tool.

Grooving Insert

Dimensions (mm)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Machining Groove Depth CDX	Width of Cut CW	Fig
PBVG 1102 R/L 030	★				0.5	0.3	1
PBVG 1102 R/L 050	★				1.0	0.5	1
PBVG 1102 R/L 100	★				2.0	1.0	1

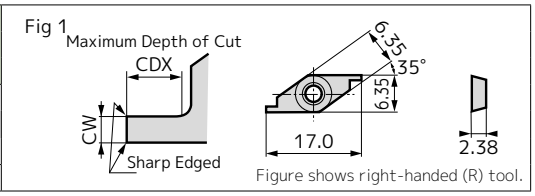
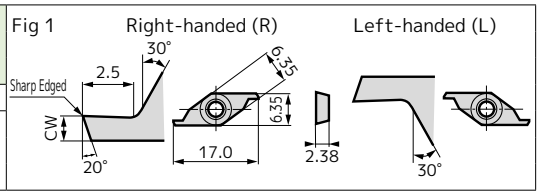


Figure shows right-handed (R) tool.

Cut-off Insert

Dimensions (mm)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Max. Cut-off Dia.	Width of Cut CW	Fig
PBVC 1102 R/L 50	★	★			5.0	1.0	1



Threading Insert

Dimensions (mm)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Process Pitch	Fig
PBVTF 1102 R/L	★				0.2 to 0.5	1
PBVTB 1102 R/L	★				0.2 to 0.5	2

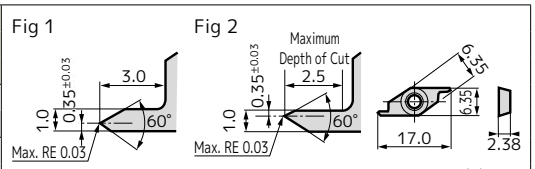


Figure shows right-handed (R) tool.

Recommended Cutting Conditions

Work Material	P Free-Cutting Steel	P Carbon Steel	M Stainless Steel	N Non-Ferrous Metal
Cutting Speed vc (m/min)	5 to 80	5 to 80	5 to 50	5 to 100
Feed Rate f (mm/rev)	0.003 to 0.05			
Coolant	Wet (oil-based)			

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | Back Clamp | 80° | 95°

PCLC-X

External Turning and Facing

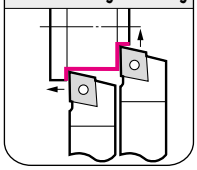
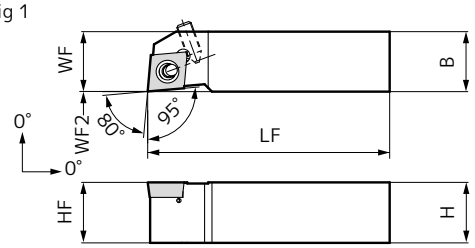


Fig 1



For PCLC R/L1212-K09X

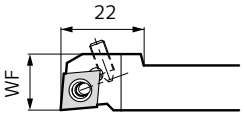


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin 	Set Screw 	Pin 	Wrench  (For hexagonal hole)
PCLC R/L1010-K06X	★		10	10	125	10	10	0	CC□T0602	**B68 ~**	1	LCL06	BTT0407	LP07	TH020
PCLC R/L1212-K09X	★		12	12	125	15	12	0	CC□T09T3	**B71 ~**	1	LCL09	BTT0411	LP06	TH020
PCLC R/L1616-K09X	★		16	16	125	16	16	0			1				

Zero Offset | 80° | 95°

SCLC-X

External Turning and Facing

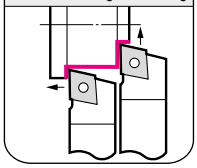


Fig 1

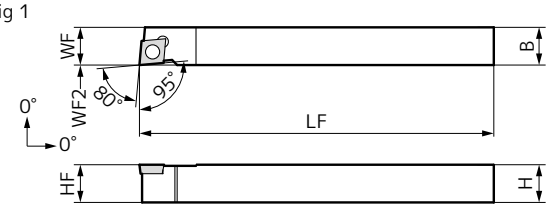


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw 	N·m	Wrench  (For Torx hole)
SCLC R/L1010-H06X	★	★	10	10	100	10	10	0	CC□T0602	**B68 ~**	1	BFTX02506N	**1.5**	TRX08
SCLC R/L1215-K09X	★	★	12	15	125	15	12	0	CC□T09T3	**B71 ~**	1	BFTX0409N	**3.4**	TRX15
SCLC R/L1215-F09X*	★	★	12	15	85	15	12	0			1			

*85mm Shank

Indexable Heads D14

Zero Offset | 80° | 91°

SCAC-X

External Turning

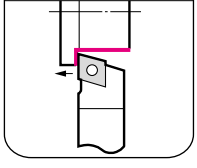


Fig 1

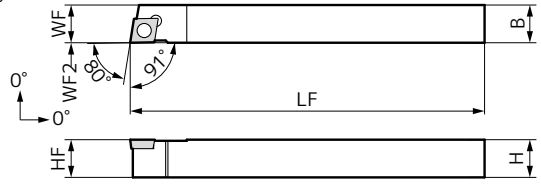


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw 	N·m	Wrench  (For Torx hole)
SCAC R/L1010-H06X	★	★	10	10	100	10	10	0	CC□T0602	**B68 ~**	1	BFTX02506N	**1.5**	TRX08
SCAC R/L1215-F09X*	★	★	12	15	85	15	12	0	CC□T09T3	**B71 ~**	1	BFTX0409N	**3.4**	TRX15
SCAC R/L1215-K09X	★	★	12	15	125	15	12	0			1			

*85mm Shank

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | Back Clamp | 55° | 93°

PDJC-X

External Turning and Profiling

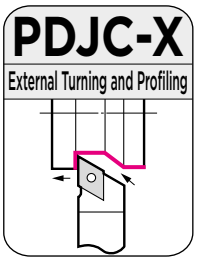
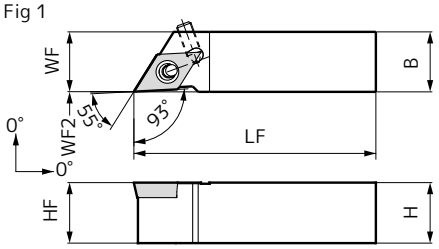


Fig 1



For PDJC R/L1212-K11X

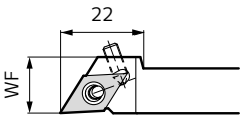


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Set Screw	Pin	Wrench (For hexagonal hole)
PDJC R/L1010-K07X	★		10	10	125	10	10	0	DC□T0702	**B78 ~**	1	LCL06	BTT0407	LP04	TH020
PDJC R/L1212-K11X	★		12	12	125	15	12	0	DC□T11T3	**B82 ~**	1	LCL09	BTT0411	LP07	TH020
PDJC R/L1616-K11X	★		16	16	125	16	16	0			1				

Zero Offset | 55° | 93°

SDJC-X

External Turning and Profiling

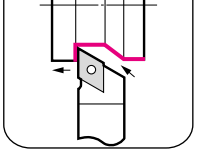


Fig 1

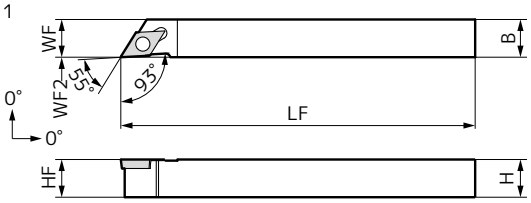


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDJC R/L1010-H07X	★	★	10	10	100	10	10	0	DC□T0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
SDJC R/L1215-F11X*	★	★	12	15	85	15	12	0	DC□T11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15
SDJC R/L1215-K11X	★	★	12	15	125	15	12	0			1			

*85mm Shank

Indexable Heads D14

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | D 55° | 91°

SDAC-X
External Turning and Profiling

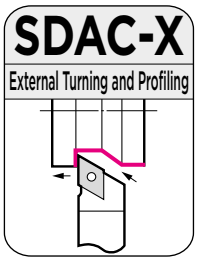


Fig 1

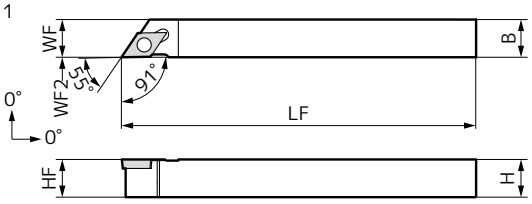


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDAC R/L1010-H07X	★	★	10	10	100	10	10	0	DC□T0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
SDAC R/L1215-F11X*	★	★	12	15	85	15	12	0	DC□T11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15
SDAC R/L1215-K11X	★	★	12	15	125	15	12	0			1			

*85mm Shank

Zero Offset | D 55° | 107.5°

SDPC-X
Necking



Fig 1

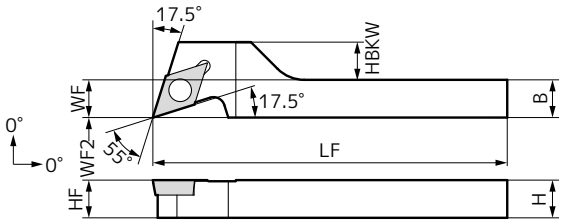


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBKW	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDPC R/L1010-H11X	★	★	10	10	100	10	10	10	0	DC□T11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | V 35° | 93°

SVJC-X

General Turning and Profiling

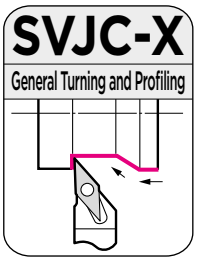


Fig 1

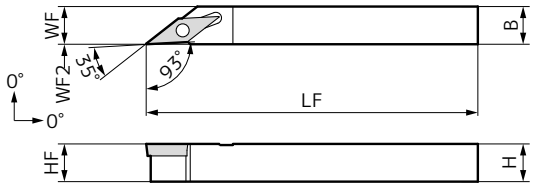


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SVJC R/L1010-H11X	★	★	10	10	100	10	10	0	VC□T1103	**B119 ~**	1	BFTX02508NV	**1.5**	TRX08
SVJC R/L1212-F11X*	★	★	12	12	85	12	12	0			1			
SVJC R/L1212-K11X	★	★	12	12	125	12	12	0			1			

*85mm Shank

Indexable Heads D15

Zero Offset | T 60° | 100°

PTXN-X

External Turning and Facing

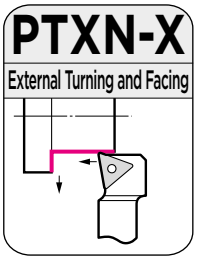
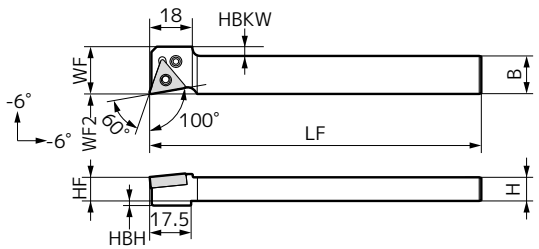


Fig 1



Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Step HBKW	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Wrench (For Hexagonal hole)
PTXN R1016-X16X	★	10	16	120	20	10	2	4	0	TN□□1604	**B48 ~**	1	LCL33NT	LCS33NT	LH020NT
PTXN R1216-X16X	★	12	16	120	20	12	0	4	0			1			
PTXN R1616-X16X	★	16	16	120	20	16	0	4	0			1			
PTXN R2020-X16X	★	20	20	120	20	20	0	0	0			1			

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)
Recommended Tightening Torque (N·m)

PC series/SC series

Back Clamp | 80° | 95°

General External Turning
Lever Lock

PCLC

External Turning and Facing

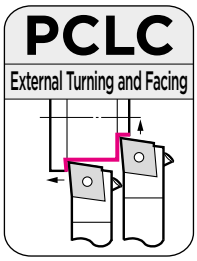
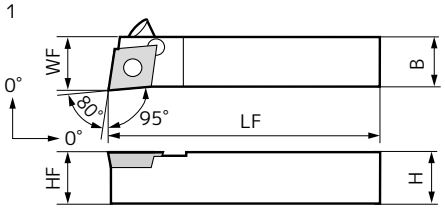


Fig 1



For PCLC R/L0810-K06

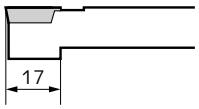


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Set Screw	Pin	Wrench (For Hexagonal hole)
PCLC R/L0810 K06	★	★	8	10	125	10.5	8	CC□□0602	**B68 ~**	1	LCL06	BTT0407	LP07	TH020
PCLC R/L1010 K06	★	★	10	10	125	10.5	10			1				
PCLC R/L1212 K09	★	★	12	12	150	12.5	12	CC□□09T3	**B71 ~**	1	LCL09	BTT0407	LP06	TH020
PCLC R/L1616 K09	★		16	16	150	16.5	16			1		BTT0411		
PCLC R/L1212 M09	★	★	12	12	150	12.5	12	CC□□09T3	**B71 ~**	1	LCL09	BTT0407	LP06	TH020
PCLC R/L1616 M09	★	★	16	16	150	16.5	16			1		BTT0411		
PCLC R/L2020 M09	★	★	20	20	150	20.5	20			1				

80° | 95°

General External Turning
Screw-on

SCLC

External Turning and Facing

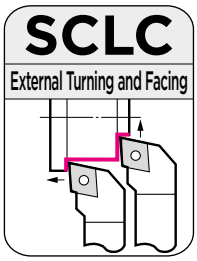


Fig 1

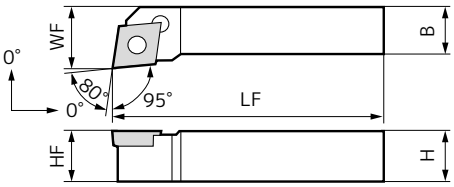


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SCLC R/L0808 D06	—			8	8	60	10	8	CC□□0602	**B68 ~**	1	BFTX02506N	**1.5**	TRX08
SCLC R/L0808 H06	**SCLC R/L0808-06**	★	★	8	8	100	10	8			1			
SCLC R/L1010 E06	—	★	★	10	10	70	12	10			1			
SCLC R/L1010 H06	**SCLC R/L1010-06**	★	★	10	10	100	12	10			1			
SCLC R/L1212 F09	—	★	★	12	12	80	16	12	CC□□09T3	**B71 ~**	1	BFTX0409N	**3.4**	TRX15
SCLC R/L1212 H09	**SCLC R/L1212-09**	★	★	12	12	100	16	12			1			
SCLC R/L1616 H09	**SCLC R/L1616-09**	★	★	16	16	100	20	16			1			
SCLC R/L2020 H09	—	★		20	20	100	25	20			1			
SCLC R/L2020 K09	**SCLC R/L2020-09**	★	★	20	20	125	25	20			1			
SCLC R/L2020 K12	—	★	★	20	20	125	25	20	CC□□1204	**B73 ~**	1	BFTX0511N	**5.0**	TRX20
SCLC R/L2525 M12	—	★	★	25	25	150	32	25			1			

When using handed chipbreaker inserts for facing, the holder and insert are opposite handed.

Indexable Heads D14

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SC series



General External Turning
Screw-on

SCAC
External Turning

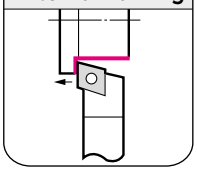


Fig 1

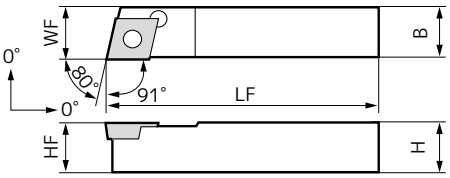


Figure shows right-handed (R) tool.

Holder

Parts

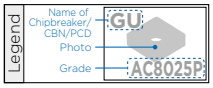
Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SCAC R/L0808 06	★		8	8	100	8.5	8	CC□□0602	**B68 ~**	1	BFTX02506N	**1.5**	TRX08
SCAC R/L0808 D06			8	8	60	8.5	8			1			
SCAC R/L1010 06	★	★	10	10	100	10.5	10			1			
SCAC R/L1010 E06	★		10	10	70	10.5	10			1			
SCAC R/L1212 09	★	★	12	12	100	12.5	12	CC□□09T3	**B71 ~**	1	BFTX0409N	**3.4**	TRX15
SCAC R/L1212 F09	★		12	12	80	12.5	12			1			
SCAC R/L1616 09	★	★	16	16	100	16.5	16			1			
SCAC R/L2020 09	★	★	20	20	125	20.5	20			1			

Applicable Inserts ◂·· PCLC type/SCLC type/SCAC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials
General Machining	FB **T1500Z**	GU **AC8025P**	MU **AC8020P**	LB **AC6030M**	GU **AC6030M**	MU **AC6135M**	SUMIBORON BN7125/BNC500	MU **AC4015K**	No Chipbreaker **AC4015K**	SU **AC5015S**	SUMIDIA **DA1000**	AG **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**	SUMIDIA **DA1090**
High-precision	FF **AC1030U**	SI **AC1030U**	SC **AC1030U**	FF **AC1030U**	SI **AC1030U**	SC **AC1030U**	SUMIBORON BN7125/BNC500	—	—	SI **AC5015S**	SUMIDIA **DA1000**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**	SUMIDIA BINDERLESS **NPD10**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

BNC500 is for ductile cast iron.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PD series/SD series

Back Clamp | D 55° | 93°

General External Turning and Profiling
Lever Lock

PDJC

External Turning and Profiling

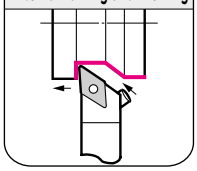
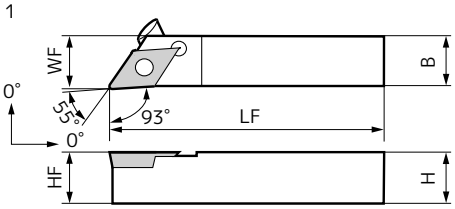


Fig 1



For PDJC R/L0810-K07

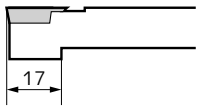


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

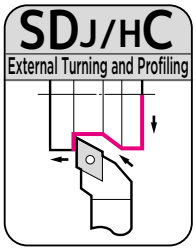
ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin 	Set Screw 	Pin 	Wrench  (For Hexagonal hole)
PDJC R/L0810 K07	★	★	8	10	125	10.5	8	DC□□0702	**B78 ~**	1	LCL06	BTT0407	LP04	TH020
PDJC R/L1010 K07	★	★	10	10	125	10.5	10			1				
PDJC R/L1212 M11	★	★	12	12	150	12.5	12	DC□□11T3	**B82 ~**	1	LCL09	BTT0407	LP07	TH020
PDJC R/L1616 M11	★	★	16	16	150	16.5	16			1		BTT0411		
PDJC R/L2020 M11	★	★	20	20	150	20.5	20			1				

D 55° | 93°

General External Turning and Profiling
Screw-on

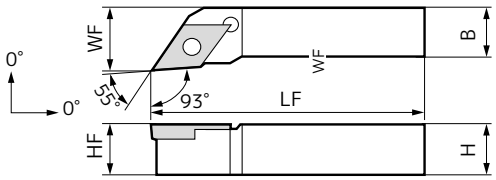
SDJ/HC

External Turning and Profiling



SDJC R/L

Fig 1



SDHC R/L

Fig 2

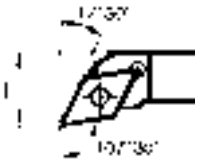


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw 	N·m	Wrench  (For Torx hole)
SDJC R/L0808 H07	**SDJC R/L0808-07**	★		8	8	100	10	8	DC□□0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
SDJC R/L1010 E07	—	★		10	10	70	12	10			1			
SDJC R/L1010 H07	**SDJC R/L1010-07**	★	★	10	10	100	12	10			1			
SDJC R/L1212 F07	—	★	★	12	12	80	16	12			1			
SDJC R/L1616 H07	—	★	★	16	16	100	20	16			1			
SDJC R/L2020 K07	—	★	★	20	20	125	25	20			1			
SDJC R/L1212 F11	—	★	★	12	12	80	16	12	DC□□11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15
SDJC R/L1212 H11	**SDJC R/L1212-11**	★	★	12	12	100	16	12			1			
SDJC R/L1616 H11	**SDJC R/L1616-11**	★	★	16	16	100	20	16			1			
SDJC R/L2020 K11	**SDJC R/L2020-11**	★	★	20	20	125	24	20			1			
SDJC R/L2525 M11	—	★	★	25	25	150	32	25			1			
SDHC R/L1616 H11	—	★	★	16	16	100	20	16	DC□□11T3	**B82 ~**	2	BFTX0409N	**3.4**	TRX15
SDHC R/L2020 K11	—	★	★	20	20	125	25	20			2			
SDHC R/L2525 M11	—	★	★	25	25	150	32	25			2			

Indexable Heads D14

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

General External Turning and Profiling
Screw-on

SDAC

External Turning and Profiling

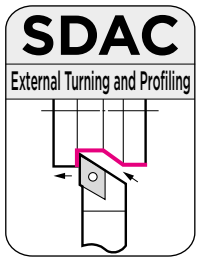


Fig 1

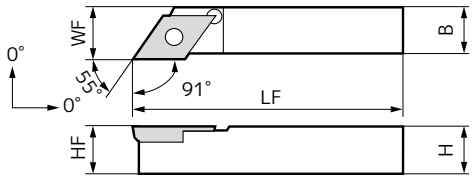


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDAC R/L0808 07	★	★	8	8	100	8.5	8	DC□□0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
SDAC R/L0808 D07			8	8	60	8.5	8			1			
SDAC R/L1010 07	★	★	10	10	100	10.5	10			1			
SDAC R/L1010 E07	★		10	10	70	10.5	10			1			
SDAC R/L1212 11	★	★	12	12	100	12.5	12	DC□□11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15
SDAC R/L1212 F11	★	★	12	12	80	12.5	12			1			
SDAC R/L1616 11	★	★	16	16	100	16.5	16			1			
SDAC R/L2020 11	★	★	20	20	125	20.5	20			1			

Applicable Inserts ◀·· PDJC type/SDJC type/SDHC type/SDAC type/SDNC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6135M	SUMIBORON BN7125/BNC500	MU AC4015K	No Chipbreaker AC4015K	FX AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
High-precision	FF AC1030U	SI AC1030U	SC AC1030U	FF AC1030U	SI AC1030U	SC AC1030U	SUMIBORON BN7125/BNC500	—	—	SI AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)



General External Turning and Profiling
Screw-on

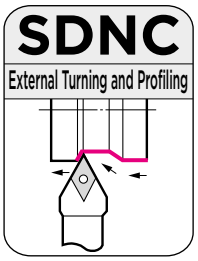
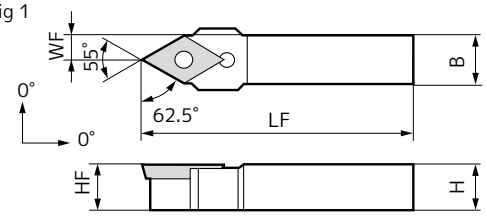
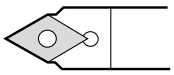


Fig 1



For SDNC N1616
SDNC N2020



Holder

Parts

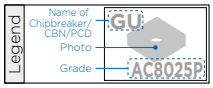
Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDNC N0808 07		8	8	100	4	8	DC□□0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
SDNC N0808 D07	★	8	8	60	4.2	8			1			
SDNC N1010 07	★	10	10	100	5	10			1			
SDNC N1010 E07	★	10	10	70	5.2	10			1			
SDNC N1212 F07	★	12	12	80	6.2	12			1			
SDNC N1616 H07		16	16	100	8.2	16			1			
SDNC N2020 K07	★	20	20	125	10.2	20			1			
SDNC N1212 11	★	12	12	100	6	12	DC□□11T3	**B82 ~**	1	BFTX0409N	**3.4**	TRX15
SDNC N1212 F11	★	12	12	80	6.5	12			1			
SDNC N1616 H11	★	16	16	100	8.5	16			1			
SDNC N2020 K11	★	20	20	125	10.5	20			1			
SDNC N2525 M11	★	25	25	150	13	25			1			

Applicable Inserts ◂·· PDJC type/SDJC type/SDHC type/SDAC type/SDNC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 -).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**MU** **AC8020P**	**LB** **AC6030M**	**GU** **AC6030M**	**MU** **AC6135M**	SUMIBORON BN7125/BNC500	**MU** **AC4015K**	No Chipbreaker **AC4015K**	**FX** **AC5015S**	SUMIDIA **DA1000**	**AG** **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**	SUMIDIA **DA1090**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**SC** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**SC** **AC1030U**	SUMIBORON BN7125/BNC500	—	—	**SI** **AC5015S**	SUMIDIA **DA1000**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**	SUMIDIA BINDERLESS **NPD10**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

BNC500 is for ductile cast iron.

N·m Recommended Tightening Torque (N·m)

MEMO



General External Turning
Screw-on

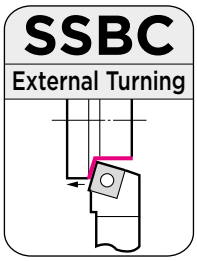


Fig 1

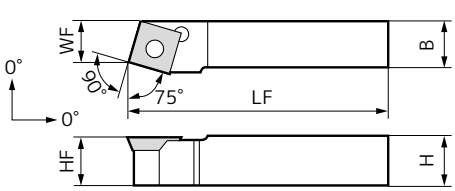


Figure shows right-handed (R) tool.

Holder

Parts

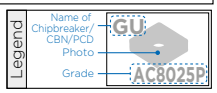
Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SSBC R/L1010 07	★	★	10	10	100	9	10	SC□□0702	**B88**	1	BFTX0307N	**2.0**	TRX10
SSBC R/L1010 E07			10	10	70	9	10			1			
SSBC R/L1212 09	★	★	12	12	100	11	12	SC□□09T3	**B89**	1	BFTX0409N	**3.4**	TRX15
SSBC R/L1212 F09			12	12	80	11	12			1			
SSBC R/L1616 09	★	★	16	16	100	15	16			1			
SSBC R/L1616 H09	★	★	16	16	100	13	16			1			
SSBC R/L2020 09	★	★	20	20	125	19	20			1			
SSBC R/L2020 K12			20	20	125	17	20	SC□□1204	**B90**	1	BFTX0511N	**5.0**	TRX20
SSBC R/L2525 M12			25	25	150	22	25			1			

Applicable Inserts ◂·· SSBC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-Ferrous) —
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6030M	MU AC4015K	No Chipbreaker AC4015K	SUMIDIA DA1000
High-precision	FX T1500A	SC AC1030U	SC AC1030U	FX AC1030U	SC AC1030U	SC AC1030U	—	—	SUMIDIA DA1000
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~		☞ A22 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)



General External Turning
Screw-on

STGC External Turning

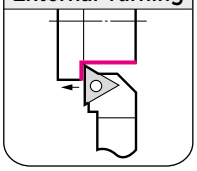


Fig 1

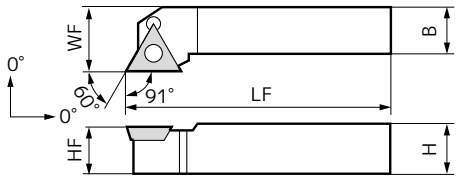


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
STGC R/L0808 09	★		8	8	100	10	8			1			
STGC R/L1010 09	★	★	10	10	100	12	10	TC□□0902	**B100**	1	BFTX02205N	**0.5**	TRX06
STGC R/L1010 E09	★		10	10	70	12	10			1			
STGC R/L1212 11	★	★	12	12	100	16	12			1			
STGC R/L1212 F11	★		12	12	80	16	12	TC□□1102	**B101**	1	BFTX02506N	**1.5**	TRX08
STGC R/L1616 H11	★	★	16	16	100	20	16			1			
STGC R/L2020 11	★	★	20	20	125	25	20			1			
STGC R/L1616 H16	★	★	16	16	100	20	16			1			
STGC R/L2020 K16	★	★	20	20	125	25	20	TC□□16T3	**B102**	1	BFTX0409N	**3.4**	TRX15
STGC R/L2525 M16			25	25	150	32m	25			1			



General External Turning
Screw-on

STAC External Turning

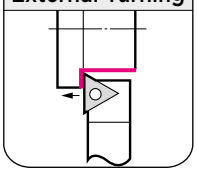


Fig 1

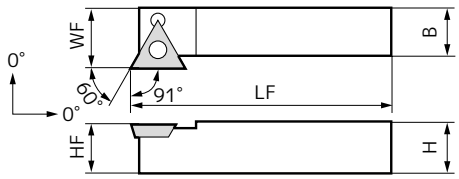


Figure shows right-handed (R) tool.

Holder

Parts

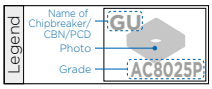
Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
STAC R/L0808 09		★	8	8	100	8.5	8	TC□□0902	**B100**	1	BFTX02205N	**0.5**	TRX06
STAC R/L1010 09	★		10	10	100	10.5	10			1			
STAC R/L1212 11	★	★	12	12	100	12.5	12			1			
STAC R/L1212 F11	★		12	12	80	12.5	12	TC□□1102	**B101**	1	BFTX02506N	**1.5**	TRX08
STAC R/L1616 11	★	★	16	16	100	16.5	16			1			
STAC R/L2020 11	★	★	20	20	125	20.5	20			1			

Applicable Inserts ◂·· STGC type/STAC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 -).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-Ferrous)
General Machining	**LU T1500Z**	**SU AC8025P**	**SU AC8020P**	**LB AC6030M**	**SU AC6030M**	**SU AC6135M**	**MU AC4015K**	**No Chipbreaker AC4015K**	**SUMIDIA DA1000**
High-precision	**FF AC1030U**	**SI AC1030U**	**SC AC1030U**	**FF AC1030U**	**SI AC1030U**	**SC AC1030U**	—	—	**SUMIDIA DA1000**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~		☞ A22 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

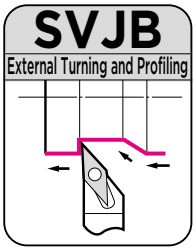
SV series

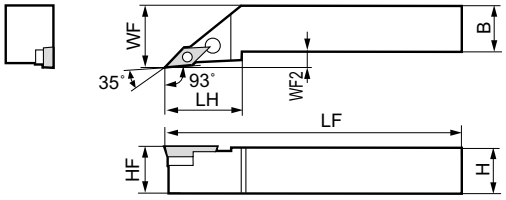


General External Turning and Profiling
S series screw Lock Holders

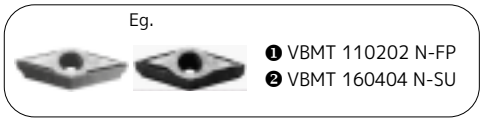
SVJB

External Turning and Profiling





Inserts



Spare Parts

Holders

Above figures show right hand tools.

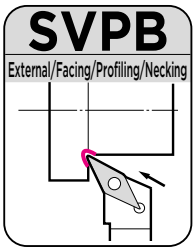
ISO Cat. No.	Stock		Dimensions (mm)							Stopper	Nut	Shim	Wrench	Scew	Wrench	Insert
	R	L	H	HF	B	LF	LH	WF	WF2							
SVJB R/L1212 F11	★	★	12	12	12	80	25	16	4,5	-	-	-	-	BFTX02508NV 1.5 N·m	TRX08	❶
SVJB R/L1616 H11	★	★	16	16	16	100	25	20	4,5							
SVJB R/L2020 K16	★	★	20	20	20	125	41	25	5,0	VP20						
SVJB R/L2525 M16	★	★	25	25	25	150	41	32	7,0	VP25	CPV33N	SVP32	LH025	BFTX03508 2.0 N·m	TRX10	❷
SVJB R/L3225 P16	★	★	32	32	25	170	41	32	7,0	VP32						

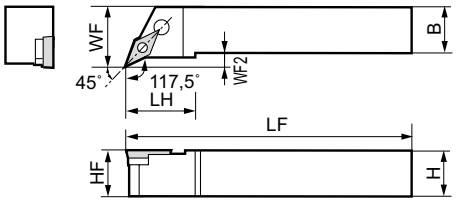


General External/Facing/Profiling/Necking
S series screw Lock Holders

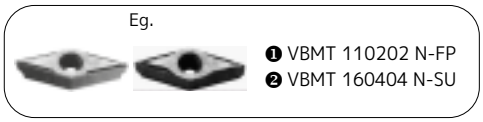
SVPB

External/Facing/Profiling/Necking





Inserts



Spare Parts

Holders

Above figures show right hand tools.

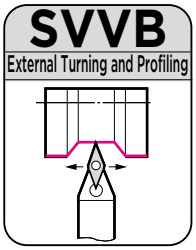
ISO Cat. No.	Stock		Dimensions (mm)							Stopper	Nut	Shim	Wrench	Scew	Wrench	Insert
	R	L	H	HF	B	LF	LH	WF	WF2							
SVPB R/L1212 F11	★		12	12	12	80	25	16	4,5	-	-	-	-	BFTX02508NV 1.5 N·m	TRX08	❶
SVPB R/L1616 H11	★	★	16	16	16	100	25	20	4,5							
SVPB R/L2020 K16	★	★	20	20	20	125	36	25	5,0	VP20						
SVPB R/L2525 M16	★	★	25	25	25	150	36	32	7,0	VP25	CPV33N	SVP32	LH025	BFTX03508 2.0 N·m	TRX10	❷
SVPB R/L3225 P16	★	★	32	32	25	170	36	32	7,0	VP32						

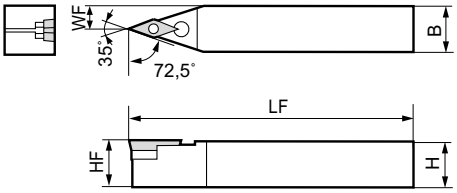
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SV series

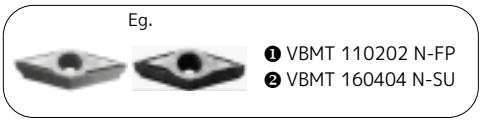


General External Turning and Profiling
S series screw Lock Holders





Inserts



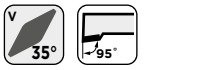
Spare Parts

Holders

ISO Cat. No.	Stock	Dimensions (mm)						Stopper	Nut	Shim	Wrench	Scew	Wrench	Insert
		H	HF	B	LF	LH	WF							
SVVB N 1212 F11	★	12	12	12	80	-	6	-	-	-	-	BFTX02508NV **1.5**	TRX08	❶
SVVB N 1616 H11	★	16	16	16	100	-	8							
SVVB N 2020 K16	★	20	20	20	125	-	10	VP20						
SVVB N 2525 M16	★	25	25	25	150	-	12,5	VP25	CPV33N	SVP32	LH025	BFTX03508 **2.0**	TRX10	❷
SVVB N 3225 P16	★	32	32	25	170	-	12,5	VP32						

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SV series (7° Pos.)



General External Turning and Profiling
Screw-on

SVLC

External Turning and Profiling

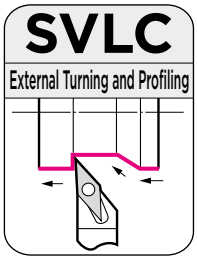


Fig 1

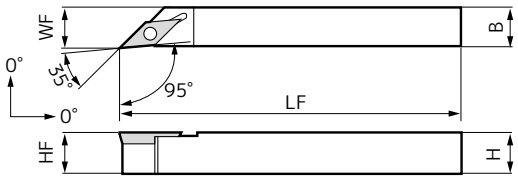


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SVLC R/L1010 H11	★	★	10	10	100	10.5	10	VC□□1103	**B119 ~**	1	BFTX02508NV	**1.5**	TRX08
SVLC R/L1212 H11	★	★	12	12	100	12.5	12			1			
SVLC R/L1616 H11	★	★	16	16	100	16.5	16			1			
SVLC R/L2020 K11	★	★	20	20	125	20.5	20			1			
SVLC R/L2525 M11	★	★	25	25	150	25.5	25			1			



General External Turning and Profiling
Screw-on

SVPC

Necking

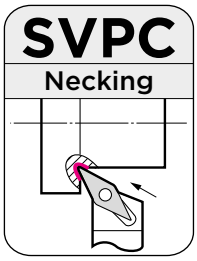


Fig 1

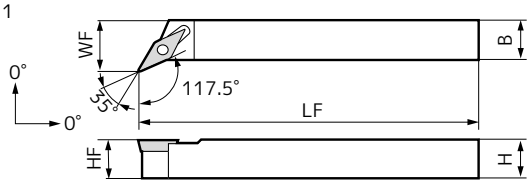


Figure shows right-handed (R) tool.

Holder

Parts

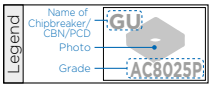
Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SVPC R/L1010 H11	★	★	10	10	100	14.5	10	VC□□1103	**B119 ~**	1	BFTX02508NV	**1.5**	TRX08
SVPC R/L1212 H11	★	★	12	12	100	16.5	12			1			
SVPC R/L1616 H11	★	★	16	16	100	20.5	16			1			
SVPC R/L2020 K11	★	★	20	20	125	24.5	20			1			

Applicable Inserts ◂·· SVLC type/SVPC type

1st Recommended Insert

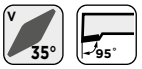
- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SU** **AC5015S**	**SU** **AC5025S**	**SUMIDIA** **DA1000**	**AG** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA90**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC5015S**	**SUMIDIA** **DA1000**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A18 ~		☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SV series (11° Pos.)



General External Turning and Profiling
Screw-on

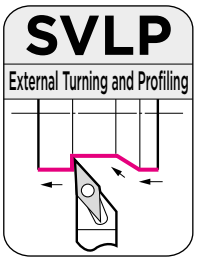


Fig 1

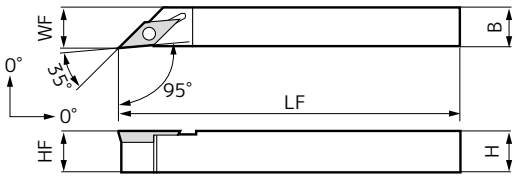


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SVLP R/L1010 H11	★	★	10	10	100	10.5	10			1			
SVLP R/L1212 H11	★	★	12	12	100	12.5	12	VP□T1103	**B123**	1	BFTX02508NV	**1.5**	TRX08
SVLP R/L1616 H11	★	★	16	16	100	16.5	16			1			



General External Turning and Profiling
Screw-on

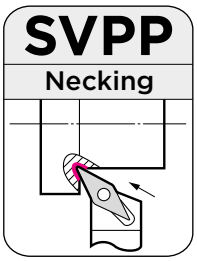


Fig 1

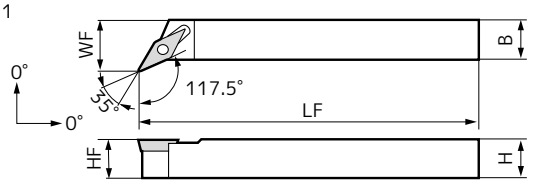


Figure shows right-handed (R) tool.

Holder

Parts

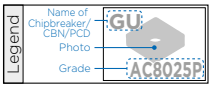
Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SVPP R/L1010 H11	★	★	10	10	100	14.5	10			1			
SVPP R/L1212 H11	★	★	12	12	100	16.5	12	VP□T1103	**B123**	1	BFTX02508NV	**1.5**	TRX08
SVPP R/L1616 H11	★	★	16	16	100	20.5	16			1			

Applicable Inserts ◂·· SVLP type/SVPP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)	M (Stainless Steel)
	Finishing	Finishing
High-precision	**FX**  **AC1030U**	**FX**  **AC1030U**
Recommended Cutting Conditions	**A24 ~**	**A24 ~**

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

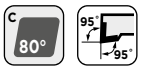
N·m Recommended Tightening Torque (N·m)

RS-SCL type



■ Features of Round Shank Holders

- Shank diameters from ø14 to ø25mm are in stock. Holders can be fitted on various manufacturers' sleeve toolposts.
- Bars can be mounted from the rear of the sleeve toolpost to increase the tooling range.



General Turning
Screw-on

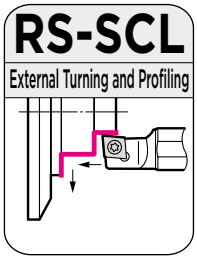
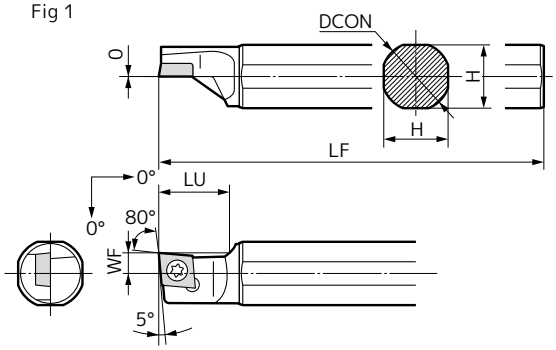


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Insert		Fig	Flat Insert Screw	Wrench
							ISO Cat. No.	Ref. Page			 (For Torx hole)
RS15H-SCL L06	★	15.875	15	100	6.0	20	CC□□0602	**B68 ~**	1	BFTX02507NT	RT08
RS19X-SCL L06	★	19.05	18	120	6.0	20			1		
RS20X-SCL L06X	★	20	19	95	6.0	20			1		
RS20X-SCL L06	★	20	19	120	6.0	20			1		
RS22X-SCL L06	★	22	21	120	6.0	20			1		
RS25X-SCL L06	★	25	24	120	6.0	20			1		
RS25M-SCL L06	★	25.4	24	150	6.0	20			1		
RS15H-SCL L09	★	15.875	15	100	6.0	20	CC□□09T3	**B71 ~**	1	BFTX0408NT	LT25NT
RS19X-SCL L09	★	19.05	18	120	6.0	20			1		
RS20X-SCL L09S	★	20	19	95	6.0	20			1		
RS20X-SCL L09	★	20	19	120	6.0	20			1		
RS22X-SCL L09	★	22	21	120	6.0	20			1		
RS25X-SCL L09	★	25	24	120	6.0	20			1		
RS25M-SCL L09	★	25.4	24	150	6.0	20			1		

Right-handed (R) or neutral (N) inserts can be used.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RS-SDU type/RS-SDX type



General Turning
Screw-on

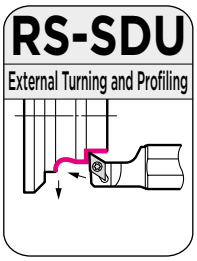
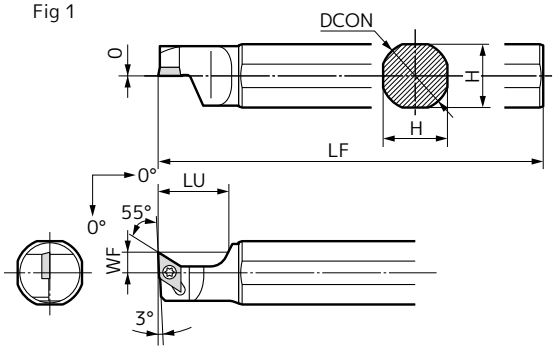


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Insert		Fig	Flat Insert Screw	Wrench
							ISO Cat. No.	Ref. Page			 (For Torx hole)
RS14F-SDU L07	★	14	13	80	6.0	20	DC□□0702	**B78 ~**	1	BFTX02507NT	RT08
RS15H-SDU L07	★	15.875	15	100	6.0	20			1		
RS16F-SDU L07	★	16	15	80	6.0	20			1		
RS16X-SDU L07	★	16	15	120	6.0	20			1		
RS19X-SDU L07	★	19.05	18	120	6.0	20			1		
RS20X-SDU L07S	★	20	19	95	6.0	20			1		
RS20X-SDU L07	★	20	19	120	6.0	20			1		
RS22X-SDU L07	★	22	21	120	6.0	20			1		
RS19X-SDU L11	★	19.05	18	120	10.0	20	DC□□11T3	**B82 ~**	1	BFTX0410NT	LT25NT
RS20X-SDU L11S	★	20	19	95	10.0	20			1		
RS20X-SDU L11	★	20	19	120	10.0	20			1		
RS22X-SDU L11	★	22	21	120	10.0	20			1		
RS25X-SDU L11	★	25	24	120	10.0	20			1		
RS25M-SDU L11	★	25.4	24	150	10.0	20			1		

Right-handed (R) or neutral (N) inserts can be used.



General Turning
Screw-on

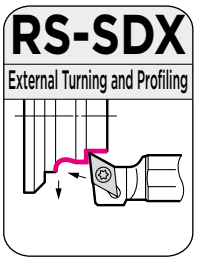
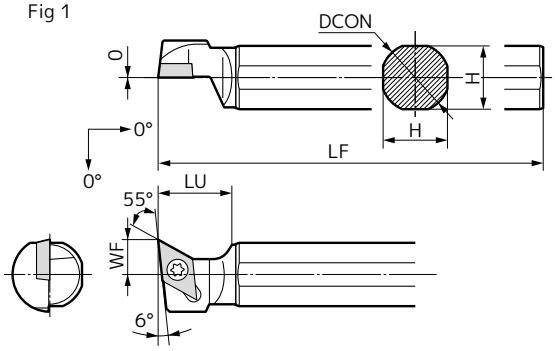


Fig 1



Holder

Parts

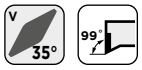
Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Insert		Fig	Flat Insert Screw	Wrench
							ISO Cat. No.	Ref. Page			 (For Torx hole)
RS19X-SDX L11	★	19.05	18	120	10.0	20	DC□□11T3	**B82 ~**	1	BFTX0410NT	LT25NT
RS20X-SDX L11S	★	20	19	95	10.0	20			1		
RS20X-SDX L11	★	20	19	120	10.0	20			1		
RS25X-SDX L11	★	25	24	120	10.0	20			1		

Right-handed (R) or neutral (N) inserts can be used.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RS-SVX type/RS-SVVP type



General Turning
Screw-on

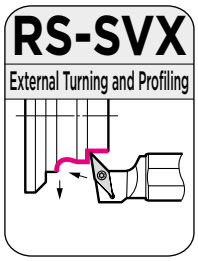
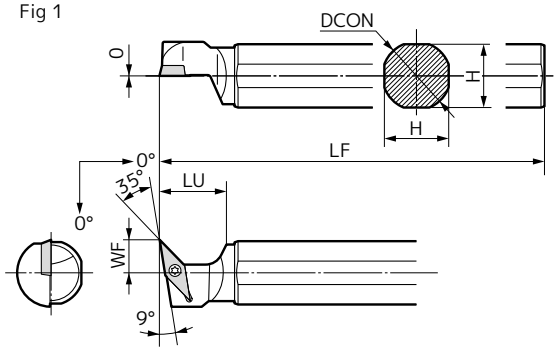


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Insert		Fig	Flat Insert Screw	Wrench
							ISO Cat. No.	Ref. Page			 (For Torx hole)
RS15H-SVX L11	★	15.875	15	100	10.0	20	VC□□1103	**B119 ~**	1	BFTX02507NT	RT08
RS19X-SVX L11	★	19.05	18	120	10.0	20			1		
RS20X-SVX L11S	★	20	19	95	10.0	20			1		
RS20X-SVX L11	★	20	19	120	10.0	20			1		
RS22X-SVX L11	★	22	21	120	10.0	20			1		
RS25X-SVX L11	★	25.4	24	150	10.0	20			1		

Right-handed (R) or neutral (N) inserts can be used.



General Turning
Screw-on

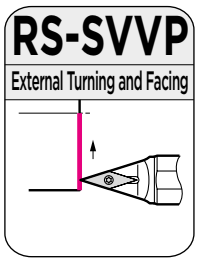
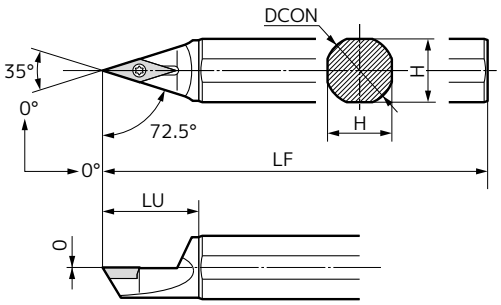


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Usable Length LU	Applicable Insert		Fig	Flat Insert Screw	Wrench
						ISO Cat. No.	Ref. Page			 (For Torx hole)
RS19X-SVVP N11	★	19.05	18	120	27	VP□□1103	**B123**	1	BFTX02507NT	RT08
RS22X-SVVP N11	★	22	21	120	27			1		

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RS-PTXN type

General Turning
Lever Lock

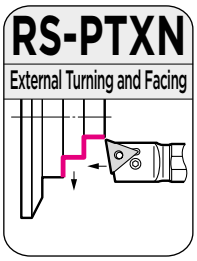
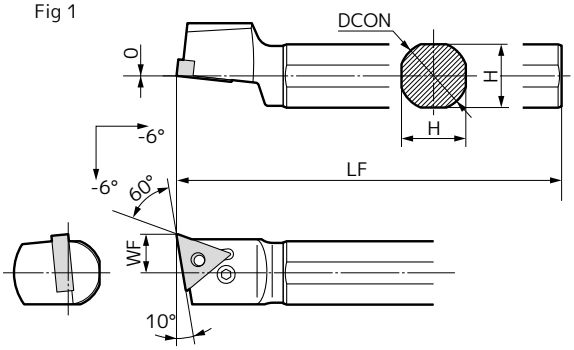


Fig 1



Holder

Parts

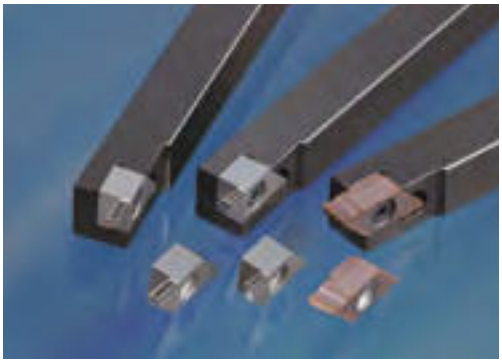
Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Applicable Insert		Fig	Lever Pin	Bolt	Wrench
						ISO Cat. No.	Ref. Page				 (For hexagonal hole)
RS19X-PTXN L16	★	19.05	18	120	11.0	TN□□1604	**B48 ~**	1	LCL33NT	LCS33NT	LH020NT
RS20X-PTXN L16	★	20	19	120	11.0			1			
RS25M-PTXN L16	★	25.4	24	150	13.0			1			

Right-handed (R) or neutral (N) inserts can be used.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SGW series

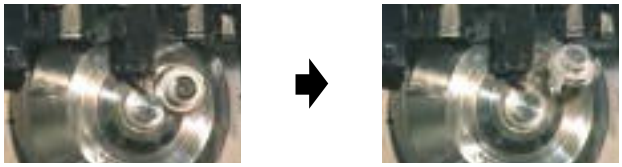


■ SUMIDIA Multi-Function Tool with Chipbreaker SUMIDIA BREAK MASTER LD type

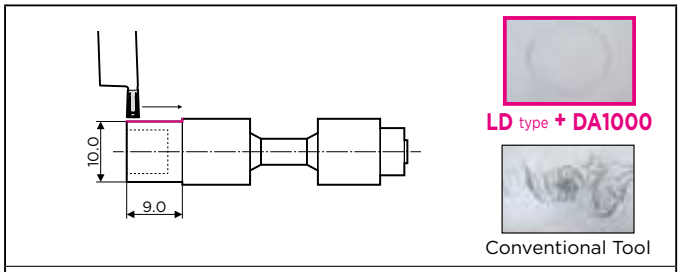
- Provides excellent chip control in traverse cutting and grooving of aluminum alloy.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing high-toughness grade SUMIDIA DA1000.

■ Features

- Enables high-efficiency roughing of long parts
- Coin-shaped chips are less likely to tangle with work material or machinery



■ Application Examples



Work Material: Al-Mg1SiCu (Valve), Tool Cat. No.: KGV R2004-LD (DA1000)
Cutting Conditions: vc = 250m/min, f = 0.10mm/rev, ap = 0.5mm Wet

SGW
External Turning

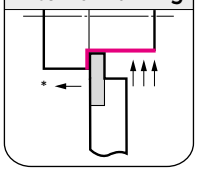
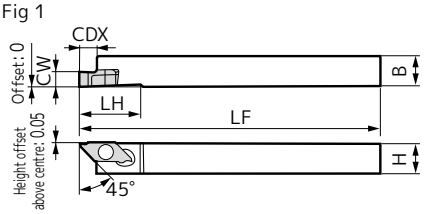
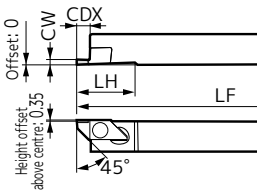


Fig 1



Dimensions with SUMIDIA insert mounted



External Multi-purpose type
(Grooving/Traverse Cutting)
Screw-on

*Use the SUMIDIA insert for traverse cutting.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SGW R1212	★	12	12	120	7.0	24.5	1	BFTX0410T8R	**1.1**	TRX08
SGW R1616	★	16	16	120	7.0	24.5	1			

The above dimensions for LF, CDX and LH are values with a carbide insert mounted. (Refer to the table below for dimensions with SUMIDIA insert mounted)

Insert (Carbide) (Coated Cabide)

Dimensions (mm)

ISO Cat. No.	AC1030U	AC530U	Width of Cut CW	Overall Length L	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Effective Length	Fig
KGV R400	★	★	4.0	21.0	120	7.0	24.5	6.3	1
KGV R500	★	★	5.0	21.0	120	7.0	24.5	6.3	1
KGV R600	★	★	6.0	21.0	120	7.0	24.5	6.3	1

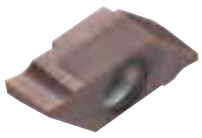
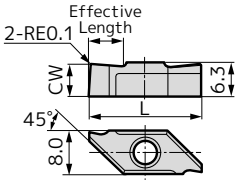


Fig 1



Insert (SUMIDIA) (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA1000	Width of Cut CW	Overall Length L	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Effective Length	Fig
KGV R2004-LD	★	2.0	19.7	118.7	5.0	23.2	4.0	1
KGV R2504-LD	★	2.5	19.7	118.7	5.0	23.2	4.0	1
KGV R2506-LD	★	2.5	21.2	120.2	6.5	24.7	5.5	1

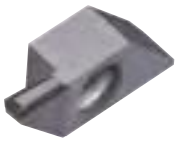
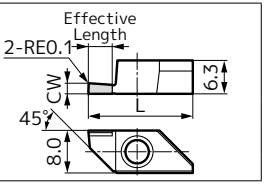


Fig 1



The above dimensions for LF, CDX and LH are the holder dimensions with insert mounted.

Recommended Cutting Conditions

Work Material	P Steel M Stainless Steel N Non-Ferrous Metal	N Non-Ferrous Metal	
Insert Grades	AC1030U	DA1000	
Process	Grooving	Grooving	Traverse Cutting
Spindle Speed n (min⁻¹)	4,000 to 6,000	4,500 to 8,000	4,500 to 8,000
Feed Rate f (mm/rev)	0.05 to 0.15	0.07 to 0.15	0.07 to 0.15
Coolant	Wet (oil-based)		

Be careful with spindle power during use. For small lathes, insufficient spindle power during machining may cause the machine to stop.
Be careful when machining carbon steel and stainless steel in particular.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

SBT series/PBT series

SBT
Back Turning

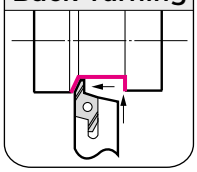


Fig 1

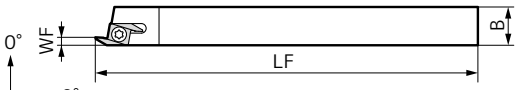
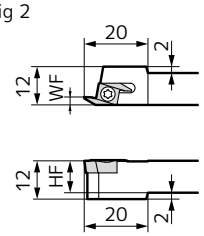


Fig 2



Back Turning
Screw-on

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SBT35 R1010	★	10	10	120	2.5	10	BTR35○○	2	BFTX0307N	2.0	TRX10
SBT35 R1212	★	12	12	120	2.5	12		1			
SBT35 R1616	★	16	16	120	2.5	16		1			
SBT35 R2020	★	20	20	125	2.5	20		1			

Refer to page D45 for applicable inserts.

Indexable Heads D17

Back Clamp

PBT
Back Turning

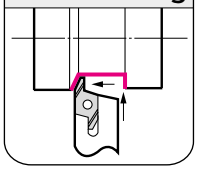


Fig 1

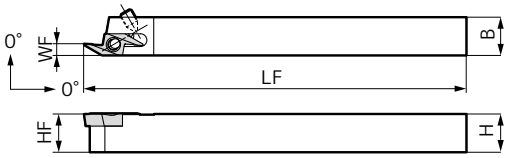
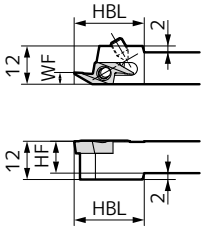


Fig 2



Back Turning
Lever Lock

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset HBL	Applicable Insert	Fig	Lever Pin	Set Screw	Pin	Wrench (For hexagonal hole)
PBT35 R1010	★	10	10	120	2.5	10	20	BTR35○○	2	LCL09	BTT0407	LP07	TH020
PBT35 R1212	★	12	12	120	2.5	12	—		1				
PBT35 R1616	★	16	16	120	2.5	16	—		1		BTT0411		
PBT35 R2020	★	20	20	120	2.5	20	—		1				
PBT55 R1010	★	10	10	120	3.7	10	22	BTR55○○	2	LCL09	BTT0407	LP07	TH020
PBT55 R1212	★	12	12	120	3.7	12	—		1				
PBT55 R1616	★	16	16	120	3.7	16	—		1		BTT0411		
PBT55 R2020	★	20	20	120	3.7	20	—		1				
PBT80 R1010	★	10	10	120	5.2	10	25	BTR80○○	2	LCL09	BTT0407	LP07	TH020
PBT80 R1212	★	12	12	120	5.2	12	—		1				
PBT80 R1616	★	16	16	120	5.2	16	—		1		BTT0411		
PBT80 R2020	★	20	20	120	5.2	20	—		1				

Refer to page D45 for applicable inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

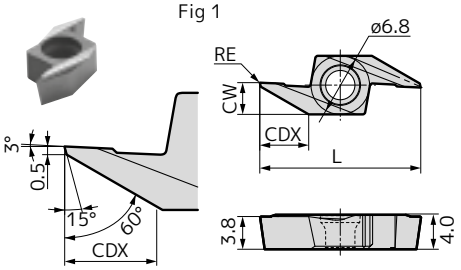
SBT series/PBT series

Insert (Coated Carbide / DLC / Cermet)

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC1030U	AC530U	ACZ150	DL1500	T1500A	Overall Length L	Maximum Depth of Cut CDX	Width of Cut CW	Corner Radius RE	Applicable Holder	Fig
BT R3505	★	★	★	★	★	★	★	15	3.5	2.5	0.05	SBT35R○○○○ PBT35R○○○○	1
BT R3508 New	★	★	★			★	★	15	3.5	2.5	0.08		1
BT R3515	★	★	★	★	★	★	★	15	3.5	2.5	0.15		1
BT R5505	★	★	★	★	★	★	★	19	5.5	3.7	0.05	PBT55R○○○○	1
BT R5508 New	★	★	★			★	★	19	5.5	3.7	0.08		1
BT R5515	★	★	★	★	★	★	★	19	5.5	3.7	0.15		1
BT R8005	★	★	★	★	★		—	24	8.0	5.2	0.05	PBT80R○○○○	1
BT R8008 New	★	★	★				—	24	8.0	5.2	0.08		1
BT R8015	★	★	★	★	★		—	24	8.0	5.2	0.15		1

Fig 1



Refer to page D44 for applicable holders.

Recommended Cutting Conditions

Work Material	P Free-Cutting Steel		P Carbon Steel		M Stainless Steel		S Exotic Alloy		N Non-Ferrous Metal	
Process	**Plunging**	**Traverse Cut**	**Plunging**	**Traverse Cut**	**Plunging**	**Traverse Cut**	**Plunging**	**Traverse Cut**	**Plunging**	**Traverse Cut**
Insert Grades	AC1030U/ACZ150 T1500A		AC1030U/AC530U/ACZ150 T1500A		AC1030U/AC5015S/AC5025S AC530U/ACZ150		AC5015S/AC5025S		DL1500	
Cutting Speed vc (m/min)	50 to 150		50 to 150		50 to 150		20 to 80		150 to 300	
Feed Rate f (mm/rev)	0.02 to 0.10	0.02 to 0.15	0.02 to 0.05	0.02 to 0.10	0.02 to 0.04	0.02 to 0.06	0.01 to 0.03	0.01 to 0.04	0.02 to 0.05	0.02 to 0.10

The inserts on this page can also be used with Indexable Heads for APM series.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

General Turning
Screw-on

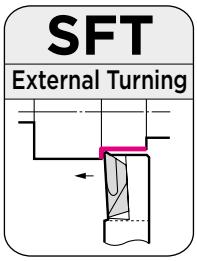
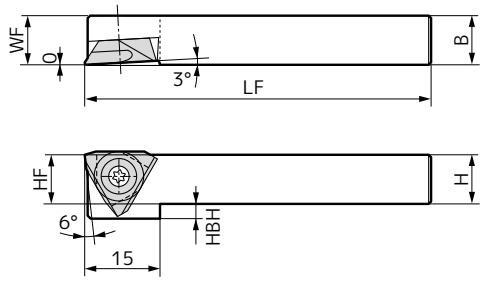


Fig 1



Holder

Parts

Dimensions (mm)

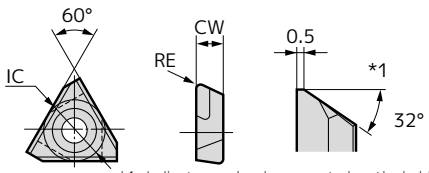
ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset HBH	Applicable Insert	Fig	Flat Insert Screw	Wrench
											 (For Torx hole)
SFT R1010	★	10	10	120	10	10	3	TFR33OO	1	BFTX0410NSW	RT08
SFT R1212	★	12	12	120	12	12	1		1		
SFT R1616	★	16	16	120	16	16	—		1		
SFT R2020	★	20	20	120	20	20	—		1		

Insert (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	ACZ150	Inscribed Circle IC	Width of Cut CW	Corner Radius RE	Applicable Holder	Fig
TF R3300	★	9.525	4.76	—	SFT ROOOO	1
TF R3305	★	9.525	4.76	0.05		1
TF R3315	★	9.525	4.76	0.15		1
TF R3320	★	9.525	4.76	0.20		1

Fig 1



*1: Indicates angle when mounted on the holder
Maximum depth of cut 4.0mm

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Boring Bars

E1 to E86



		Selection Guide for Boring Bars by Tooling E2
		Boring Bars Identification Table E4
		Selection Guide for Boring Bars E5
		Boring Bar series E8
		Smart Damper™ for Internal Boring E10
		Twin Head Holders for Multi-functional Small Lathe Tools E16
Bottom Facing	SEC-Boring Bar	S-SCLC type / A-SCLC type E18
		B-SCLC type E19
		C-SCLC type / E-SCLC type E20
		S/C-SCLP type E21
		A-SCLP type / B/D-SCLP type E22
		S-DCLN type / D-DCLN type E23
		S-PCLN type / B-PCLN type E24
		S-ECLN type E25
Profiling	SEC-Boring Bar	S-SDUC type / A-SDUC type E26
		B-SDUC type E27
		C-SDUC type E28
		S-SDQC type E29
		A-SDQC type E30
		B/D-SDQC type E31
		S-SDZC type E32
		S-DDQN type / S-DDUN type E33
		D-DDUN type / S-PDUN type / S-EDUN type E34
		S-PDZN type / S-EDZN type E35
Through Boring	SEC-Boring Bar	S-SSKP type / C-SSKP type E36
		S-CSKP type E37
		S-SSKC type / S-DSKN E38
		S-PSKN type E39
		S-ESKN type / S-PSYN E40
		S-ESYN type E41
Stop Boring	SEC-Boring Bar	S-STUB type / S-STUP type / A-STUP type E42
		S-STFC E43
		B-STUP type E44
		D-STUP type E45
		C-STUB type / C-STUP type E46
		E-STUP type E47
		S-CTFP type E48
		S-DTFN type / D-DTFN type E49
		S-PTFN type / B-PTFN type E50
		S-ETFN type E51
Profiling	SEC-Boring Bar	S-SVJB type / B-SVJB type E52
		S-SVJC type E53
		S-SVQB type / B-SVQB type E54
		C-SVQB type E55
		S-SVQC type / A-SVQC type E56
		S-SVUB type / B-SVUB type E57
		D-SVUB type / C-SVUB type E58
		S-SVUC type / A-SVUC type E59
		S-SVZB type / B-SVZB type E60
		C-SVZB type E61
		S-SVZC type E62
	Tool Holders for Aluminum Wheel Turning	MV type / GD type ..... (C45, C46, C47)
Stop Boring	SEC-Boring Bar	S-SWUB type E64
		C-SWUB type / S-SWUP type E65
		S-DWLN type / D-DWLN type E66
		S-MWLN type / S-PWLN type E67
SumiSmall Very Small Diameter Turning	SEC-MINI Boring Bars	CKB series E68
	Solid Carbide Bar	BXBR series E74
	Small Diameter Boring Bars	BSME/ SEXC series E76
	SUMIBORON Small Hole Boring Bars	BNBX series E80
		BNZ series E81
Small Diameter Turning		BNB series E82
	SUMIDIA Small Diameter Boring Bars	DABB series E84
	SUMIDIA BINDERLESS Small Diameter Boring Bars	DABX series E85
	Double Clamp Tool Holders	Clamp Set Parts E86

Stock Markings and Symbols

★ mark: Global stocked item

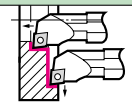
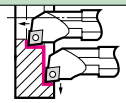
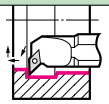
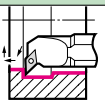
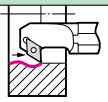
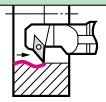
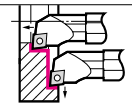
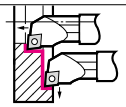
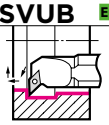
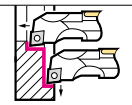
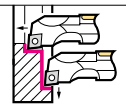
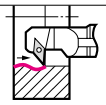
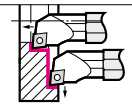
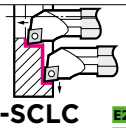
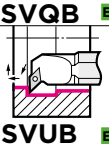
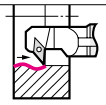
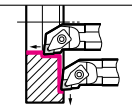
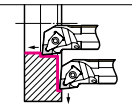
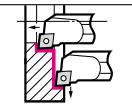
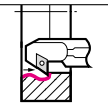
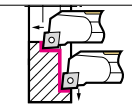
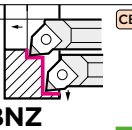
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— mark: Not available

Boring Bar series

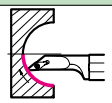
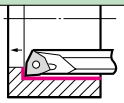
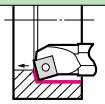
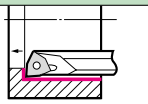
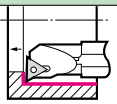
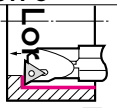
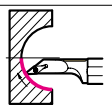
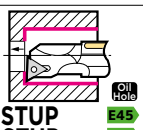
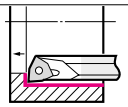
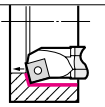
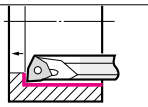
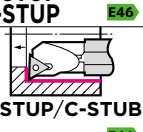
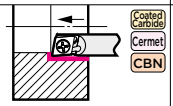
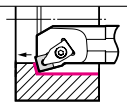
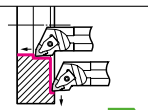
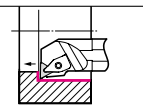
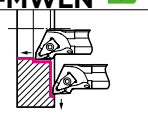
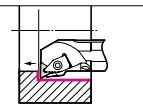
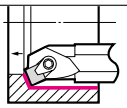
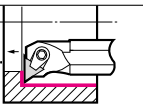
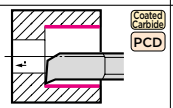
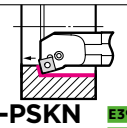
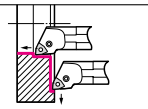
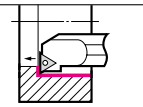
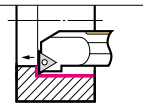
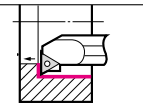
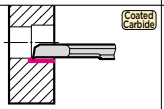
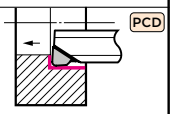
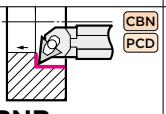
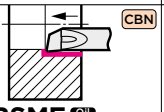
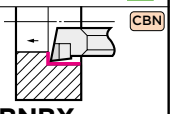
Selection Guide by Tooling

Applications		Bottom Facing		Profiling			Back Turning	
Insert Shape	Structure/Shank Material	80° Diamond type C		55° Diamond type D	35° Diamond type V		55° Diamond type D	35° Diamond type V
Screw-on	Steel	 S-SCLP E23	 S-SCLC E18	S-SDUC E28 S-SDQC E30	 S-SVUC E59 S-SVUB E57	 S-SVQC E56 S-SVQB E54	 S-SDZC E32	 S-SVZC E62 S-SVZB E60
		 A-SCLP Oil Hole E23	 A-SCLC Oil Hole E18	A-SDUC Oil Hole E29 A-SDQC Oil Hole E31	 A-SVUC Oil Hole E59 A-SVQC Oil Hole E56	—	—	—
	Steel with Anti-Vibration Mechanism	 B-SCLP/D-SCLP Oil Hole E24	 B-SCLC E19	B-SDUC E27 B/D-SDQC E31	 B/D-SVUB E57 B-SVQB E54	—	—	 B/D-SVZB E60
	Carbide	 C-SCLP E24	 C-SCLC E22 E-SCLC Oil Hole E22	C-SDUC E29	 C-SVUB E58 C-SVQB E55	—	—	 C-SVZB E61
Double Clamp	Steel	 S-DCLN E25	—	S-DDUN E33 S-DDQN E33	—	—	—	—
	Steel with Anti-Vibration Mechanism	 D-DCLN Oil Hole E25	—	D-DDUN Oil Hole E34	—	—	—	—
Clamp-on	Steel	—	—	—	—	—	—	—
Lever Lock	Steel	 S-PCLN E26	—	S-PDUN E34	—	—	 S-PDZN E35	—
	Steel with Anti-Vibration Mechanism	 B-PCLN E26	—	—	—	—	—	—
Pin Lock	Steel	 S-ECLN E26	—	S-EDUN E34	—	—	 S-EDZN E35	—
		—	—	—	—	—	—	—
CBN	Carbide	 CBN BNZ E81	—	—	—	—	—	—

Symbols in [ ] indicate the previous models Oil Hole: With oil hole Coated Carbide Cermet CBN: Lineup of dedicated insert grades (includes solid/brazed)

Boring Bar series

Selection Guide by Tooling

Applications		Spherical Internal Facing	Through Boring		Stop Boring			
Insert Shape / Structure/Shank Material		35° Diamond type V	Trigon type / Others W	Square type S	Trigon type W	Triangular type T	Others	
Screw-on	Steel	 S-SVJB E52 S-SVJC E53	 S-SWUB E64 S-SWUP E65	 S-SSKP E36 S-SSKC E38	 S-SWUB E64 S-SWUP E65	 S-STUP/S-STUB E42 S-STFC E44	—	—
		—	—	—	—	 A-STUP Oil Hole E44	—	—
	Steel with Anti-Vibration Mechanism	 B-SVJB E52	—	—	—	 B-STUP E45 D-STUP E46	—	—
	Carbide	—	 C-SWUB E64	 C-SSKP E36	 C-SWUB E64	 C-STUP/C-STUB E46 E-STUP Oil Hole E47	 SEXC Oil Hole E78	—
Double Clamp	Steel	—	—	 S-DSKN E39	 S-DWLN E66 S-MWLN E67	 S-DTFN E49	—	—
	Steel with Anti-Vibration Mechanism	—	—	—	 D-DWLN Oil Hole E66	 D-DTFN Oil Hole E49	—	—
Clamp-on	Steel	—	—	 S-CSKP E37	—	 S-CTFP E48	 CKB E68	—
Lever Lock	Steel	—	—	 S-PSKN E39 S-PSYN E40	 S-PWLN E67	 S-PTFN E50	—	—
	Steel with Anti-Vibration Mechanism	—	—	—	—	 B-PTFN E50	—	—
Pin Lock	Steel	—	—	 S-ESKN E40 S-ESYN E41	—	 S-ETFN E51	—	—
Solid Carbide / CBN / PCD	Carbide	—	—	—	—	—	 BXBR E74	 DABX E85
	Carbide	—	—	—	—	 BNB E82	 BSME Oil Hole E77	 BNBX E80

Symbols in [ ] indicate the previous models Oil Hole: With oil hole Coated Carbide Cermet CBN PCD: Lineup of dedicated insert grades (includes solid/brazed)

Boring Bars Identification Table

■ Catalogue Classification System for SEC-Boring Bars (Round Shank) [ISO Standard]

Example: **S 16 R — S T U P R 11 03 - 18**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Shank Material Refer to Table 1	(2) Shank Diameter mm	(3) Shank Length Refer to Table 3	(4) Structural Symbol Refer to Table 4	(5) Insert Shape Refer to Table 5	(6) Holder Style Refer to Table 6	(7) Insert Relief Angle Refer to Table 7	(8) Feed Direction Refer to Table 8	(9) Insert Cutting Edge Length mm	*(10) Insert Thickness mm	*(11) Min. Bore Diameter mm

* This code may only be included in some of the catalogue nos.

Table 1

(1) Shank Material	
Symbol	Shank Material
S	Steel Shank
A	Steel Shank with Oil Hole
B	Steel Shank with Anti-Vibration Mechanism
D	Steel Shank with Anti-Vibration Mechanism and Oil Hole
C	Carbide Shank
E	Carbide Shank with Oil Hole

Table 3

(3) Shank Length					
Symbol	Length (mm)	Symbol	Length (mm)	Symbol	Length (mm)
F	80	M	150	T	300
G	90	N	160	U	350
H	100	P	170	V	400
J	110	Q	180	W	450
K	125	R	200		
L	140	S	250		

Table 4

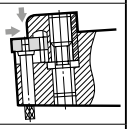
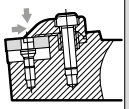
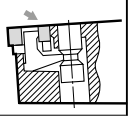
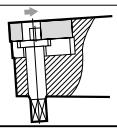
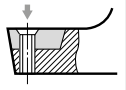
(4) Structural Symbol					
Symbol	Clamp	Structure	Symbol	Clamp	Structure
C	Clamp-on		M	Clamp-on + Pin Lock	
D	Double Clamp		P	Lever Lock (insert supported by 2 faces)	
E	Pin Lock (insert supported by 1 face)		S	Screw-on	

Table 8

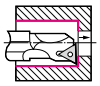
(8) Feed Direction			
Symbol	Right-handed	Symbol	Left-handed
R		L	

Table 5

(5) Insert Shape			
Symbol	Insert Shape	Symbol	Insert Shape
A	85° Apex Angle Parallelogram	M	86° Apex Angle Diamond type
B	82° Apex Angle Parallelogram	O	Octagonal type
C	80° Apex Angle Diamond type	P	Pentagonal type
D	55° Apex Angle Diamond type	R	Round type
E	75° Apex Angle Diamond type	S	Square type
F	50° Apex Angle Diamond type	T	Triangular type
H	Hexagonal type	V	35° Apex Angle Diamond type
K	55° Apex Angle Parallelogram	W	Trigon type
L	Rectangular type		

Table 6

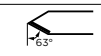
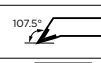
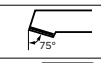
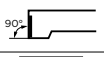
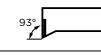
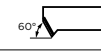
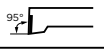
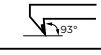
(6) Holder Style (— indicates main cutting edge)					
Symbol	Shape	Offset	Symbol	Shape	Offset
A		No	N		No
B		No	Q		Yes
D		No	R		Yes
E		No	S		Yes
F		Yes	T		Yes
G		Yes	U		Yes
J		Yes	W		Yes
K		Yes	Y		Yes
L		Yes	Z		Yes

Table 7

(7) Insert Relief Angle	
Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special Relief Angle

■ Catalogue Classification System for SEC-Boring Bars (Round Shank) [Sumitomo Standard]

Example: **WB P T — 2 12 R (H) (14)**

BB	Steel Shank Boring Bar
WB	Carbide Shank Boring Bar
XB	Steel Shank Boring Bar with Anti-Vibration Mechanism

P	Positive Insert

Symbol	T	S	C
Insert Shape	Triangular type	Square type	80° Diamond type

Symbol	5	6	2	0	3	4
Insert Inscribed Circle (mm)	3.97	4.76	6.35	7.94	9.525	12.70

Symbol	08	10	12	16	20	25
Shank Diameter (mm)	8	10	12	16	20	25

Symbol	R	L
Direction	Right	Left

With Oil Hole

Min. Bore Dia.

Selection Guide for Boring Bars

Application	Model	Shank Material Boring Depth (L/D) Steel	Carbide	Anti-Vibration	Applicable Inserts and Shapes	Tooling	Min. Bore Dia. (mm) *The actual values will be written in the table if it differs from those in the column headings. 1	1.5	2	3	4	5	6	7	8	10	12	13	14	16	18	20	22	25	28	32	40	50	63
Very Small Dia. Boring	CKB → E68	up to 3			Coated Inserts and Dedicated SUMIDIA Inserts		★	★	★	★	★	★	★																
	BXBR → E74		up to 5		Coated Carbide				★ 2.0 to 5.0 0.5 increments																				
	DABB → E84		up to 2		Brazed SUMIDIA					★	★	★		★															
	DABX → E85 (New)		up to 5		Brazed SUMIDIA BINDERLESS					★	★																		
Stop Boring	BSME (Oil Hole) → E77		up to 4		Brazed SUMIBORON				Ⓗ 2.5 to 5.0 0.5 increments																				
	SEXC (Oil Hole) (Expansion) → E78		up to 3		Dedicated Inserts						Ⓗ	Ⓗ	Ⓗ																
	BNBX → E80		up to 5		Brazed SUMIBORON					★ 2.5 to 8.5 0.5 increments																			
	BNB → E82		up to 4		SUMIBORON SUMIDIA Dedicated Inserts										★	★		★		★		★							
	S-STUB/ S-STUP [BBPT] →E44	up to 3												★	★	★		★	★	★	★	★		★					
	A-STUP (Oil Hole) → E44	up to 3													Ⓗ	Ⓗ		Ⓗ		Ⓗ		Ⓗ		Ⓗ					
	B-STUP [XBPT] →E45			up to 6											★	★		★	★	★	★	★	★		★				
	D-STUP (Oil Hole) [XBPT-H] →E46			up to 6														Ⓗ		Ⓗ		Ⓗ							
	C-STUB/ C-STUP [WBPT] →E46		up to 8											★	★	★		★	★	★	★	★							
	E-STUP (Oil Hole) [WBPT-H] →E47		up to 8		Triangular type 5° Positive (With Hole) 11° Positive (With Hole)										Ⓗ	Ⓗ		Ⓗ	Ⓗ	Ⓗ	Ⓗ								
	S-CTFP → E48	up to 3			Triangular type 11° Positive (Without Hole)														★		★		★		★				
	S-PTFN → E50	up to 3																							★	★	★	★
	B-PTFN → E50			up to 6																					★	★	★	
	S-DTFN → E49	up to 3																								★	★	★
	D-DTFN (Oil Hole) → E49			up to 6	Triangular type Negative (With Hole)																				Ⓗ	Ⓗ	Ⓗ	
	S-ETFN [BTFN] → E51	up to 3																							★ 34	★ 44	★ 54	70
	S-STFC → E51	-3															★		★		★		★		★ 32	★ 44	★ 50	
Bottom Facing	BNZ → E81		up to 5		SUMIBORON Dedicated Inserts								★		★ 9	★ 11	★			★ 17		★ 21						
	S-SCLC → E18	up to 3										★	★	★	★	★	★		★		★		★	★ 27				
	A-SCLC (Oil Hole) → E18	up to 3														Ⓗ	Ⓗ		Ⓗ		Ⓗ		Ⓗ	Ⓗ 27				
	B-SCLC → E19			up to 6	80° Diamond type 7° Positive (With Hole)											★	★		★	★		★		★		★			

Symbols in [ ] indicate the previous models (Oil Hole): With oil hole

: Steel Shank : Carbide Shank : Steel Shank with Anti-Vibration Mechanism

Coloured box: Manufacturable size (no oil hole), ★: In stock, Ⓗ: In stock with oil hole

Selection Guide for Boring Bars

Application	Model	Shank Material Boring Depth (L/D) Steel	Carbide	Anti-Vibration	Applicable Inserts and Shapes	Tooling	Min. Bore Dia. (mm) *The actual values will be written in the table if it differs from those in the column headings. 1	1.5	2	3	4	5	6	7	8	10	12	13	14	16	18	20	22	25	28	32	40	50	63
Bottom Facing	C-SCLC → E22		up to 8		80° Diamond type 7° Positive (With Hole)							★	★	★	★	★	★	★	★	★		★		★					
	E-SCLC (Oil Hole) → E22		up to 8													(H)		(H)		(H)		(H)							
	S-SCLP → E23	up to 3															★		★	★	★		★		★ 27				
	A-SCLP (Oil Hole) → E23	up to 3															(H)		(H)	(H)	(H)		(H)		(H) 27				
	B-SCLP →E24			up to 6															★		★		★						
	D-SCLP (Oil Hole) →E24			up to 6															(H)		(H)		(H)						
	C-SCLP → E24		up to 8		80° Diamond type 11° Positive (With Hole)												★		★	★	★	★							
	S-DCLN → E25	up to 3				DCLN type																				★	★	★	★
	D-DCLN (Oil Hole) → E25			up to 6																						(H)	(H)	(H)	
	S-PCLN → E26	up to 3				PCLN type / ECLN type																				★	★	★	★
	B-PCLN → E26			up to 6																							★	★	
	S-ECLN → E27	up to 3			80° Diamond type Negative (With Hole)																					★ 26	★ 34	★ 44	★ 54	70
	D-DWLN (Oil Hole) → E66			up to 6																						(H)	(H)	(H)	
	S-DWLN → E66	up to 3																								★	★	★	★
	S-MWLN → E67	up to 3			Trigon type Negative (With Hole)																					★ 32	★ 40	★ 50	
	S-PWLN → E67	up to 3																									★	★	

Application	Model	Shank Material Boring Depth (L/D) Steel	Carbide	Anti-Vibration	Applicable Inserts and Shapes	Tooling	6	8	10	12	13	14	16	18	20	22	25	28	32	34	35	40	44	50	54	63	70
Profiling	S-SDUC S-SDQC →E28, E30	up to 3				SDUC type SDQC type					★		★		★		★ 23 ★		★										
	A-SDUC (Oil Hole) A-SDQC (Oil Hole) →E28, E30	up to 3									(H)		(H)		(H)		(H) 23 (H)		(H)										
	B-SDUC B-SDQC →E29, E31			up to 6							★		★		★		★		★										
	B/D-SDQC →E29, E31			up to 6							(H)		(H)		(H)		(H)		(H)				(H)						
	C-SDUC → E29		up to 8								★		★		★		★												
	S-SDZC → E32	up to 3			55° Diamond type 7° Positive (With Hole)						★		★		★		★ 23 ★		★										
	S-SVJB → E52	up to 3															★		★ 30				★		★				
	B-SVJB → E52			up to 6													★		★ 30										
	S-SVJC → E53	up to 3											★		★														
	S-SVQC S-SVUC →E56, E59	up to 3				SVU□ type/SVQ□ type						★	★		★		★												
	A-SVUC (Oil Hole) → E59	up to 3			35° Diamond type 5° Positive (With Hole) 7° Positive (With Hole)												(H)	(H)	(H)	(H)									

Symbols in [ ] indicate the previous models (Oil Hole): With oil hole

: Steel Shank : Carbide Shank : Steel Shank with Anti-Vibration Mechanism

Coloured box: Manufacturable size (no oil hole), ★: In stock, (H): In stock with oil hole

Selection Guide for Boring Bars

Application	Model	Shank Material Boring Depth (L/D) Steel	Carbide	Anti-Vibration	Applicable Inserts and Shapes	Tooling	Min. Bore Dia. (mm) 6	8	10	12	13	14	16	18	20	22	25	28	32	34	35	40	44	50	54	63	70
Profiling	A-SVQC (Oil Hole) → E56	up to 3			35° Diamond type 5° Positive (With Hole) 7° Positive (With Hole)	SVU□ type/SVQ□ type									⊕		⊕		⊕	⊕							
	D-SVUB → E60	up to 6														⊕		⊕ 27			⊕	⊕					
	S-SVQB S-SVUB →E54, E57	up to 3															★	★	★	★		★		★			
	B-SVQB B-SVUB →E54, E57			up to 6											★		★										
	C-SVQB C-SVUB →E55, E58		up to 8												★		★										
	S-SVZB → E60	up to 3															★		★	★		★		★			
	S-SVZC → E62	up to 3											★		★												
	B-SVZB → E60			up to 6											★		★										
	D-SVZB → E60			up to 6												⊕		⊕			⊕	⊕					
	C-SVZB → E61		up to 8												★		★										
	S-DDQN → E33	up to 3			55° Diamond type Negative (With Hole)																	★					
	S-DDUN → E33	up to 3																				★		★		★	
	D-DDUN (Oil Hole) → E34			up to 6																		⊕		⊕			
	S-PDUN → E34	up to 3																	★			★		★		★	
	S-EDUN → E34	up to 3																		★			★				
	S-PDZN → E35	up to 3																				★		★		★	
	S-EDZN → E35	up to 3																		★			★				
Through Boring	S-SWUB → E64	up to 3			Trigon type 5° Positive (With Hole) 11° Positive (With Hole)		★ 5.5	★	★	★																	
	C-SWUB → E64		up to 8				★ 5.5																				
	S-SWUP → E65	up to 3										★		★		★											
	S-SSKP → E36	up to 3			Square type 11° Positive (With Hole)								★		★		★	★									
	C-SSKP → E36		up to 8										★		★												
	S-SSKC → E38	up to 3			Square type 7° Positive (With Hole)										★		★		★			★					
	S-CSKP → E37	up to 3			Square type 11° Positive (Without Hole)										★		★										
	S-DSKN → E39	up to 3			Square type Negative (With Hole)														★			★		★		★	
	S-PSKN → E39	up to 3																				★	★	★	★	★	★
	S-PSYN → E40	up to 3																					★				
	S-ESKN → E40	up to 3																		★			★				
	S-ESYN → E41	up to 3																									

Symbols in [ ] indicate the previous models (Oil Hole): With oil hole

: Steel Shank : Carbide Shank : Steel Shank with Anti-Vibration Mechanism

Coloured box: Manufacturable size (no oil hole), ★: In stock, ⊕: In stock with oil hole

Boring Bar series



■ General Features

Since its launch in 1976, our industry leading SEC-Boring Bar series with its steel/carbide shank holders and high rigidity heads have since included the popular SEC-Small Diameter Boring Bars and now the SumiTurn X-Bars with anti-vibration mechanism, optimised insert grades and chipbreakers.

■ Features of SEC-Boring Bars

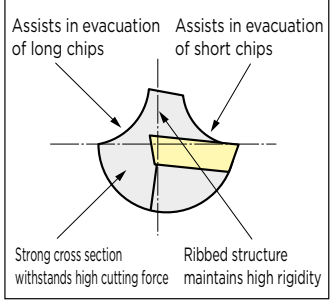
- Suitable for a wide variety of applications.
  Stop-Boring/Bottom Facing/Through-Boring/Profiling
- Min. bore diameter: From ø1mm for CKB series, from ø5mm for C-SCLC type
- Anti-vibration boring bar SumiTurn X-Bar.
- Smart Dampers™ for Internal Boring with Built-in Anti-Vibration Mechanism.
- Carbide short shank type usable on turret lathes without shortening (C16M-STUP, C20M-STUP types).
- Wide selection of insert grades and chipbreakers available for various work materials.

■ Steel Shank type with Anti-Vibration Mechanism

SumiTurn X-Bar

- Higher anti-chatter capability for effective rough boring of deep holes.
- Achieves low-cost boring of large diameters and deep holes, with ø32mm shank now in stock.
- Excellent chip control with double chip pockets.
- Bars with internal coolant hole are also in stock.
- Negative insert holders (shank dia. ø25 to ø50mm) are now in stock.

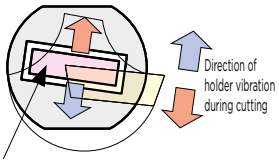
Excellent Chip Evacuation
New Head Design





ECKS Anti-Vibration Mechanism
Effective Chattering Killer System

X-Bar Construction



Flat impact counter-weight effectively reduces chattering.

Stops chattering in its tracks!

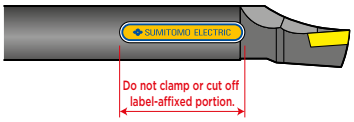
■ Shank Material Selection

SumiTurn X-Bar

Applications \ Shank Material		Steel	Steel with Anti-Vibration Mechanism	Carbide
General Steel	Shallow Holes (L/D < 3)	◎		
	Deep Holes (L/D > 3)		◎	◎
High-efficiency boring with wiper insert			○	◎
Hardened Steel			—	◎
High-precision Turning				◎

◎ 1st Recommendation ○ 2nd Recommendation

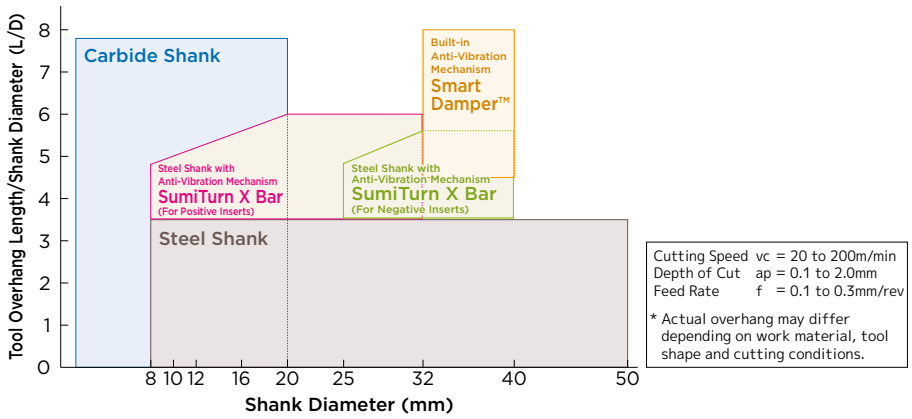
⚠ Precautions for Clamping Position on Steel Shank with Anti-Vibration Mechanism



Clamping on the SUMITOMO ELECTRIC label-affixed portion may disrupt dampening functions (due to built-in Anti-Vibratic Mechanism). Therefore, minimum tool overhang length is kept at 3.5D (shank diameter x 3.5). This is a dedicated turning tool. It cannot be used as a rotating tool.

Boring Bar series

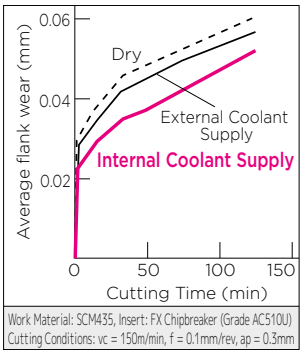
■ Application Range by Shank type



Cutting Speed vc = 20 to 200m/min
Depth of Cut ap = 0.1 to 2.0mm
Feed Rate f = 0.1 to 0.3mm/rev

* Actual overhang may differ depending on work material, tool shape and cutting conditions.

■ Wear Comparison by Coolant Supply Method



Work Material: SCM435, Insert: FX Chipbreaker (Grade AC510U)
Cutting Conditions: vc = 150m/min, f = 0.1mm/rev, ap = 0.3mm

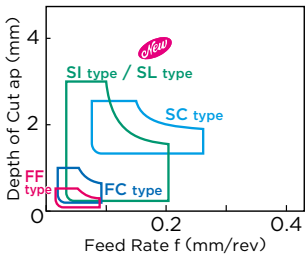
■ Recommended Grades

Insert Grades		Application Range: High Precision	Application Range: Finishing to Light Cutting	Application Range: Medium Cutting	P General Steel	M Stainless Steel	K Cast Iron	S Heat-Resistant Alloy	H Hardened Steel	N Non-Ferrous Metals	Sintered Alloy
Coated Carbide	CVD		New AC8115P		◎		○				
			AC8020P		◎		○				
			AC8025P		◎		○				
			AC8035P		◎	○					
			AC6020M		○	◎					
			AC6030M		○	◎					
			AC4010K				◎				
			AC4015K				◎				
			New AC4125K				◎				
	PVD		ACZ150		◎	◎				○	
			AC5015S		○		○	◎			
			AC5025S		○	○	○	◎			
			AC530U		◎	◎	○	○		○	
			AC1030U		◎	◎	○	○		○	
				New AC6135M	○	◎					
Uncoated Cermet Coated Cermet			T1000A		◎	○	◎			○	○
			T1500A/T1500Z		◎	○	○			○	
				T2500Z	◎	○	○				
Cemented Carbide				G10E			◎			○	
Uncoated CBN Coated CBN (SUMIBORON)			BN1000						◎		
			BN2000						◎		
			BNC2105						◎		
			BNC2115						◎		
				BNC2125					◎		
			BNC2010						○		
				BNC2020					○		
				BN7125			◎	○			○
			BN7115								◎
Polycrystalline Diamond (SUMIDIA)			DA1000							◎	
			DA150							◎	

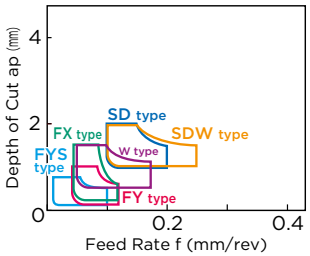
◎ 1st Recommendation ○ 2nd Recommendation

■ Recommended Chipbreakers

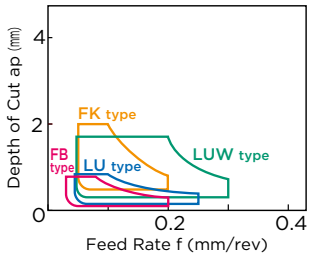
● G Class Chipbreakers



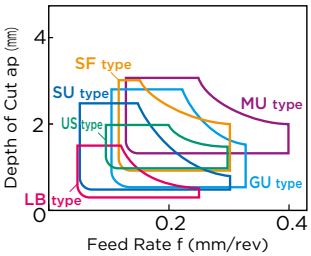
● G Class Ground type



● M Class Finishing to Light Cutting



● M Class Light to Medium Cutting



Smart Damper™

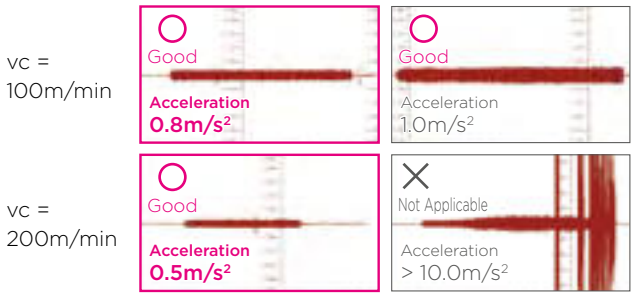


■ Features

- Adopts a special damper mechanism to suppress chattering for large diameter bars with long overhang of L/D=5.5 to 8.
- Replaceable heads enable a wide selection of positive and negative inserts.
- Internal coolant supply improves chip evacuation and tool life. (For use with internal coolant supply, keep the coolant pressure at 3MPa or below.)

■ Cutting Performance

Vibration of 6D overhang during machining



Surface roughness of 9D* overhang during machining



Work Material: S45C (Work Dia. ø40 up) Holder: ø32 Shank Insert: TPMT160404N-SU Cutting Conditions: f = 0.1mm/rev ap = 0.2mm Dry

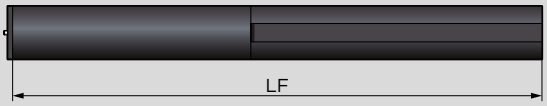
*Machining performed with 9D overhang was for anti-vibration performance evaluation only; to prevent tool deflection, use up to a maximum of 8D.

■ Smart Damper™ Combination Example

Indexable Head

For Positive Inserts	For Negative Inserts
SCLC type SCLP type	DCLN type
SDUC type SDQC type	DDUN type
STUP type	DTFN type
SVUB type SVQB type	

Smart Damper™ Body



S-SDB3240L320 Shank Dia.: ø32mm LF: 320mm
S-SDB4050L410 Shank Dia.: ø40mm LF: 410mm

Indexable heads can be selected to suit machining applications

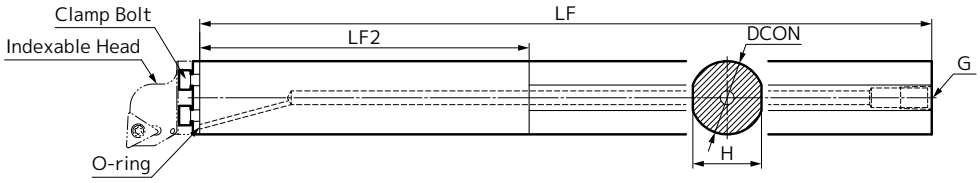


*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Smart Damper™

Anti-Vibration | Internal Coolant

Fig 1



Smart Damper™ Body

Parts

Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Overall Length LF	Length LF2	Height H	Shank G	Indexable Head Group No.	Weight (kg)	Fig	Clamp Bolt	N·m	Wrench (For Hexagonal hole)	O-ring
S-SDB3240L320	★	32	320	144	30	Rc1/4	1	2.3	1	BX0510	**3.0**	LH040	SS020
S-SDB4050L410	★	40	410	170	37	Rc3/8	2	4.5	1	BX0610	**5.2**	LH050	SS020

Refer to the user's manual for methods of mounting indexable heads. Indexable heads are not included with the Smart Damper ™ body.
Because the anti-vibration mechanism is built in, clamping to the LF2 dimension may disrupt dampening functions.
The indexable head is not included in the weight.
Three clamp bolts and two O-rings (including one spare) are included.

Indexable Heads E12 to E15

Fig 1

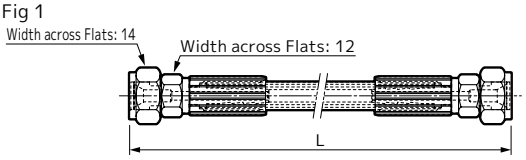


Fig 1

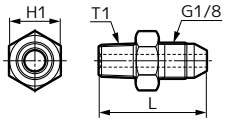
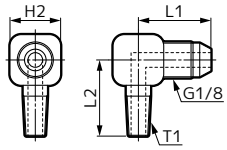


Fig 2



Parts (Hose)

Dimensions (mm)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

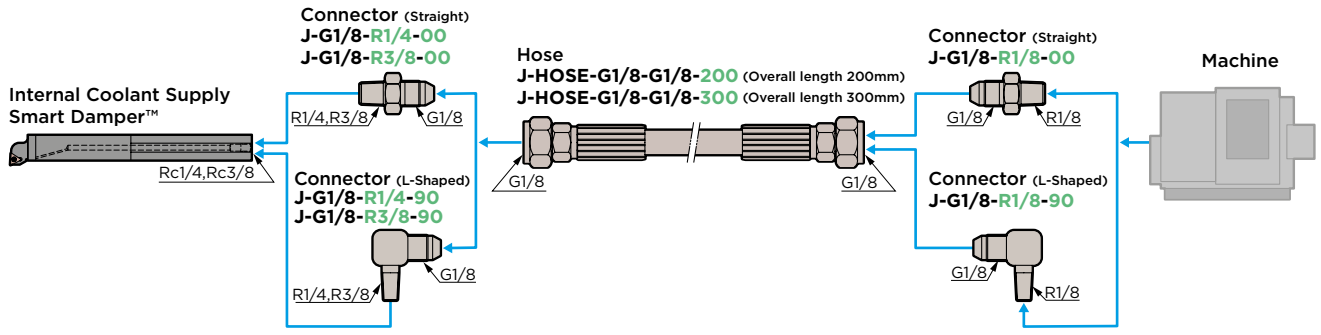
Parts (Connector)

Dimensions (mm)

Cat. No.	Stock	Screw Standard T1	L	L1	L2	H1	H2	Fig
J-G1/8-R1/4-00	★	R1/4	34	—	—	14	—	1
J-G1/8-R1/8-00	★	R1/8	29	—	—	14	—	1
J-G1/8-R3/8-00	★	R3/8	36	—	—	19	—	1
J-G1/8-R1/4-90	★	R1/4	—	22	25	—	17	2
J-G1/8-R1/8-90	★	R1/8	—	20	21	—	14	2
J-G1/8-R3/8-90	★	R3/8	—	23	30	—	19	2

Connectors are sold separately.

Piping Method for Hoses and Connectors



· Apply sealant such as commercial sealing tape to the piping connection parts.

Identification Code (Smart Damper™ Body)

S-SDB 32 40 L320

- S-SDB: Connection Method
- 32: Shank Dia.
- 40: Min. Bore Dia.
- L320: Overall Length

Identification Code (Indexable Head)

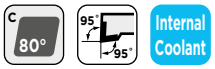
SDB 32 - SCLCR09T3 - 40

- SDB: Connection Method
- 32: Compatible Shank Dia.
- SCLCR09T3: (Conforms to boring bar ISO standard classification) See page E4
- 40: Min. Bore Dia.

*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Smart Damper™



Internal Boring, Internal Coolant Supply
Screw-on

SCLC
Bottom Facing

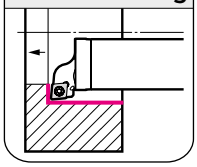
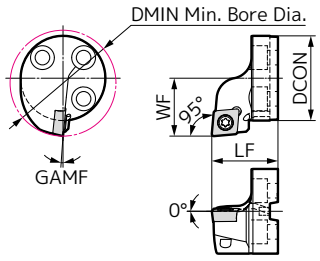


Fig 1



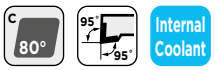
Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-SCLC R/L09T3-40	★	★	**40**	32	25	22	-6°	CC□□09T3	B71 ~	1	1	BFTX0409N	**3.4**	TRX15
SDB40-SCLC R/L09T3-50	★	★	**50**	40	25	27	-2°			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.



Internal Boring, Internal Coolant Supply
Screw-on

SCLP
Bottom Facing

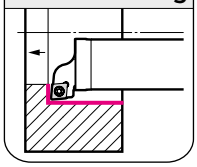
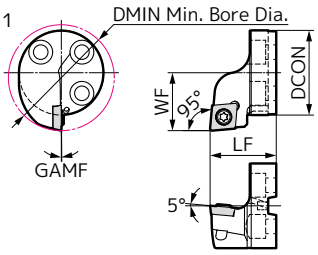


Fig 1



Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-SCLP R/L0903-40	★		**40**	32	25	22	0°	CP□□0903	B75 ~	1	1	BFTX0409N	**3.4**	TRX15
SDB40-SCLP R/L0903-50	★		**50**	40	25	27	0°			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.

*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Smart Damper™



Internal Boring, Internal Coolant Supply
Screw-on

SDUC
Profiling

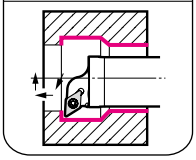
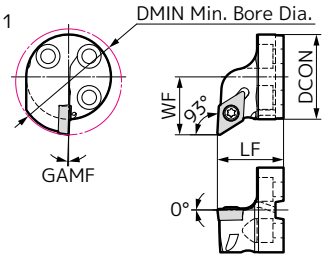


Fig 1



Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-SDUC R/L11T3-40	★	★	**40**	32	25	22	-2°	DC□□11T3	B82 ~	1	1	BFTX0409N	**3.4**	TRX15
SDB40-SDUC R/L11T3-50	★	★	**50**	40	25	27	0°			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.



Internal Boring, Internal Coolant Supply
Screw-on

SDQC
Profiling

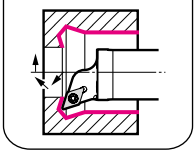
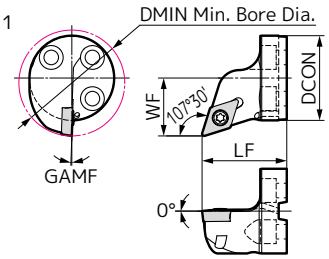


Fig 1



Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-SDQC R/L11T3-40	★	★	**40**	32	32	22	-2°	DC□□11T3	B82 ~	1	1	BFTX0409N	**3.4**	TRX15
SDB40-SDQC R/L11T3-50	★	★	**50**	40	32	27	0°			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
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★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Smart Damper™



Internal Boring, Internal Coolant Supply
Screw-on

STUP
Stop Boring

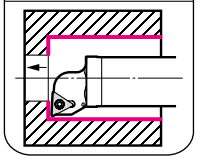
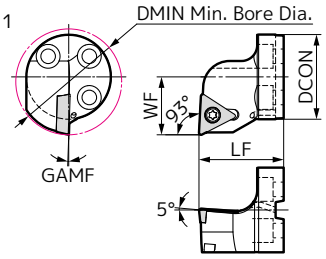


Fig 1



Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-STUP R/L1103-40	★	★	**40**	32	25	22	-2°	TP□□1103	B107~	1	1	BFTX0307N	**2.0**	TRX10
SDB40-STUP R/L1103-50	★	★	**50**	40	25	27	0°			2	1			
SDB32-STUP R/L1604-40	★	★	**40**	32	32	22	-2°	TP□□1604	**B110**	1	1	BFTX0409N	**3.4**	TRX15
SDB40-STUP R/L1604-50	★	★	**50**	40	32	27	0°			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.



Internal Boring, Internal Coolant Supply
Screw-on

SVUB
Profiling

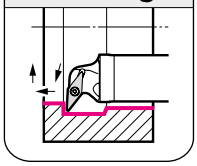
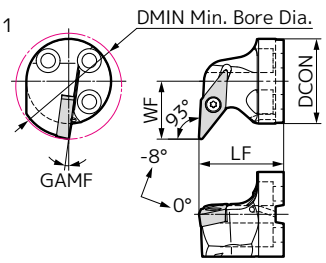


Fig 1



Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-SVUB R/L1604-40	★		**40**	32	32	22	(-7.5°)	VB□□1604	**B118**	1	1	BFTX03508N	**2.0**	TRX10
SDB40-SVUB R/L1604-50	★		**50**	40	32	27	(-7.5°)			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.



Internal Boring, Internal Coolant Supply
Screw-on

SVQB
Profiling

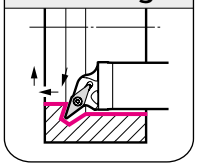
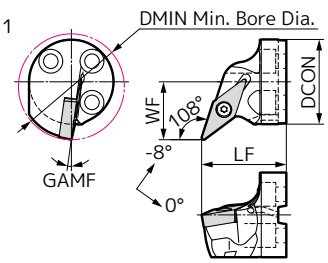


Fig 1



Indexable Heads (For Positive Inserts)

Parts

Dimensions (mm)

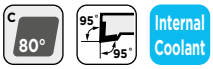
Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SDB32-SVQB R/L1604-40	★		**40**	32	32	22	(-6.5°)	VB□□1604	**B118**	1	1	BFTX03508N	**2.0**	TRX10
SDB40-SVQB R/L1604-50	★		**50**	40	32	27	(-6.5°)			2	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.

*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Smart Damper™



Internal Boring, Internal Coolant Supply
Double Clamp

DCLN
Bottom Facing

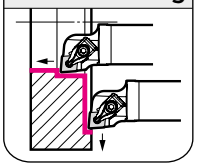
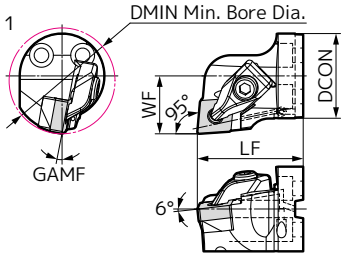


Fig 1



● Feed direction of applicable inserts differs for DCLN type according to machining application.

For Internal Boring
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
For Facing
Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Indexable Heads (For Negative Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
SDB32-DCLN R/L1204-40	★	★	**40**	32	40	22	CN□□1204	B14 ~	1	1	SCP2	**5.0**	CNS1204B	BFTX0409N	LH040	LH025
SDB40-DCLN R/L1204-50	★	★	**50**	40	40	27			2	1						

*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.

Clamp Set Parts E86



Internal Boring, Internal Coolant Supply
Double Clamp

DDUN
Profiling

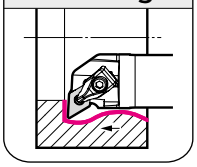
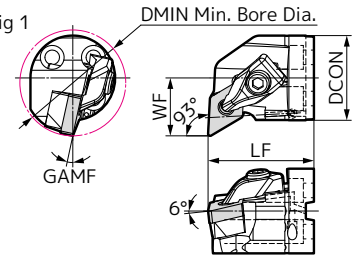


Fig 1



Indexable Heads (For Negative Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
SDB32-DDUN R/L1504-40	★	★	**40**	32	40	22	DN□□1504	B24 ~	1	1	SCP2	**5.0**	DNS1504B	BFTX0409N	LH040	LH025
SDB40-DDUN R/L1504-50	★	★	**50**	40	40	27			2	1						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.

Clamp Set Parts E86



Internal Boring, Internal Coolant Supply
Double Clamp

DTFN
Stop Boring

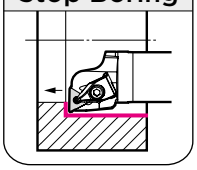
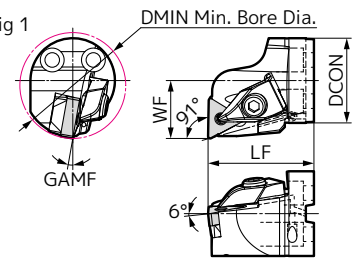


Fig 1



Indexable Heads (For Negative Inserts)

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Overall Length LF	Cutting Edge Distance WF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Smart Damper™ Group No.	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
SDB32-DTFN R/L1604-40	★		**40**	32	40	22	TN□□1604	B48 ~	1	1	SCP1	**5.0**	TNS1604B	BFTX0307N	LH040	LH025
SDB40-DTFN R/L1604-50	★		**50**	40	40	27			2	1						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*Refer to Smart Damper™ body Group Nos. on page E11 for applicable Smart Damper™ bodies.

Clamp Set Parts E86

*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Twin Head Holder



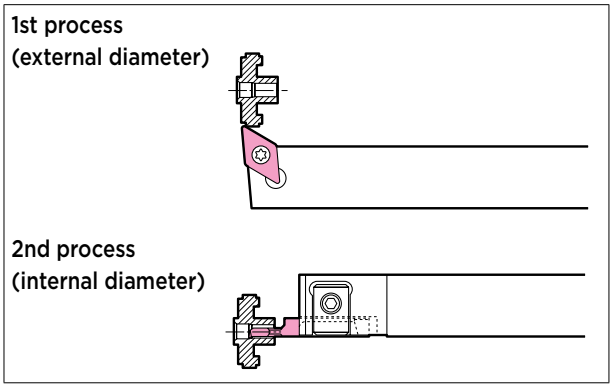
TWIN HEAD

■ Features

- Having one holder that performs two operations is equivalent to mounting an additional tool on the drill sleeve toolpost.
- External turning possible with the aid of a drill sleeve.
- 2 holder configurations, internal + external and internal + internal, are standard stocked items.
- Centre height difference of the 2 cutting edges is below 40µm, which is good for high-precision machining.

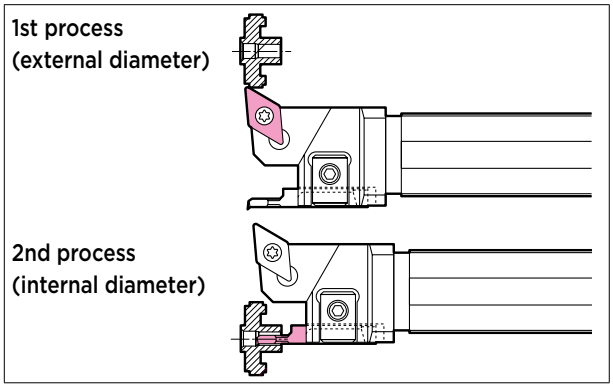
■ Advantages of the Twin Head Holder

● Conventional Tool



· 2 different operations requiring 2 separate tools.

● Twin head holder

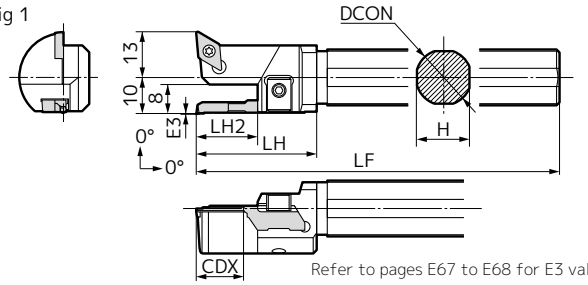


· A single tool performing 2 different operations.

· Toolpost moving time can also be reduced.



Fig 1



Internal Boring + External Turning
Screw-on + Clamp-on

SumiSmall

Refer to pages E67 to E68 for E3 values.

Holder (Internal Boring Depth of 6.0mm)

Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Boring Depth CDX	Head LH2	*Max. Work Material Dia.	Insert for Internal Boring	Insert for External Turning	Fig
S1588X-CKBE-06	★	15.875	15	130	27	6	10	**12.0**	KBMX R0006-00 KBMX R0006-00T	DC□□0702OO	1
S16X-CKBE-06	★	16	15	130	27	6	10	**12.0**			1
S1905X-CKBE-06	★	19.05	17	130	27	6	10	**12.0**			1
S20X-CKBE-06	★	20	18	130	27	6	10	**12.0**			1
S22X-CKBE-06	★	22	20	130	27	6	10	**12.0**			1

* When machining internal diameter

Holder (Internal Boring Depth of 11.0mm)

Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Boring Depth CDX	Head LH2	*Max. Work Material Dia.	Insert for Internal Boring	Insert for External Turning	Fig
S1588X-CKBE-11	★	15.875	15	130	32	11	15	**12.0**	KBMX R0011-00 KBMX R0011-00T	DC□□0702OO	1
S16X-CKBE-11	★	16	15	130	32	11	15	**12.0**			1
S1905X-CKBE-11	★	19.05	17	130	32	11	15	**12.0**			1
S20X-CKBE-11	★	20	18	130	32	11	15	**12.0**			1
S22X-CKBE-11	★	22	20	130	32	11	15	**12.0**			1

* When machining internal diameter

Internal Diameter Inserts E71 to E72 External Diameter Inserts B82 to B84

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

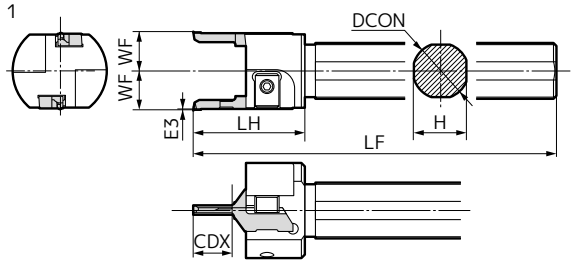
— mark: Not available

Twin Head Holder

Internal Boring, Face Grooving
Clamp-on



Fig 1



Holder

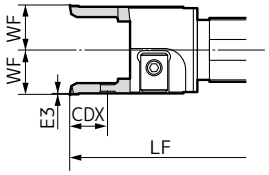
Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Cutting Edge Distance WF	Boring Depth CDX	Insert for Internal Boring	Insert for Face Grooving	Fig
S1588X-CKBB-F	★	15.875	15	130	32	11.0	11	KBMX R○○○○-○○ KBMX R○○○○-○○T	KBMF R○○○○-05	1
S16X-CKBB-F	★	16	15	130	32	11.0	11			1
S1905X-CKBB-F	★	19.05	17	130	32	11.0	11			1
S20X-CKBB-F	★	20	18	130	32	11.0	11			1
S22X-CKBB-F	★	22	20	130	32	11.0	11			1

* Reference values for LF, WF and CDX dimensions are with KBMXR0311-○○(T) mounted. (Refer to the table below for dimensions with other inserts mounted.)

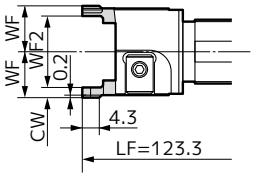
Ref. Page for Inserts E71 to E72

Insert: KBMX (ID+ID) assembled



Insert	Offset E3	Boring Depth CDX	Cutting Edge Distance WF	Overall Length LF
KBMX R0103-○○ (T)	0.2	3	10.9	122
KBMX R01506-○○ (T)	0.25	6	10.95	125
KBMX R0206-○○ (T)	0.25	6	10.95	125
KBMX R0311-○○ (T)*	0.3	11	11.0	130
KBMX R0411-○○ (T)	0.5	11	11.2	130
KBMX R0511-○○ (T)	0.7	11	11.4	130
KBMX R0420-○○ (T)	0.5	20	11.2	139
KBMX R0520-○○ (T)	0.7	20	11.4	139

Insert: KBMF (Face+Face) assembled



Insert	Cutting Edge Distance WF	Cutting Edge Distance WF2	Width of Cut CW
KBMF R0615-05	10.9	18.8	1.5
KBMF R0620-05	10.9	17.8	2.0
KBMF R0630-05	10.9	15.8	3.0

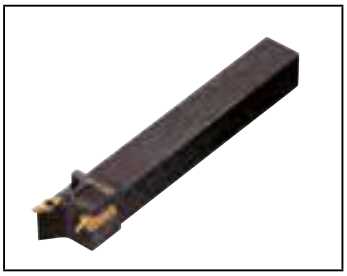
Part (KBM□R insert mounting part)

Clamp Plate	Double Screw	Wrench
		 (For Hexagonal hole)
CKBW16	WB4-8	LH020

Part (DC□□ insert mounting part)

Flat Insert Screw		Wrench
	N·m	 (For Torx hole)
BFTX02506N	1.5	TRX08

Special Holder Configurations



Internal diameter + external diameter (Square holder)



Internal diameter + centre drill



Internal diameter + internal diameter (parallel design)

Holder configurations for different work materials or various machining applications, such as centre holes, chamfering and external necking, can be made to order.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

S-SCLC type / A-SCLC type

C 80° | 95° | Steel

Internal Finishing to Medium Cutting
Screw-on

S-SCLC
Bottom Facing

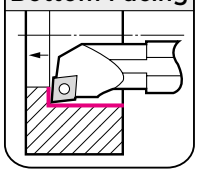


Fig 1

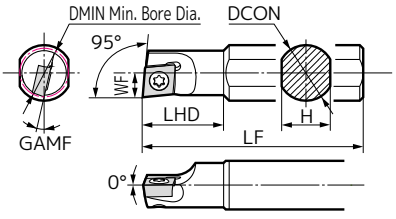


Fig 2

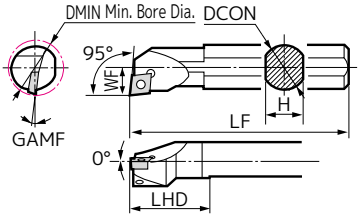


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Inserts ISO Cat. No.	Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S08H-SCLC R/L03X1-05**	—	★	★	**5**	8	7	100	2.5	24	-15°	CC□□03X1	**B66**	1	BFTX016033	**0.2**	TRX06
	S08H-SCLC R/L03X1-06	—	★	★	**6**	8	7	100	3.0	28	-13°			1			
	S08H-SCLC R/L04X1-07	—	★	★	**7**	8	7	100	3.5	32	-13°	CC□□04X1	**B67**	1	BFTX0203N	**0.5**	TRX06
	S08H-SCLC R/L04X1-08	—	★	★	**8**	8	7	100	4.0	37	-11°			1			
	S08H-SCLC R/L0602-10	S08H-SCLC R/L 06	★	★	**10**	8	7	100	5.5	19	-13°	CC□□0602	**B68 ~**	2	BFTX02505N	**1.1**	TRX08
	S10K-SCLC R/L0602-12	S10K-SCLC R/L 06-12	★	★	**12**	10	9	125	6.0	21	-12°			2	BFTX02506N	**1.5**	
	S12M-SCLC R/L0602-14	S12M-SCLC R/L 06-14	★	★	**14**	12	11	150	7.0	25	-10°			2			
	S16R-SCLC R/L0602-18	—	★	★	**18**	16	15	200	9.0	27	-8°			2			
	S16R-SCLC R/L 09	—	★	★	**20**	16	15	200	15	11	-8	CC□□09T3	**B71 ~**	2	BFTX0407N	**3.0**	TRX15
	S16R-SCLC R/L09T3-18	—	★	★	**18**	16	15	200	9.0	30	-10°			2			
	S20S-SCLC R/L09T3-22	—	★	★	**22**	20	18	250	11.0	30	-8°			2	BFTX0409N	**3.4**	
	S25T-SCLC R/L09T3-27	—	★	★	**27**	25	23	300	13.5	35	-6°			2			
	S25T-SCLC R/L06		★	★	**32**	25	23	300	20	17	-6°	CC□□0602		2	BFTX02505N	**1.1**	TRX08
	S32U-SCLC R/L12		★	★	**40**	32	30	350	25	22	-10°	CC□□1204		2	BFTX0511N	**5.0**	TRX20
	S40V-SCLC R/L12		★	★	**50**	40	37	400	25	27	-8°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E12

C 80° | 95° | Steel Coolant Hole

Internal Finishing to Medium Cutting
Screw-on

A-SCLC
Bottom Facing

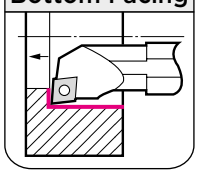


Fig 1

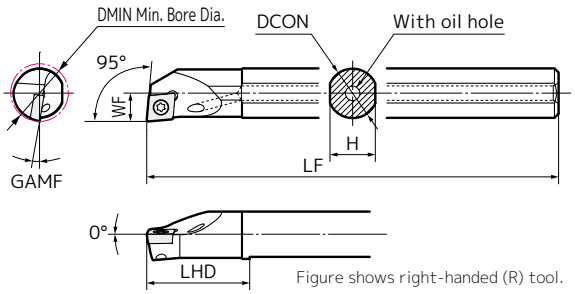


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A08H-SCLC R/L0602-10**	★	★	**10**	8	7	100	5.5	19	-13°	CC□□0602	**B68 ~**	1	BFTX02505N	**1.1**	TRX08
	A10K-SCLC R/L0602-12	★	★	**12**	10	9	125	6.0	21	-12°			1	BFTX02506N	**1.5**	
	A12M-SCLC R/L0602-14	★	★	**14**	12	11	150	7.0	25	-10°			1			
	A16R-SCLC R/L0602-18	★	★	**18**	16	15	200	9.0	27	-8°			1			
	A16R-SCLC R/L09T3-18	★	★	**18**	16	15	200	9.0	30	-10°	CC□□09T3	**B71 ~**	1	BFTX0407N	**3.0**	TRX15
	A20S-SCLC R/L09T3-22	★	★	**22**	20	18	250	11.0	30	-8°			1	BFTX0409N	**3.4**	
	A25T-SCLC R/L09T3-27	★	★	**27**	25	23	300	13.5	35	-6°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E12

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

B-SCLC type



Internal Finishing to Medium Cutting
Screw-on

B-SCLC
Bottom Facing

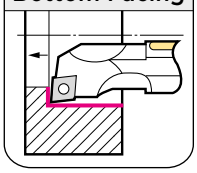


Fig 1

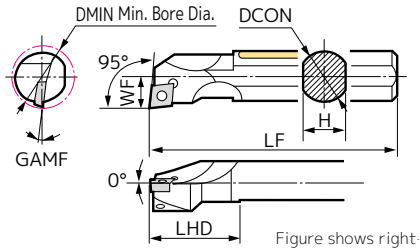


Figure shows right-handed (R) tool.

SumiTurn X Bar

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B08H-SCLC R/L0602-10**	★	★	**10**	8	7	100	5.5	19	-13°	CC□□0602	**B68 ~**	1	BFTX02505N	**1.1**	TRX08
	B10K-SCLC R/L0602-12	★	★	**12**	10	9	125	6.0	21	-12°			1			
	B12M-SCLC R/L0602-14	★	★	**14**	12	11	150	7.0	25	-10°			1	BFTX02506N	**1.5**	
	B12M-SCLC R/L0602-16	★	★	**16**	12	11	150	9.0	25	-10°			1			
	B16R-SCLC R/L09T3-20	★	★	**20**	16	15	200	11.0	30	-8°	CC□□09T3	**B71 ~**	1	BFTX0407N	**3.0**	TRX15
	B20S-SCLC R/L09T3-25	★	★	**25**	20	18	250	13.0	30	-7°			1	BFTX0409N	**3.4**	
	B25T-SCLC R/L1204-32	★	★	**32**	25	23	300	17.0	38	-6°	CC□□1204	**B73**	1	BFTX0511N	**5.0**	TRX20

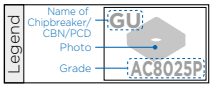
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E12

Applicable Inserts ◂·· S-SCLC type / A-SCLC type / B-SCLC type / C-SCLC type / E-SCLC type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	FB **T1500Z**	GU **AC8025P**	MU **AC8020P**	LB **AC6030M**	GU **AC6030M**	MU **AC6135M**	SUMIBORON BN7125/BNC500	MU **AC4015K**	No Chipbreaker **AC4015K**	SU **AC5015S**	SUMIDIA **DA1000**	AG **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**	SUMIDIA **DA1090**
High-precision	FF **AC1030U**	SI **AC1030U**	SC **AC1030U**	FF **AC1030U**	SI **AC1030U**	SC **AC1030U**	SUMIBORON BN7125/BNC500	—	—	SI **AC5015S**	SUMIDIA **DA1000**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**	SUMIDIA BINDERLESS **NPD10**
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~			A18 ~	A22 ~		A20 ~		M2 ~

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

C-SCLC type / E-SCLC type



Internal Finishing to Medium Cutting
Screw-on

C-SCLC
Bottom Facing

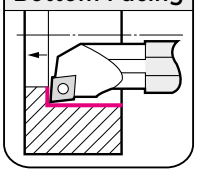


Fig 1

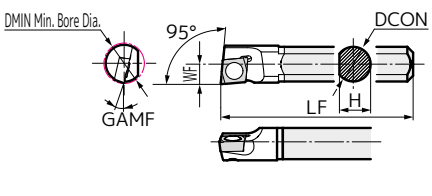
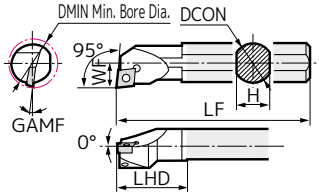


Fig 2



SumiSmall

Holder

Parts

Dimensions (mm)

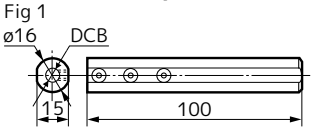
Shank Material	ISO Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Carbide	**C04G-SCLC R03X1-05***	★	**5**	4	3.8	90	2.5	—	-15°	CC□□03X1	**B66**	1	BFTX016033	**0.2**	TRX06
	C05H-SCLC R03X1-06*	★	**6**	5	4.4	100	3.0	—	-13°			1			
	C06J-SCLC R04X1-07*	★	**7**	6	5.4	110	3.5	—	-13°	CC□□04X1	**B67**	1	BFTX0203N	**0.5**	TRX06
	C07K-SCLC R04X1-08*	★	**8**	7	6.4	125	4.0	—	-11°			1			
	C08H-SCLC R0602-10	★	**10**	8	7.0	100	5.5	19	-13°	CC□□0602	**B68 ~**	2	BFTX02505N	**1.1**	TRX08
	C10K-SCLC R0602-12	★	**12**	10	9.0	125	6.0	21	-12°			2	BFTX02506N	**1.5**	
	C10K-SCLC R0602-13	★	**13**	10	9.0	125	7.0	21	-12°			2			
	C12M-SCLC R0602-14	★	**14**	12	11.0	150	7.0	25	-10°			2			
	C12M-SCLC R0602-16	★	**16**	12	11.0	150	9.0	25	-10°			2			
	C16R-SCLC R09T3-20	★	**20**	16	15.0	200	11.0	30	-8°	CC□□09T3	**B71 ~**	2	BFTX0407N	**3.4**	TRX15
	C20S-SCLC R09T3-25	★	**25**	20	18.0	250	13.0	35	-7°			2	BFTX0409N	**3.4**	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
* Separately sold adapter sleeve is required.

Smart Damper™ E12

Adapter Sleeve

Fig 1



Cat. No.	Stock	Bore Dia. DCB	Applicable Holder	Fig
HBB 416	★	4.0	C04G-SCLC R03X1-05	1
HBB 516	★	5.0	C05H-SCLC R03X1-06	1
HBB 616	★	6.0	C06J-SCLC R04X1-07	1
HBB 716	★	7.0	C07K-SCLC R04X1-08	1



Internal Finishing to Medium Cutting
Screw-on

E-SCLC
Bottom Facing

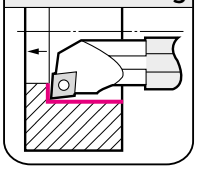
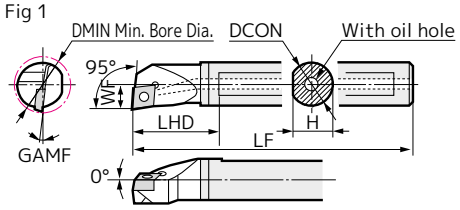


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Carbide with Oil Hole	**E08H-SCLC R0602-10**	★	**10**	8	7.5	100	5.5	18	-13°	CC□□0602	**B68 ~**	1	BFTX02505N	**1.1**	TRX08
	E10K-SCLC R0602-13	★	**13**	10	9.5	125	7.0	19	-12°			1	BFTX02506N	**1.5**	
	E12M-SCLC R0602-16	★	**16**	12	11.5	150	9.0	25	-10°			1			
	E16R-SCLC R09T3-20	★	**20**	16	15.5	200	11.0	30	-8°	CC□□09T3	**B71 ~**	1	BFTX0407N	**3.4**	TRX15

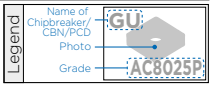
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Smart Damper™ E12

Applicable Inserts S-SCLC type / A-SCLC type / B-SCLC type / C-SCLC type / E-SCLC type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)			M (Stainless Steel)			K (Cast Iron)			S (Exotic Alloy)	N (Non-Ferrous)		H (Hardened Steel)		Hard Brittle Materials
	Finishing	Medium Cutting	Roughing	Finishing	Medium Cutting	Roughing	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	High-precision/Finishing	Finishing to Medium Cutting	Coated	Uncoated	—
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6135M	SUMIBORON BN7125/BNC500	MU AC4015K	No Chipbreaker AC4015K	SU AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
High-precision	FF AC1030U	SI AC1030U	SC AC1030U	FF AC1030U	SI AC1030U	SC AC1030U	SUMIBORON BN7125/BNC500	—	—	SI AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~			A18 ~	A22 ~		A20 ~		M2 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

S /C-SCLP type



Internal Finishing to Medium Cutting
Screw-on

S/C-SCLP
Bottom Facing

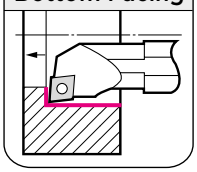


Fig 1

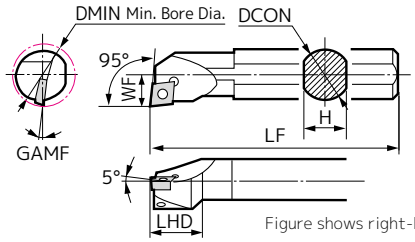


Figure shows right-handed (R) tool.

Fig 2

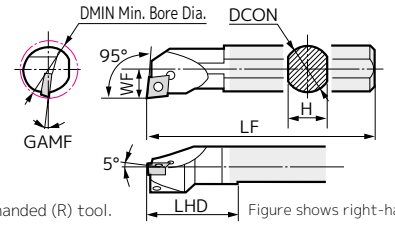


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S10K-SCLP R/L0802-12**	★	★	**12**	10	9	125	6.0	12.0	-5°	CP□□0802	**B74**	1	BFTX0305A	**2.0**	TRX10
	S12M-SCLP R/L0802-14	★	★	**14**	12	11	150	7.0	10.6	-5°			1			
	S12M-SCLP R/L0903-16	★	★	**16**	12	11	150	8.0	23.0	-6°	CP□□0903	**B75 ~**	1	BFTX0407A	**3.4**	TRX15
	S16R-SCLP R/L0903-18	★	★	**18**	16	15	200	9.0	18.0	-4°			1			
	S20S-SCLP R/L0903-22	★	★	**22**	20	18	250	11.0	18.0	-2°			1			
	S25T-SCLP R/L12	★	★	**27**	25	22	300	13.5	18.0	-2°	CP□□1204		1			
Carbide	**C10K-SCLP R/L0802-12**	★	★	**12**	10	9	125	6	19	-5°	CP□□0802		2	BFTX0305A	**2.0**	TRX10
	C12M-SCLP R/L0802-14	★	★	**14**	12	11	150	7	25	-5°			2			
	C12M-SCLP R/L0802-16	★	★	**16**	12	11	150	8	25	-3°			2			
	C10Q-SCLP R/L08	★	★	**12**	**10**	9	180	15	6	-5°			2		-	
	C12R-SCLP R/L08	★	★	**16**	12	11	200	15	8	-2°			2		-	
	C16R-SCLP R/L0903-18	★	★	**18**	16	15	200	9	30	-4°	CP□□0903		2	BFTX0407A	**3.4**	TRX15
	C16R-SCLP R/L0903-20	★	★	**20**	16	15	200	10	30	-3°			2			
	C16S-SCLP R/L09	★	★	**20**	16	15	250	15	10	-2°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E12

Applicable Inserts ◂·· S-SCLP type / A-SCLP type / B-SCLP type / D-SCLP type / C-SCLP type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD, Photo, Grade — GU, AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6135M	MU AC4015K	No Chipbreaker AC4015K	SD AC5015S	SUMIDIA DA1000	SUMIBORON BNC2125	SUMIBORON BN2000
High-precision	SD T1500Z	—	—	SD AC5015S	—	—	—	—	SD AC5015S	SUMIDIA DA1000	SUMIBORON BNC2115	SUMIBORON BN1000
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~		A18 ~	A22 ~	A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

A-SCLP type / B/D-SCLP type



Internal Finishing to Medium Cutting
Screw-on

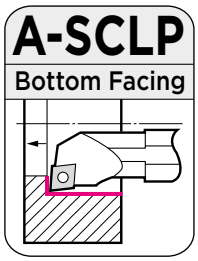


Fig 1

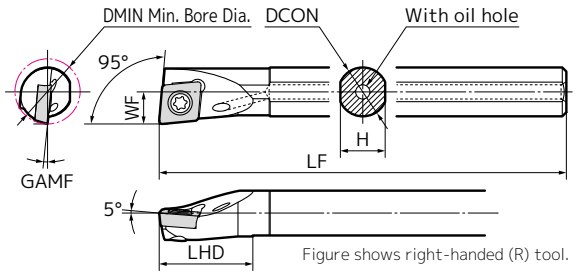


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A10K-SCLP R/L0802-12**	★	★	**12**	10	9	125	6.0	12.0	-5°	CP□□0802	**B74**	1	BFTX0305N	**2.0**	TRX10
	A12M-SCLP R/L0802-14	★	★	**14**	12	11	150	7.0	10.6	-5°			1	BFTX0306N	**2.0**	
	A12M-SCLP R/L0903-16	★	★	**16**	12	11	150	8.0	23.0	-6°	CP□□0903	**B75 ~**	1	BFTX0407N	**3.4**	TRX15
	A16R-SCLP R/L0903-18	★	★	**18**	16	15	200	9.0	18.0	-4°			1			
	A20S-SCLP R/L0903-22	★	★	**22**	20	18	250	11.0	18.0	-2°			1			
	A25T-SCLP R/L0903-27	★	★	**27**	25	22	300	13.5	18.0	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E12



Internal Finishing to Medium Cutting
Screw-on

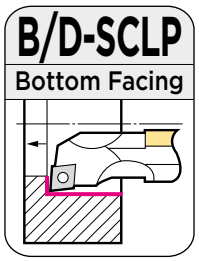


Fig 1

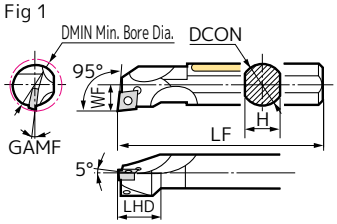


Fig 2

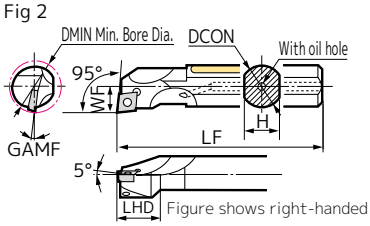


Figure shows right-handed (R) tool.

SumiTurn X-Bar
SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B12M-SCLP R/L0802-14**	★	★	**14**	12	11	150	7	10.6	-5°	CP□□0802	**B74**	1	BFTX0305A	**2.0**	TRX10
	B16R-SCLP R/L0903-18	★	★	**18**	16	15	200	9	18.0	-4°	CP□□0903	**B75 ~**	1	BFTX0407A	**3.4**	TRX15
	B20S-SCLP R/L0903-22	★	★	**22**	20	18	250	11	18.0	-2°			1			
Steel with Anti-Vibration Mechanism and Oil Hole	**D12M-SCLP R/L0802-14**	★		**14**	12	11	150	7	10.6	-5°	CP□□0802	**B74**	2	BFTX0305A	**2.0**	TRX10
	D16R-SCLP R/L0903-18	★		**18**	16	15	200	9	18.0	-4°	CP□□0903	**B75 ~**	2	BFTX0407A	**3.4**	TRX15
	D20S-SCLP R/L0903-22	★		**22**	20	18	250	11	18.0	-2°			2			

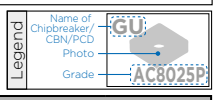
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E12

Applicable Inserts ··· S-SCLP type / A-SCLP type / B-SCLP type / D-SCLP type / C-SCLP type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	FB T1500Z	GU AC8025P	MU AC8020P	LB AC6030M	GU AC6030M	MU AC6135M	MU AC4015K	No Chipbreaker AC4015K	SD AC5015S	SUMIDIA DA1000	SUMIBORON BNC2125	SUMIBORON BN2000
High-precision	SD T1500Z	—	—	SD AC5015S	—	—	—	—	SD AC5015S	SUMIDIA DA1000	SUMIBORON BNC2115	SUMIBORON BN1000
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~		A18 ~	A22 ~	A20 ~	

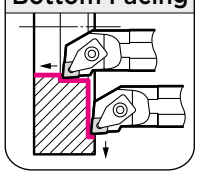
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

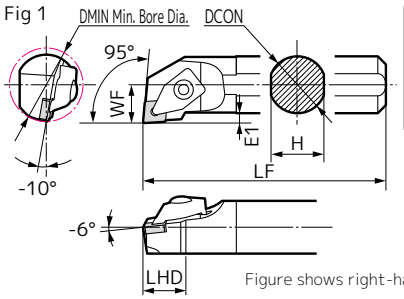
S-DCLN type / D-DCLN type

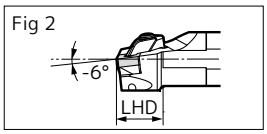


Medium Diameter General-purpose
Double Clamp

S-DCLN
Bottom Facing







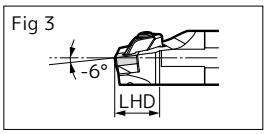


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench	Bottom Hex Wrench
Steel	S25R-DCLN R/L0903-32	★	★	32	25	23	200	17.0	18	4.5	CN□□0903	B12	1	SCP1	5.0	—	—	LH040 (For Hexagonal hole)	LH025 (For Hexagonal hole)
	S25T-DCLN R/L0903-32	★	★	32	25	23	300	17.0	18	4.5			1						
	S32S-DCLN R/L1204-40	★	★	40	32	30	250	22.0	26	7.0	CN□□1204	B14~	2	SCP2	5.0	CNS1204B	BFTX0409N	LH040	LH025
	S40T-DCLN R/L1204-50	★	★	50	40	37	300	27.0	26	8.5			2						
	S50U-DCLN R/L1204-63	★	★	63	50	47	350	31.5	36	8.0			3						

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)

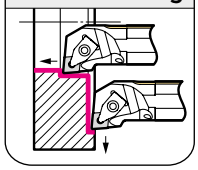
Clamp Set Parts E86 Smart Damper™ E15



Medium Diameter General-purpose
Double Clamp

SumiTurn X Bar

D-DCLN
Bottom Facing



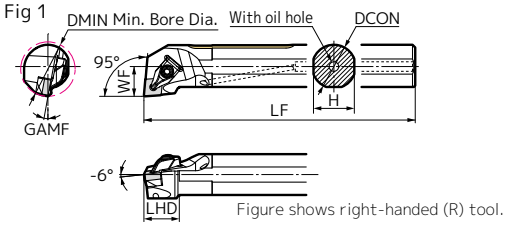


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench	Bottom Hex Wrench
Steel with Anti-Vibration Mechanism and Oil Hole	D25T-DCLN R/L1204-32	★	★	32	25	23	300	17	26	-12°	CN□□1204	B14~	1	SCP2	5.0	CNS1203B	BFTX0307N	LH040 (For Hexagonal hole)	LH025 (For Hexagonal hole)
	D32T-DCLN R/L1204-40	★	★	40	32	30	300	22	26	-10°			1			CNS1204B	BFTX0409N		
	D40U-DCLN R/L1204-50	★	★	50	40	37	350	27	26	-10°			1						

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)

Clamp Set Parts E86 Smart Damper™ E15

***Applicable Inserts for DCLN type**

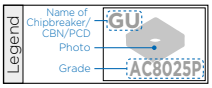
For internal boring: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-DCLN type / D-DCLN type / S-PCLN type / B-PCLN type / S-ECLN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 -).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Process \ Application Range	P (Steel)			M (Stainless Steel)			K (Cast Iron)			S (Exotic Alloy)			N (Non-Ferrous)		H (Hardened Steel)	
	Finishing	Medium Cutting	Roughing	Finishing	Medium Cutting	Roughing	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing	Medium Cutting	Roughing	High-precision/Finishing	Finishing to Medium Cutting	Coated	Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2115	SUMIBORON BN1000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC2135	SUMIBORON BN350
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~			A18 ~			A22 ~		A20 ~	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

BNC500 is for ductile cast iron.

N·m Recommended Tightening Torque (N·m)

S-PCLN type /B-PCLN type



Medium Diameter General-purpose
Lever Lock

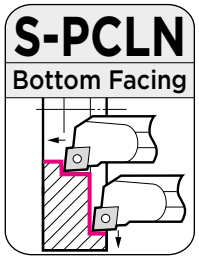
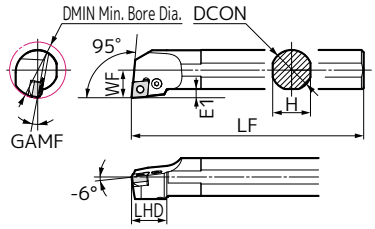


Fig 1



Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
Steel	**S20S - PCLN R/L09**	★	★	**25**	20	18	250	29	13	-	-11°	CN□□0903	**B12**	LCL3C-SD	LCS3B-SD	-	-	LH020
	S25T - PCLN R/L09	★	★	**30**	25	23	300	33	17	-	-10°							
	S25T - PCLN R/L12	★	★	**32**	25	23	300	42	17	-	-10°	CN□□1204	**B14 ~**	LCL4C-SD	LCS4B-SD	-	-	LH025
	S32U - PCLN R/L12	★	★	**40**	32	30	350	49	22	-	-11°			LCL4T-SD	LCS41BS-SD	LSC42SD	LSP4SD	LH030
	S40V - PCLN R/L12	★	★	**50**	40	37	400	56	27	-	-10°			LCL4SD	LCS42BS-SD	LSC42SD	LSP4SD	
	S32U - PCLN R/L16	★	★	**40**	32	30	350	56	22	-	-11°	CN□□1606		LCL5SD	LCS5B-SD	LSC53SD	LSP5SD	
	S40V - PCLN R/L16	★	★	**50**	40	37	400	56	27	-	-10°							
	S50W - PCLN R/L16			**63**	50	47	450	56	35	-	-11°							
	S50W - PCLN R/L19			**63**	50	47	450	63	35	-	-11°	CN□□1906		LCL5C-SD	LCS6B-SD	LSC63SD	LSP6SD	LH040

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)



Medium Diameter General-purpose
Lever Lock

SumiTurn X-Bar

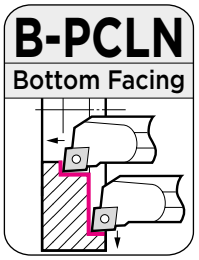


Fig 1

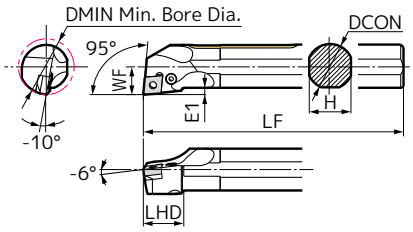


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
Steel with Anti-Vibration Mechanism	**B32U-PCLN R/L1204-40**	★		**40**	32	30	350	20	29	5.0	CN□□1204	**B14 ~**	1	LCL4	LCS4CA	LSC42B	LSP4	LH030
	B40W-PCLN R/L1204-50	★		**50**	40	37	450	25	29	6.5			1		LCS4			

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)

***Applicable Inserts for PCLN type**

For internal boring: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

S-ECLN type

Steel

Medium Diameter General-purpose
Pin Lock

S-ECLN
Bottom Facing

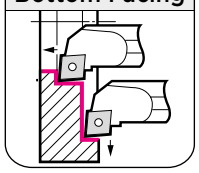


Fig 1

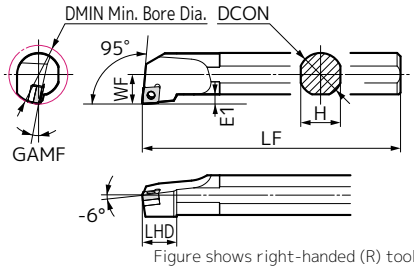


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Shim	Eccentric Pin	Wrench (For Hexagonal hole)
Steel	**S20Q-ECLN R/L0903-26**	★	★	**26**	20	18	180	13	20	4.0	-12°	CN□□0903	**B12**	1	—	CPU304C	LH030
	S25R-ECLN R/L0903-34	★	★	**34**	25	23	200	17	20	5.5	-12°			1	SCW323	CPB32C	LH025
	S25R-ECLN R/L1204-34	★	★	**34**	25	23	200	17	20	5.5	-12°	CN□□1204	B14 ~	1	SCW423	CPB42	LH030
	S32S-ECLN R/L1204-44	★	★	**44**	32	30	250	22	25	7.0	-10°			1		CPB43S	
	S40T-ECLN R/L1204-54	★		**54**	40	37	300	27	25	8.5	-10°			1		CPB43	
	S50U-ECLN R/L1906-70			**70**	50	47	350	35	32	11.5	-10°	CN□□1906	B20 ~	1	SCW635	CPB64	LH040

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)

***Applicable Inserts for ECLN type**

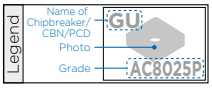
For internal boring: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-DCLN type / D-DCLN type / S-PCLN type / B-PCLN type / S-ECLN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2115	SUMIBORON BN1000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC2135	SUMIBORON BN350
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~		☞ A20 ~	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

S-SDUC type / A-SDUC type



Internal Profiling
Screw-on

SumiSmall

S-SDUC Profiling

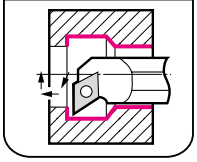


Fig 1

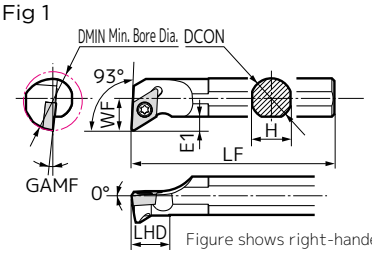


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S10K-SDUC R/L07**		★	★	**13**	10	9	125	7	2.5	-8°	—	DC□□0702	B78 ~	BFTX02506N	**1.5**	TRX08
	S10M-SDUC R/L0702-13		★	★	**13**	10	9	150	7.0	2.5	-8°	—					
	S12M-SDUC R/L0702-16	S12M-SDUC R/L 07	★	★	**16**	12	11	150	9.0	3.5	-8°	—					
	S16Q-SDUC R/L0702-20	—	★	★	**20**	16	15	180	11.0	4.0	-6°	—					
	S16R-SDUC R/L07		★	★	**20**	16	15	200	11.0	4.0	-6°	—					
	S16N-SDUC R/L0702-20		★	★	**20**	16	15	160	11.0	4.0	-6°	—					
	S16Q-SDUC R/L11T3-23	—	★	★	**23**	16	15	180	12.5	5.5	-6°	15	DC□□11T3	B82 ~	BFTX0409N	**3.4**	TRX15
	S20R-SDUC R/L11T3-25	—	★	★	**25**	20	18	200	13.0	4.5	-6°	—					
	S20S-SDUC R/L11		★	★	**25**	20	18	250	13.0	4.5	-6°	—					
	S20N-SDUC R/L11T3-25		★	★	**25**	20	18	160	13.0	4.5	-6°	—					
	S25S-SDUC R/L11T3-32	—	★	★	**32**	25	22	250	17.0	7.0	-6°	—					
	S25T-SDUC R/L11		★	★	**32**	25	22	300	17	7.5	-6°	—					
	S25Q-SDUC R/L11T3-32		★	★	**32**	25	22	180	17.0	7.0	-6°	—					
	S32U-SDUC R/L11		★	★	**40**	32	30	350	22.0	11.0	-6°	—					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E13



Internal Profiling
Screw-on

A-SDUC Profiling

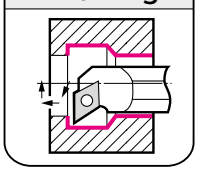


Fig 1

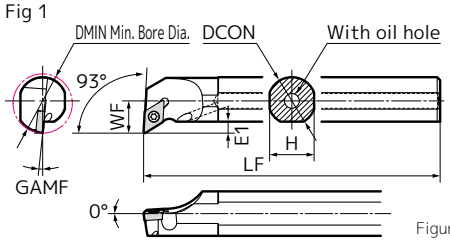


Fig 2

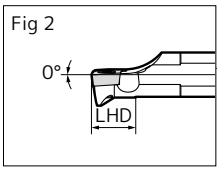


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A10M-SDUC R/L0702-13**	★	★	**13**	10	9	150	7.0	2.5	-8°	—	DC□□0702	B78 ~	1	BFTX02506N	**1.5**	TRX08
	A12M-SDUC R/L0702-16	★	★	**16**	12	11	150	9.0	3.5	-8°	—			1			
	A16Q-SDUC R/L0702-20	★	★	**20**	16	15	180	11.0	4.0	-6°	—			1			
	A16Q-SDUC R/L11T3-23	★	★	**23**	16	15	180	12.5	5.5	-6°	15	DC□□11T3	B82 ~	2	BFTX0409N	**3.4**	TRX15
	A20R-SDUC R/L11T3-25	★	★	**25**	20	18	200	13.0	4.5	-6°	—			1			
	A25S-SDUC R/L11T3-32	★	★	**32**	25	22	250	17.0	7.0	-6°	—			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E13

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

B-SDUC type

Steel with Anti-Vibration Mechanism

Internal Profiling
Screw-on

B-SDUC
Profiling

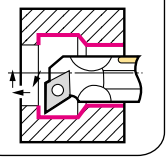


Fig 1

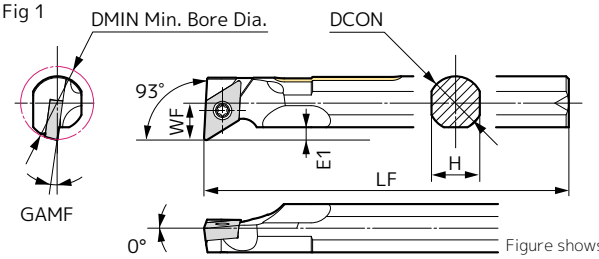


Figure shows right-handed (R) tool.

SumiTurn X-Bar

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B10M-SDUC R/L0702-13**	★	★	**13**	10	9	150	7	2.5	-8°	DC□□0702	B78 ~	1	BFTX02506N	**1.5**	TRX08
	B12M-SDUC R/L0702-16	★	★	**16**	12	11	150	9	3.5	-8°			1			
	B16R-SDUC R/L0702-20	★	★	**20**	16	15	200	11	4.0	-6°			1			
	B20S-SDUC R/L11T3-25	★	★	**25**	20	18	250	13	4.5	-6°	DC□□11T3	B82 ~	1	BFTX0409N	**3.4**	TRX15
	B25S-SDUC R/L11T3-32	★	★	**32**	25	22	250	17	7.0	-6°			1			
	D32T - SDUC R/L 11T3-40	★	★	**40**	32	30	300	22	8.0	-6°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E13

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

C-SDUC type



Internal Profiling
Screw-on

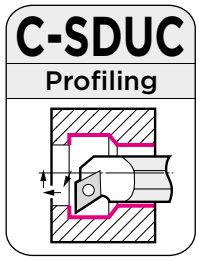


Fig 1

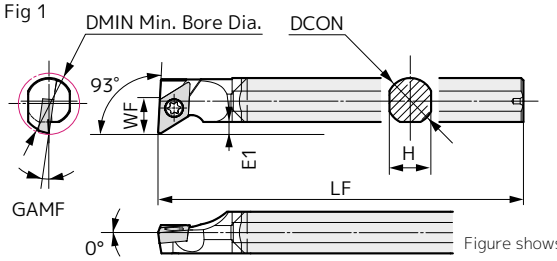


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Carbide	**C10M-SDUC R/L0702-13**	★	★	**13**	10	9	150	7	2.5	-8°	DC□□0702	B78 ~	1	BFTX02506N	**1.5**	TRX08
	C12M-SDUC R/L0702-16	★	★	**16**	12	11	150	9	3.5	-8°			1			
	C16R-SDUC R/L0702-20	★	★	**20**	16	15	200	11	4.0	-6°			1			
	C20S-SDUC R/L11T3-25	★	★	**25**	20	18	250	13	4.5	-6°	DC□□11T3	B82 ~	1	BFTX0409N	**3.4**	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

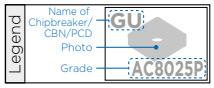
Smart Damper™ E13

Applicable Inserts

S-SDUC type / A-SDUC type / B-SDUC type / C-SDUC type / S-SDQC type / A-SDQC type / B-SDQC type / S-SDZC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB T1500Z**	**GU AC8025P**	**MU AC8020P**	**LB AC6030M**	**GU AC6030M**	**MU AC6135M**	**SUMIBORON BN7125/BNC500**	**MU AC4015K**	**No Chipbreaker AC4015K**	**FX AC5015S**	**SUMIDIA DA1000**	**AG H1**	**SUMIBORON BNC2125**	**SUMIBORON BN2000**	**SUMIDIA DA1090**
High-precision	**FF AC1030U**	**SI AC1030U**	**SC AC1030U**	**FF AC1030U**	**SI AC1030U**	**SC AC1030U**	**SUMIBORON BN7125/BNC500**	—	—	**SI AC5015S**	**SUMIDIA DA1000**	—	**SUMIBORON BNC2115**	**SUMIBORON BN1000**	**SUMIDIA BINDERLESS NPD10**
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~			A18 ~	A22 ~		A20 ~		M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-SDQC type



Internal Profiling
Screw-on

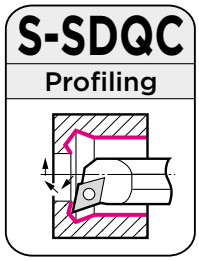


Fig 1

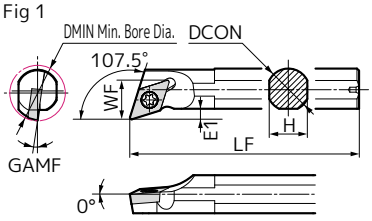


Fig 2

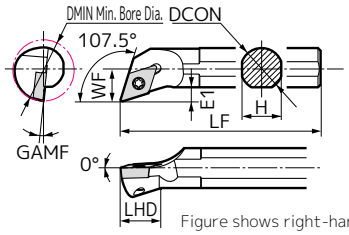


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel	**S10K-SDQC R/L-07**		★	★	**13**	10	9	125	7.0	2,5	-8°	—	DC□□0702	**B78 ~**	1	BFTX02506N	**1.5**	TRX08
	S10M-SDQC R/L0702-13		★	★	**13**	10	9	150	7.0	2.5	-8°	—			1			
	S12M-SDQC R/L0702-16	S12M-SDQC R/L 07	★	★	**16**	12	11	150	9.0	3.5	-8°	—			1			
	S16N-SDQC R/L0702-20		★	★	**20**	16	15	160	11.0	4.0	-6°	—			1			
	S16R-SDQC R/L-07		★	★	**20**	16	15	200	11	4.0	-6°	—			1			
	S16Q-SDQC R/L0702-20	—	★	★	**20**	16	15	180	11.0	4.0	-6°	—			1			
	S16Q-SDQC R/L11T3-23	—	★	★	**23**	16	15	180	12.5	5.5	-6°	15	DC□□11T3	**B82 ~**	2	BFTX0409N	**3.4**	TRX15
	S20R-SDQC R/L11T3-25	—	★	★	**25**	20	18	200	13.0	4.5	-6°	—			1			
	S20S-SDQC R/L-11	—	★	★	**25**	20	18	250	13	4.5	-6°	—			1			
	S20N-SDQC R/L11T3-25		★	★	**25**	20	18	160	13.0	4.5	-6°	—			1			
	S25S-SDQC R/L11T3-32	—	★	★	**32**	25	22	250	17.0	7.0	-6°	—			1			
	S25T-SDQC R/L-11	—	★	★	**32**	25	22	300	17	7.0	-6°	—			1			
	S25Q-SDQC R/L11T3-32		★	★	**32**	25	22	180	17.0	7.0	-6°	—			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E13

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

A-SDQC type



Internal Profiling
Screw-on

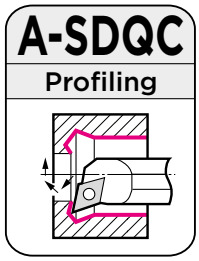


Fig 1

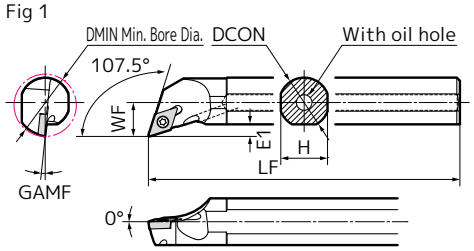


Fig 2

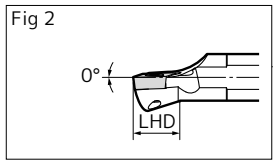


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A10M-SDQC R/L0702-13**	★	★	**13**	10	9	150	7.0	2.5	-8°	—	DC□□0702	B78 ~	1	BFTX02506N	**1.5**	TRX08
	A12M-SDQC R/L0702-16	★	★	**16**	12	11	150	9.0	3.5	-8°	—			1			
	A16Q-SDQC R/L0702-20	★	★	**20**	16	15	180	11.0	4.0	-6°	—			1			
	A16Q-SDQC R/L11T3-23	★	★	**23**	16	15	180	12.5	5.5	-6°	15	DC□□11T3	B82 ~	2	BFTX0409N	**3.4**	TRX15
	A20R-SDQC R/L11T3-25	★	★	**25**	20	18	200	13.0	4.5	-6°	—			1			
	A25S-SDQC R/L11T3-32	★	★	**32**	25	22	250	17.0	7.0	-6°	—			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E13

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

B/D-SDQC type



Internal Profiling
Screw-on

B/D-SDQC
Profiling

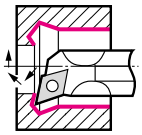


Fig 1

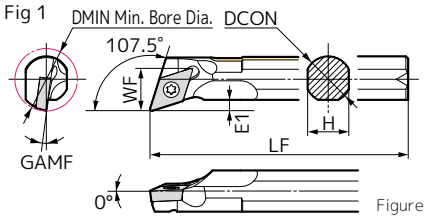


Figure shows right-handed (R) tool.

SumiTurn X-Bar
SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B10M-SDQC R/L0702-13**	★	★	**13**	10	9	150	7	2.5	-8°	DC□□0702	B78 ~	1	BFTX02506N	**1.5**	TRX08
	B12M-SDQC R/L0702-16	★	★	**16**	12	11	150	9	3.5	-8°			1			
	B16R-SDQC R/L0702-20	★	★	**20**	16	15	200	11	4.0	-6°			1			
	B20S-SDQC R/L11T3-25	★	★	**25**	20	18	250	13	4.5	-6°			1			
	B25S-SDQC R/L11T3-32	★	★	**32**	25	22	250	17	7.0	-6°			1			
Anti-vibration D type with oil hole	**D12M - SDQC R/L 0702-16**	★	★	**16**	12	11	150	9	3.5	-8°		B82 ~	2			
	D16R - SDQC R/L 0702-20	★	★	**20**	16	15	200	11	4.0	-6°			2			
	D20S - SDQC R/L 11T3-25	★	★	**25**	20	18	250	13	4.5	-6°			2			
	D20S - SDQC R/L 11T3-25	★	★	**32**	25	22	250	17	7.0	-6°	DC□□11T3		2	BFTX0409N	**3.4**	TRX15
	D32T - SDQC R/L 11T3-40	★	★	**40**	32	30	300	22	7.0	-10°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

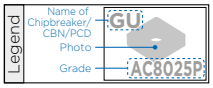
Smart Damper™ E13

Applicable Inserts

S-SDUC type / A-SDUC type / B-SDUC type / C-SDUC type / S-SDQC type / A-SDQC type / B-SDQC type / S-SDZC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB T1500Z**	**GU AC8025P**	**MU AC8020P**	**LB AC6030M**	**GU AC6030M**	**MU AC6135M**	SUMIBORON BN7125/BNC500	**MU AC4015K**	No Chipbreaker **AC4015K**	**FX AC5015S**	**SUMIDIA DA1000**	**AG H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**	SUMIDIA **DA1090**
High-precision	**FF AC1030U**	**SI AC1030U**	**SC AC1030U**	**FF AC1030U**	**SI AC1030U**	**SC AC1030U**	SUMIBORON BN7125/BNC500	—	—	**SI AC5015S**	**SUMIDIA DA1000**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**	SUMIDIA BINDERLESS **NPD10**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
BNC500 is for ductile cast iron.
N·m Recommended Tightening Torque (N·m)

S-SDZC type



Internal Profiling
Screw-on

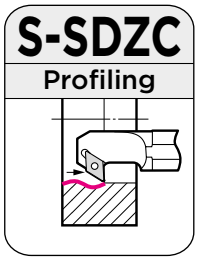


Fig 1

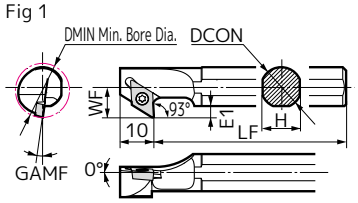


Fig 2

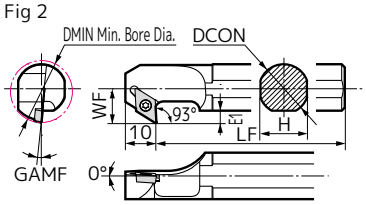


Fig 3

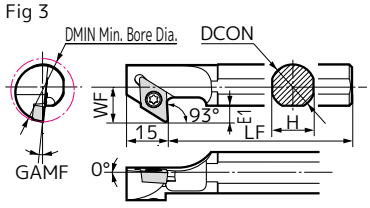


Fig 4

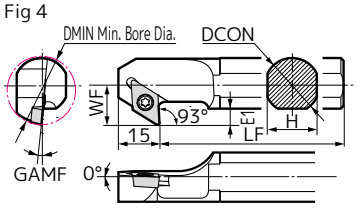


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel	**S10M-SDZC R/L0702-13**	★	★	**13**	10	9	150	7.5	3.0	-8°	DC□□0702	B78 ~	1	BFTX02506N	**1.5**	TRX08
	S12M-SDZC R/L0702-16	★	★	**16**	12	11	150	9.0	3.5	-8°			1			
	S16Q-SDZC R/L0702-20	★	★	**20**	16	15	180	11.0	4.0	-6°			2			
	S16Q-SDZC R/L11T3-23	★	★	**23**	16	15	180	13.0	6.0	-6°	DC□□11T3	B82 ~	3	BFTX0409N	**3.4**	TRX15
	S20R-SDZC R/L11T3-25	★	★	**25**	20	18	200	14.5	6.0	-6°			4			
	S25S-SDZC R/L11T3-32	★	★	**32**	25	22	250	17.0	7.0	-6°			4			

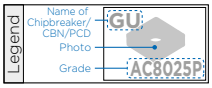
Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts

S-SDUC type / A-SDUC type / B-SDUC type / C-SDUC type / S-SDQC type / A-SDQC type / B-SDQC type / S-SDZC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**MU** **AC8020P**	**LB** **AC6030M**	**GU** **AC6030M**	**MU** **AC6135M**	SUMIBORON BN7125/BNC500	**MU** **AC4015K**	No Chipbreaker **AC4015K**	**FX** **AC5015S**	SUMIDIA **DA1000**	**AG** **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**	SUMIDIA **DA1090**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**SC** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**SC** **AC1030U**	SUMIBORON BN7125/BNC500	—	—	**SI** **AC5015S**	SUMIDIA **DA1000**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**	SUMIDIA BINDERLESS **NPD10**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~	☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

S-DDQN type / S-DDUN type



Profiling
Double Clamp

S-DDQN
Profiling

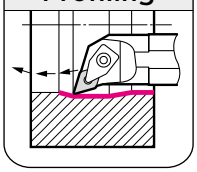


Fig 1

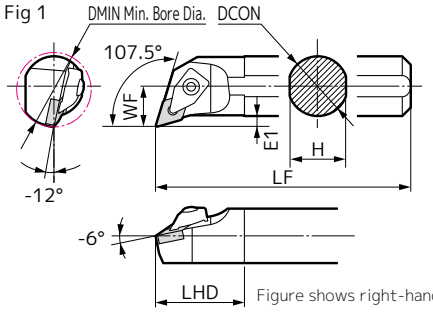


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Top Hex Wrench	Bottom Hex Wrench
Steel	**S32T-DDQN R/L1504-40**	★	★	**40**	32	30	300	22	48	6	DN□□1504	B24 ~	1	SCP2	**5.0**	LH040 (For Hexagonal hole)	LH025 (For Hexagonal hole)

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Clamp Set Parts ☞ E86



Profiling
Double Clamp

S-DDUN
Profiling

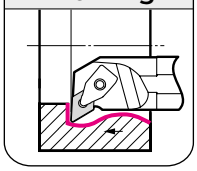


Fig 1

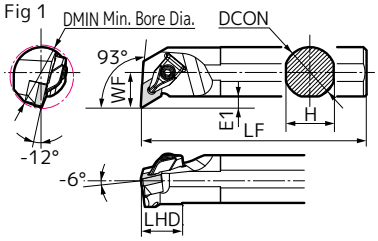


Fig 2

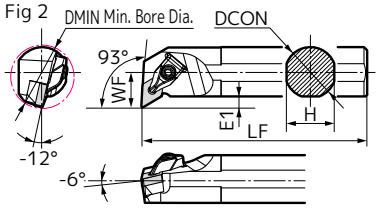


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Top Hex Wrench	Bottom Hex Wrench
Steel	**S32S-DDUN R/L1504-40**	★	★	**40**	32	30	250	22.0	26	7.0	DN□□1504	B24 ~	1	SCP2	**5.0**	DNS1504B	BFTX0409N	LH040 (For Hexagonal hole)	LH025 (For Hexagonal hole)
	S40T-DDUN R/L1504-50	★	★	**50**	40	37	300	27.0	26	8.5			1						
	S50U-DDUN R/L1504-63	★	★	**63**	50	47	350	31.5	—	8.0			2						

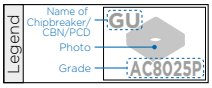
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Modification of the holder and shim is required when using inserts with corner radius of 1.6 or larger, in order to prevent interference with the workpiece.

Clamp Set Parts ☞ E86 Smart Damper™ ☞ E15

Applicable Inserts ◀·· S-DDQN type / S-DDUN type / D-DDUN type / S-PDUN type / S-EDUN type / S-PDZN type / S-EDZN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE **T1500Z**	GU **AC8115P**	MU **AC8020P**	EF **AC6020M**	EG **AC6020M**	EM **AC6030M**	SUMIBORON BN7125/BNC500	UZ **AC4010K**	GZ **AC4010K**	EF **AC5015S**	EG **AC5015S**	EM **AC5015S**	SUMIDIA **DA1000**	AX **H1**	SUMIBORON **BNC2115**	SUMIBORON **BN1000**	SUMIDIA BINDERLESS **NPD10**
General Machining	SU **AC8115P**	GU **AC8025P**	MU **AC8025P**	EF **AC6030M**	EG **AC6030M**	EM **AC6135M**	SUMIBORON BN7125/BNC500	GZ **AC4015K**	GZ **AC4015K**	EF **AC5015S**	EG **AC5015S**	EM **AC5025S**	SUMIDIA **DA1000**	AX **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**	SUMIDIA **DA1090**
Interrupted Cutting	SX **AC8025P**	UX **AC8035P**	MX **AC8035P**	EF **AC6030M**	EH **AC6135M**	EM **AC6145M**	SUMIBORON BN7125/BNC500	GZ **AC4125K**	No Chipbreaker **AC4125K**	EF **AC5025S**	EG **AC5025S**	EM **AC5025S**	SUMIDIA **DA1000**	—	SUMIBORON **BNC2135**	SUMIBORON **BN350**	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~		☞ A20 ~		☞ M2 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

D-DDUN type / S-PDUN type / S-EDUN type

D-DDUN Profiling

Profiling
Double Clamp

SumiTurn X-Bar

Fig 1

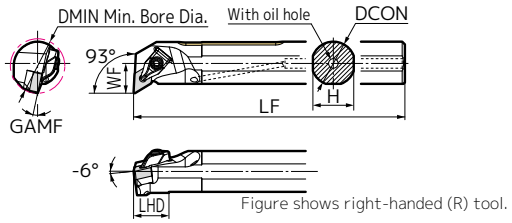


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO SO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
Steel with Anti-Vibration Mechanism and Oil Hole	**D32T-DDUN R/L1104-40**	★	★	**40**	32	30	300	22	26	-10°	DN□□1104	**B23 ~**	1	SCP1	**5.0**	DNS1104B	BFTX0307N	LH040	LH025
	D32T-DDUN R/L1506-40	★	★	**40**	32	30	300	22	26	-12°	DN□□1506	**B28 ~**	1	SCP2	**5.0**	DNS1506B	BFTX0409N	LH040	LH025
	D40U-DDUN R/L1506-50	★	★	**50**	40	37	350	27	26	-12°			1						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

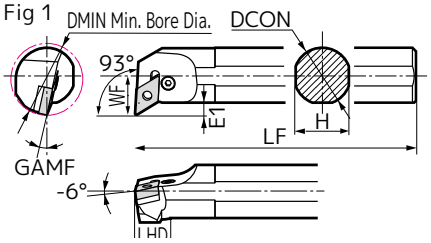
Clamp Set Parts E86

Smart Damper™ E15

S-PDUN Profiling

Profiling
Lever Lock

Fig 1



Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
Steel	**S25T - PDUN R/L 11**	★	★	**32**	25	23	300	17.0	35	7.0	-11°	DN□□1104	**B23 ~**	1	LCL3	LCS3	LSD317	LSP3	LH025
	S32U - PDUN R/L 15 04	★	★	**40**	32	30	350	22.0	40	7.0	-11°	DN□□1504		1					
	S40V - PDUN R/L 15	★	★	**50**	40	37	400	27.0	56	8.5	-11°	DN□□1506	**B24 ~**	1	LCL4	LCS4	LSD42	LSP4	LH030
	S50W - PDUN R/L 15	★	★	**63**	50	47	450	35.0	63	8.0	-10°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

S-EDUN Profiling

Profiling
Pin Lock

Fig 1

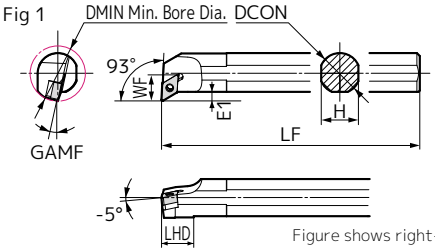


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench (For Hexagonal hole)
Steel	**S25R-EDUN R/L1104-34**	●		**34**	25	23	200	17	20	5.5	-12°	DN□□1104	**B23 ~**	1	SDW323	CPB34	LH025
	S32S-EDUN R/L1504-44	●		**44**	32	30	250	22	20	7.0	-10°	DN□□1504	**B24 ~**	1	SDW423	CPB43	LH030

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-PDZN type / S-EDZN type



Profiling
Lever Lock

S-PDZN
Profiling

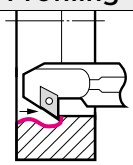


Fig 1

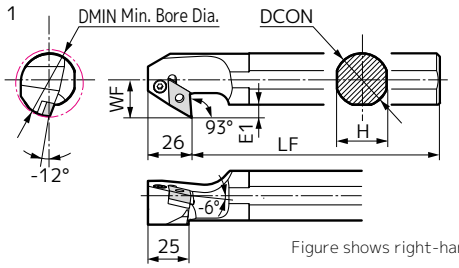


Fig 2

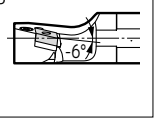


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Steel	**S32S-PDZN R/L1504-40**	★	★	**40**	32	30	250	22.0	7.0	DN□□1504	B24 ~	1	LCL4	LCS4	LSD42	LSP4	LH030
	S40T-PDZN R/L1504-50	★	★	**50**	40	37	300	27.0	8.5			1					
	S50U-PDZN R/L1504-63	★	★	**63**	50	47	350	31.5	8.0			2					

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.



Profiling
Pin Lock

S-EDZN
Profiling

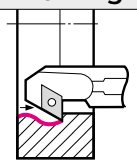


Fig 1

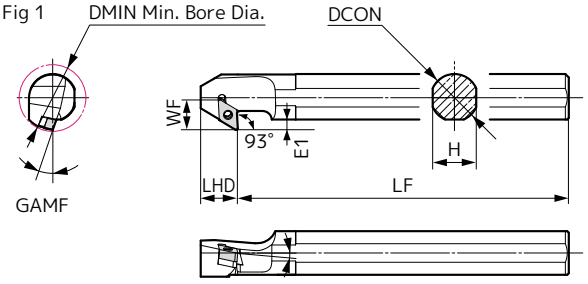


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

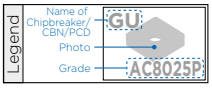
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench
Steel	**S25R-EDZN R/L1104-34**	★		**34**	25	23	200	20	17	5.5	-12°	DN□□1104	B23 ~	1	SDW323	CPB34	LH025
	S32S-EDZN R/L1504-44	★		**44**	32	30	250	25	22	7.0	-10°	DN□□1504	B24 ~	1	SDW423	CPB43	LH030

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-DDQN type / S-DDUN type / D-DDUN type / S-PDUN type / S-EDUN type / S-PDZN type / S-EDZN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC2135	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

S-SSKP type / C-SSKP type



Internal General-purpose
Screw-on

SumiSmall

S-SSKP
Through Boring

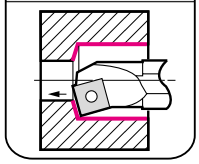


Fig 1

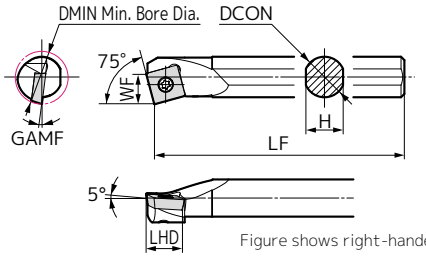


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel	**S12M-SSKP R/L0903-16**	S12M - SSKP R/L 09	★	★	**16**	12	11	150	8.0	9.0	-6°	SP□□0903	**B92**	1	BFTX0307A	**2.0**	TRX10
	S16R-SSKP R/L0903-20	S16R - SSKP R/L 09	★	★	**20**	16	15	200	10.0	6.8	-4°			1			
	S20S-SSKP R/L0903-25	S20S - SSKP R/L 09	★	★	**25**	20	18	250	12.5	8.5	-2°			1			
	S25T-SSKP R/L0903-28	S25T - SSKPR/L 09	★	★	**28**	25	22	300	14.0	5.0	0°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal General-purpose
Screw-on

SumiSmall

C-SSKP
Through Boring

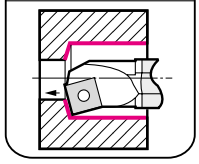
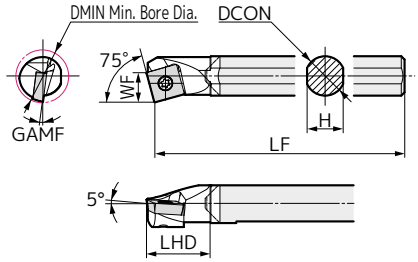


Fig 1



Holder

Parts

Dimensions (mm)

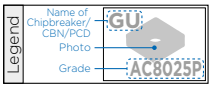
Shank Material	ISO Cat. No.	Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Carbide Standard	**C12M-SSKP R0903-16**		★	**16**	12	11	150	8	25	-6°	SP□□0903	**B92**	1	BFTX0307A	**2.0**	TRX10
Carbide Long	**C12R-SSKP R0903-16**	C12R – SSKP R 09	★	**16**	12	11	200	8	25	-6°			1	BFTX0307A	**2.0**	TRX10
	C16S-SSKP R0903-20	C16S – SSKP R 09	★	**20**	16	15	250	10	30	-4°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-SSKP type/C-SSKP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application / Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	N (Non-Ferrous)
General Machining	FB **T1500Z**	LB **AC8025P**	LU **AC6030M**	LB **AC6030M**	SUMIDIA **DA1000**
High-precision	SD **T1500Z**	—	—	—	SUMIDIA **DA1000**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A22 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

S-CSKP type

Steel

Internal General-purpose
Clamp-on

S-CSKP
Through Boring

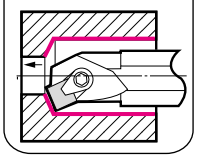


Fig 1

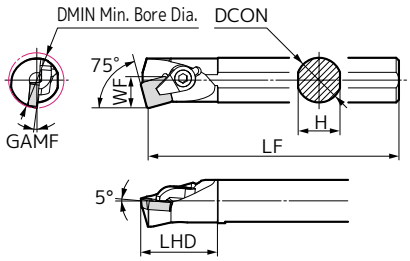


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Double Screw	Wrench
Steel	**S16Q-CSKP R/L0903-20**	★	★	**20**	16	15	180	10.0	28	-4°	SP□□0903	**B94**	1	CCM6B L/R	WB6-10	LH030
	S20R-CSKP R/L0903-25	★	★	**25**	20	18	200	12.5	28	-2°			1		WB6-13	

(For Hexagonal hole)

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-CSKP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel)		K (Cast Iron)			S (Exotic Alloy)		H (Hardened Steel)
	Finishing	Medium Cutting	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	Medium to Roughing	Uncoated
General Machining	**FK** **T1500Z**	**SF** **AC8025P**	**SUMIBORON** **BN7125**	**No Chipbreaker** **AC4015K**	**No Chipbreaker** **AC4015K**	**No Chipbreaker** **AC5015S**	**No Chipbreaker** **AC5025S**	**SUMIBORON** **BN2000**
Recommended Cutting Conditions	☞ A10 ~		☞ A16 ~			☞ A18 ~		☞ A20 ~

11° inserts with holes can also be used.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

S-SSKC type / S-DSKN type

90° 75° Steel

Internal General-purpose
Screw-on

SumiSmall

S-SSKC
Through Boring

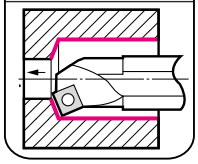


Fig 1

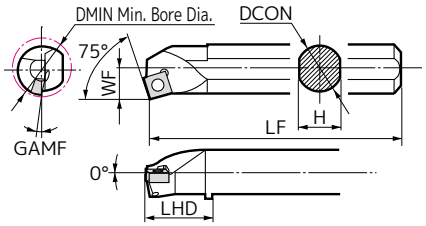


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S16R-SSKC R/L09T3-20**	★	★	**20**	16	15	200	11	23	-10°	SC□□09T3	**B89**	1	BFTX0407N	**3.4**	TRX15
	S20S-SSKC R/L09T3-25	★	★	**25**	20	18	250	13	27	-8°			1	BFTX0409N	**3.4**	
	S25T-SSKC R/L1204-32	★		**32**	25	23	300	17	30	-7°	SC□□1204	**B90**	1	BFTX0511N	**5.0**	TRX20
	S32U-SSKC R/L1204-40	★		**40**	32	30	350	22	33	-6°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

90° 75° Steel

Medium Diameter General-purpose
Double Clamp

S-DSKN
Through Boring

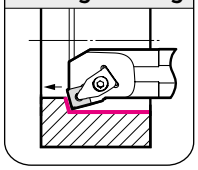


Fig 1

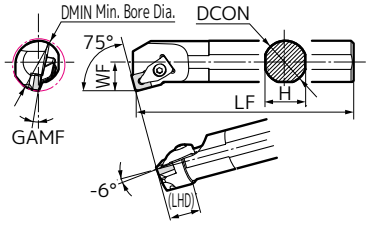


Fig 2

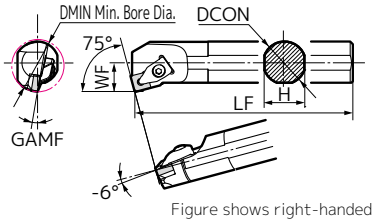


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
Steel	**S25R-DSKN R/L1204-32**	★	★	**32**	25	23	200	17.0	(26)	-13°	SN□□1204	**B33 ~**	1	SCP2	**5.0**	SNS1203B	BFTX0307N	LH040	LH025
	S32S-DSKN R/L1204-40	★	★	**40**	32	30	250	22.0	(21)	-10°			1						
	S40T-DSKN R/L1204-50	★	★	**50**	40	37	300	27.0	(21)	-10°			1						
	S50U-DSKN R/L1204-63	★	★	**63**	50	47	350	31.5	—	-10°			2						

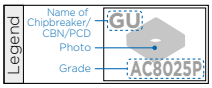
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
( ) is a reference value.

Clamp Set Parts ☞E86

Applicable Inserts ◂·· S-SSKC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-Ferrous) —
General Machining	**FB T1500Z**	**GU AC8025P**	**MU AC8020P**	**LB AC6030M**	**GU AC6030M**	**MU AC6030M**	**MU AC4015K**	**No Chipbreaker AC4015K**	**SUMIDIA DA1000**
High-precision	**FX T1500A**	**SC AC1030U**	**SC AC1030U**	**FX AC1030U**	**SC AC1030U**	**SC AC1030U**	—	—	**SUMIDIA DA1000**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~		☞ A22 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-PSKN type

Steel

Medium Diameter General-purpose
Lever Lock

S-PSKN
Through Boring

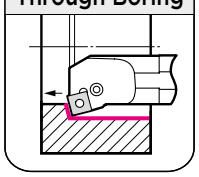


Fig 1

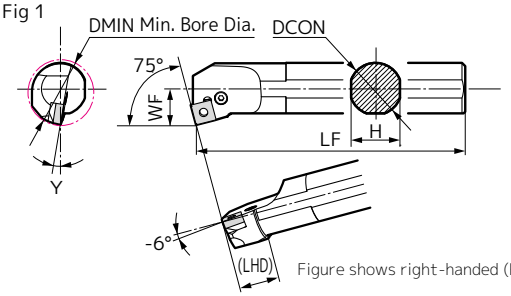


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

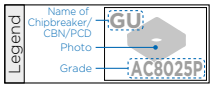
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
Steel	**S25T - PSKN R/L 12**	★		**32**	25	23	300	17.0	(21)	SN□□1204	B33 ~	1	LCL4C-SD	LCS4B-SD	—	—	LH025
	S32U - PSKN R/L 12	★		**40**	32	30	350	22.0	(21)			1	LCL4T-SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030
	S40V - PSKN R/L 12	★	★	**50**	40	37	400	27.0	—			1	LCL4SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030
	S40V - PSKN R/L 15	★		**63**	40	47	400	35.0	—	SN□□1506		1	LCL4SD	LCS42BS-SD	LSS42SD	LSP4SD	LH030
	S50W - PSKN R/L 15			**63**	50	47	450	35.0	—			1	LCL5SD	LCS5B-SD	LSS53SD	LSP5SD	LH030
	S50W - PSKN R/L 19			**63**	50	47	450	35.0	—	SN□□1906		1	LCL5C-SD	LCS6B-SD	LSS63SD	LSP6SD	LH040

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
( ) is a reference value.

Applicable Inserts ◂·· S-DSKN type / S-PSKN type / S-ESKN type / S-PSYN type / S-ESYN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

S-ESKN type / S-PSYN type



Medium Diameter General-purpose
Pin Lock



Fig 1

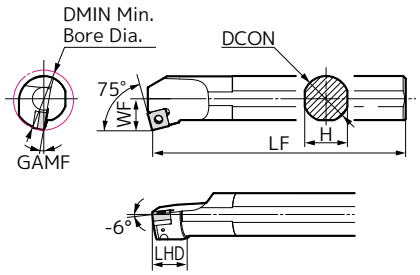


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench
																(For Hexagonal hole)
Steel	**S25R-ESKN R/L1204-34**	★		**34**	25	23	200	17	(18)	-12°	SN□□1204	B33 ~	1	SSW423	CPB42	LH030
	S32S-ESKN R/L1204-44	★		**44**	32	30	250	22	(20)	-10°			1		CPB43S	
	S40T-ESKN R/L1204-54			**54**	40	37	300	27	(20)	-10°			1		CPB43	
	S50U-ESKN R/L1906-70			**70**	50	47	350	35	(30)	-10°	SN□□1906	B39 ~	1	SSW635	CPB64	LH040

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The LHD ( ) is a reference value.



Medium Diameter General-purpose
Lever Lock

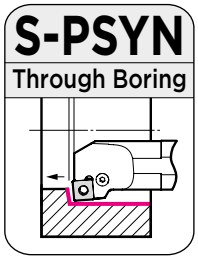


Fig 1

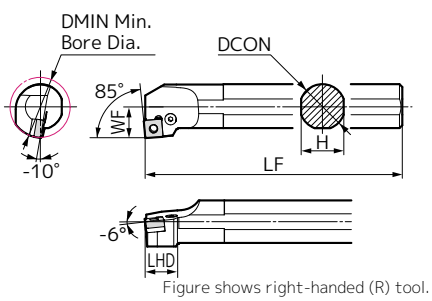


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
																	(For Hexagonal hole)
Steel	**S32S-PSYN R/L1204-44**	★	★	**44**	32	30	250	22	(22)	SN□□1204	B33 ~	1	LCL4	LCS4	LSS42B	LSP4	LH030

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The LHD ( ) is a reference value.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S-ESYN type

Steel

Medium Diameter General-purpose
Pin Lock

S-ESYN
Through Boring

Fig 1

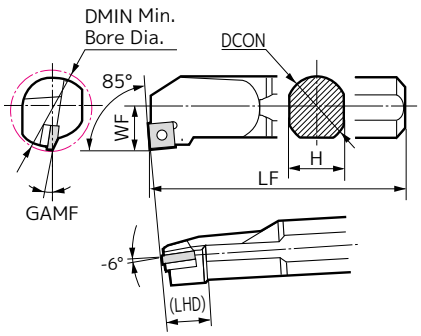


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench
Steel	**S25R-ESYN R/L1204-34**			**34**	25	23	200	17	(20)	-12°	SN□□1204	B33 ~	1	SSW423	CPB42	LH030 (For Hexagonal hole)
	S32S-ESYN R/L1204-44			**44**	32	30	250	22	(22)	-10°			1		CPB43S	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The LHD ( ) is a reference value.

Applicable Inserts ◂·· S-DSKN type / S-PSKN type / S-ESKN type / S-PSYN type / S-ESYN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials Finishing
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN1000	SUMIDIA BINDERLESS NPD10
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN350	—
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

BNC500 is for ductile cast iron.

S-STUB type / S-STUP type / A-STUP type

60° 93° Steel

Internal Finishing to Medium Cutting
Screw-on

S-STUB S-STUP Stop Boring

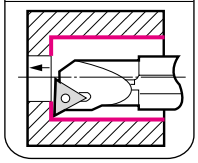


Fig 1

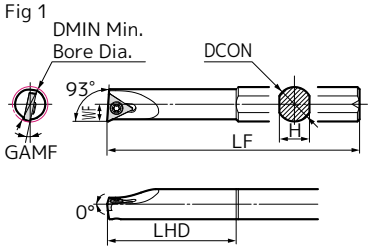


Fig 2

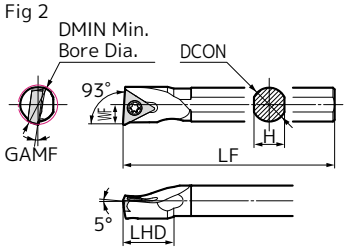


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S08H-STUB R/L0601-08**	S08H-STUB R/L 06-01	★	★	**8**	8	7	100	4.0	30	-12°	TB□□0601	B98~	1	BFTX0204A	**0.5**	TRX06
	S08H-STUP R/L0802-10	S08H-STUP R/L 08-02	★	★	**10**	8	7	100	5.0	13	-10°	TP□□0802	B103~	1	BFTX0204A	**0.5**	TRX06
	S08H-STUP R/L0902-10		★	★	**10**	8	7	100	5.0	13	-10°	TP□□0902	**B105**	2	BFTX02505N	**1.1**	TRX08
	S10K-STUP R/L1103-12	S10K-STUP R/L 11-03	★	★	**12**	10	9	125	6.0	15	-8°	TP□□1103	B107~	2	BFTX0306A	**2.0**	TRX10
	S12M-STUP R/L1103-14		★	★	**14**	12	11	150	7.0	17	-7°			2			
	S12M-STUP R/L1103-16	S12M-STUP R/L11-03	★	★	**16**	12	11	150	8.0	17	-6°			2	BFTX0307A	**2.0**	
	S16R-STUP R/L1103-18		★	★	**18**	16	15	200	9.0	18	-4°			2	BFTX0306A	**2.0**	
	S16R-STUP R/L1103-20	S16R-STUP R/L1103	★	★	**20**	16	15	200	10.0	18	-2°			2	BFTX0307A	**2.0**	
	S20S-STUP R/L1103-22		★	★	**22**	20	18	250	11.0	18	-2°			2			
	S25T-STUP R/L1103-28		★	★	**28**	25	22	300	14.0	27	-2°			2			
	S20S-STUP R/L1603-22	S20S-STUP R/L 16	★	★	**22**	20	18	250	11.0	18	-3°	TP□□1603	**B109**	2	BFTX0407A	**3.4**	TRX15
	S25T-STUP R/L1603-28		★	★	**28**	25	22	300	14.0	18	-1°			2			
	S20S-STUP R/L1604-22	S20S-STUP R/L 16	★	★	**22**	20	18	250	12.5	18	-5°	TP□□1604	**B110**	2	BFTX0409N	**3.4**	TRX15
	S25T-STUP R/L1604-28	S25T-STUP R/L 16	★	★	**28**	25	22	300	14.0	18	-2°			2	BFTX0410A	**3.4**	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E14

60° 93° Steel Coolant Hole

Internal Finishing to Medium Cutting
Screw-on

A-STUP Stop Boring

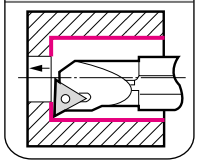


Fig 1

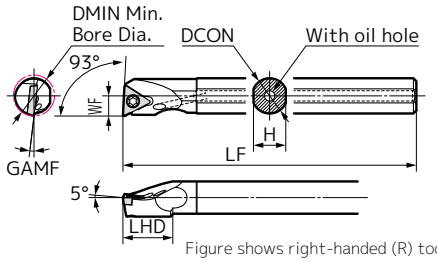


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A08H-STUP R/L0802-10**	★	★	**10**	8	7	100	5	13	-10°	TP□□0802	B103~	1	BFTX0204N	**0.5**	TRX06
	A08H-STUP R/L0902-10	★	★	**10**	8	7	100	5	13	-10°	TP□□0902	**B105**	1	BFTX02505N	**1.1**	TRX08
	A10K-STUP R/L1102-12	★	★	**12**	10	9	125	6	15	-8°	TP□□1102	**B106**	1	BFTX02505N	**1.1**	TRX08
	A12M-STUP R/L1102-14	★	★	**14**	12	11	150	7	17	-7°			1	BFTX02506N	**1.5**	
	A16R-STUP R/L1102-18	★	★	**18**	16	15	200	9	18	-4°			1			
	A10K-STUP R/L1103-12	★	★	**12**	10	9	125	6	15	-8°	TP□□1103	B107~	1	BFTX0306N	**2.0**	TRX10
	A12M-STUP R/L1103-14	★	★	**14**	12	11	150	7	17	-7°			1			
	A16R-STUP R/L1103-18	★	★	**18**	16	15	200	9	18	-4°			1			
	A20S-STUP R/L1103-22	★	★	**22**	20	18	250	11	18	-2°			1	BFTX0307N	**2.0**	
	A25T-STUP R/L1103-28	★	★	**28**	25	22	300	14	18	-2°			1			
	A20S-STUP R/L1603-22	★	★	**22**	20	18	250	11	18	-3°	TP□□1603	**B109**	1	BFTX0407N	**2.0**	TRX15
	A25T-STUP R/L1603-28	★	★	**28**	25	22	300	14	18	-1°			1			
	A20S-STUP R/L1604-22	★	★	**22**	20	18	250	11	18	-5°	TP□□1604	**B110**	1	BFTX0409N	**3.4**	TRX15
	A25T-STUP R/L1604-28	★	★	**28**	25	22	300	14	18	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

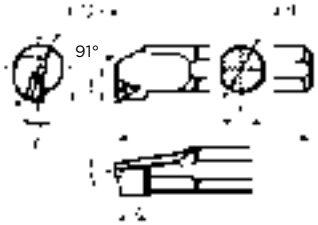
Smart Damper™ E14

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-STFC type

Internal Finishing to Medium Cutting
Screw-on

S-STFC
Stop Boring



Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with screw-lock systtem	**S10K-STFC R/L 09**	★	★	**13**	10	9	125	-	10.5	-12°	TC□□0902	B103 ~	1	BFTX02205N	**0.5**	TRX06
	S12M-STFC R/L11	★	★	**16**	12	11	150	10	9	-10°	TC□□1102	B105	1	BFTX02506N	**1.5**	TRX08
	S16R-STFC R/L11	★	★	**20**	16	15	200	12	11	-6°			1		**1.5**	
	S20S-STFC R/L11	★	★	**25**	20	18	250	14	13	-3°		B106	1		**1.5**	
	S25T-STFC R/L16	★		**32**	25	23	300	18	17	-6°			1		**3.4**	
	S32U-STFC R/L16	★		**40**	32	30	350	20	22	-10°	TC□□16T3	B107 ~	1	BFTX0409N	**3.4**	TRX15
	S40V-STFC R/L16			**50**	40	37	400	25	27	-8°			1		**3.4**	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

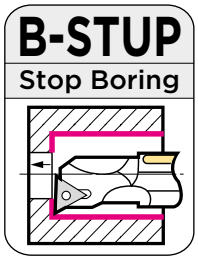
Smart Damper™ E14

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

B-STUP type



Internal Finishing to Medium Cutting
Screw-on



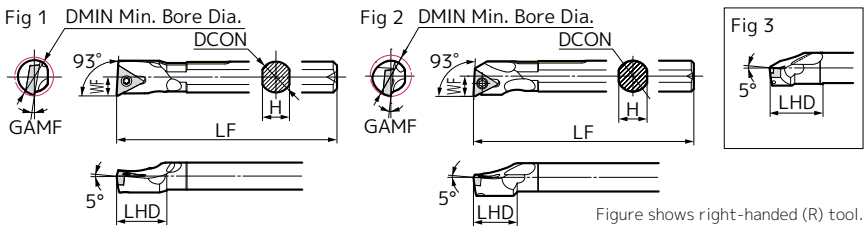


Figure shows right-handed (R) tool.

SumiTurn X-Bar
SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B08H-STUP R/L0802-10**	★	★	**10**	8	7	100	5.0	13	-10°	TP□□0802	B103 ~	1	BFTX0204A	**0.5**	TRX06
	B10K-STUP R/L1103-12	★	★	**12**	10	9	125	6.0	15	-8°	TP□□1103	B107 ~	1	BFTX0306A	**2.0**	TRX10
	B12M-STUP R/L1103-14	★	★	**14**	12	11	150	7.0	17	-7°			2			
	B12M-STUP R/L1103-16	★	★	**16**	12	11	150	8.0	17	-6°			2	BFTX0307A	**2.0**	
	B16R-STUP R/L1103-18	★	★	**18**	16	15	200	9.0	18	-4°			2	BFTX0306A	**2.0**	
	B16R-STUP R/L1103-20	★	★	**20**	16	15	200	10.0	18	-2°			2			
	B20S-STUP R/L1103-22	★	★	**22**	20	18	250	11.0	18	-2°			2	BFTX0307A	**2.0**	
	B25T-STUP R/L1103-28	★	★	**28**	25	22	300	14.0	18	-2°			2			
	B32T-STUP R/L1103-40	★	★	**40**	32	30	300	20.0	53	-2°			3			
	B20S-STUP R/L1604-25	★	★	**25**	20	18	250	12.5	18	-3°	TP□□1604	B110	2	BFTX0410A	**3.4**	TRX15
	B25T-STUP R/L1604-28	★	★	**28**	25	22	300	14.0	18	-2°			2			
	B32T-STUP R/L1604-40	★	★	**40**	32	30	300	20.0	53	-2°			3			

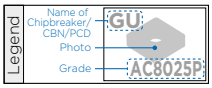
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E14

Applicable Inserts ◂·· S-STUB type / C-STUB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

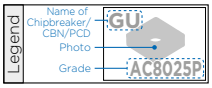


Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	N (Non-Ferrous)	H (Hardened Steel)
High-precision	**FW T150OZ**	**FX AC1030U**	**FW AC1030U**	**FX AC1030U**	**SUMIDIA DA1000**	**SUMIBORON BN2000**
Recommended Cutting Conditions	A10 ~		A14 ~		A22 ~	A20 ~

Applicable Inserts ◂·· S-STUP type / A-STUP type / B-STUP type / D-STUP type / C-STUP type / E-STUP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB T150OZ**	**GU AC8025P**	**MU AC8020P**	**LB AC6030M**	**GU AC6030M**	**MU AC6030M**	**SUMIBORON BN7125**	**MU AC4015K**	**FX AC5015S**	**SUMIDIA DA1000**	**AY H1**	**SUMIBORON BNC2125**	**SUMIBORON BN2000**	**SUMIDIA DA1090**
High-precision	**FF AC1030U**	—	—	—	—	—	**SUMIBORON BN7125**	—	**FX AC5015S**	**SUMIDIA DA1000**	—	**SUMIBORON BNC2115**	**SUMIBORON BN1000**	**SUMIDIA BINDERLESS NPD10**
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~		A18 ~	A22 ~		A20 ~		M2 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

D-STUP type

Internal Finishing to Medium Cutting
Screw-on

D-STUP
Stop Boring

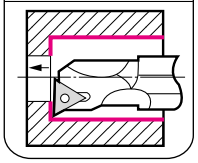
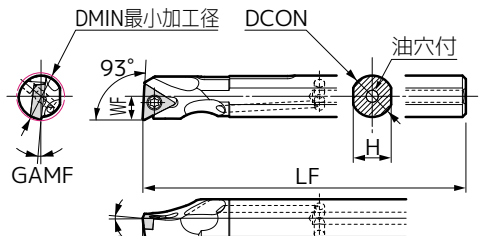


Fig 1



SumiTurn X-Bar
SumiSmall

Holder

Parts

Dimensions (mm)

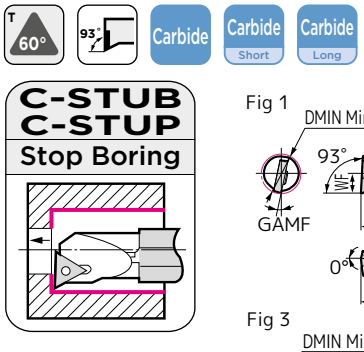
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism and Oil Hole	**D12M-STUP R/L1103-14**	★	★	**14**	12	11	150	7	17	-7°	TP□□1103	B107 ~	1	BFTX0306A	2.0	TRX10
	D16R-STUP R/L1103-18	★	★	**18**	16	15	200	9	18	-4°			1			
	D20S-STUP R/L1103-22	★	★	**22**	20	18	250	11	18	-2°			1	BFTX0307A		
	D25T - STUP R/L 1604-28	★	★	**28**	25	22	300	14	18	-2°	TP□□1604		1	BFTX0410A	3.4	TRX15
	D32T - STUP R/L 1604-40	★	★	**40**	32	30	300	20	13	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E14

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

C-STUB type / C-STUP type



Internal Finishing to Medium Cutting
Screw-on

SumiSmall

Fig 1

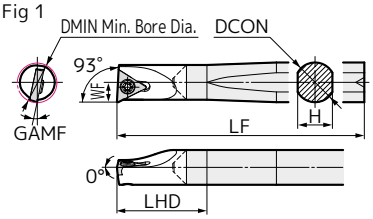


Fig 2

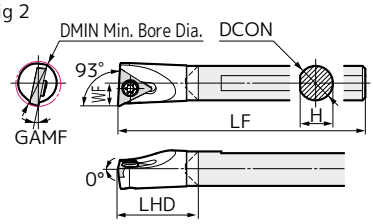


Fig 3

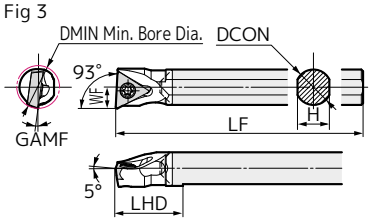


Figure shows right-handed (R) tool.

Holder

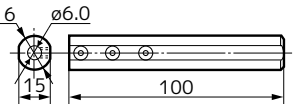
Dimensions (mm)

Shank Material	ISO Cat. No.	Cat.No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Parts: Flat Insert Screw	Parts: N·m	Parts: Wrench (For Torx hole)
Carbide Standard	C08H-STUB R/L0601-08	C08-STUB R/L 06	★	★	8	8	7.0	100	4.0	50	-12°	TB□□0601	B98 ~	1	BFTX0204A	0.5	TRX06
	C08H-STUB R/L0601-08K		★	★	8	6	5.7	100	4.0	—	-12°			2	BFTX0204N	0.5	
	C08H-STUP R/L0802-10	C08M-STUP R/L 08	★	★	10	8	7.0	100	5.0	18	-10°	TP□□0802	B103 ~	3	BFTX0204A	0.5	TRX06
	C10K-STUP R/L1103-12	C10Q-STUP R/L 11	★	★	12	10	9.0	125	6.0	19	-8°	TP□□1103	B107 ~	3	BFTX0306A	2.0	TRX10
	C12M-STUP R/L1103-14		★	★	14	12	11.0	150	7.0	25	-7°			3			
	C12M-STUP R/L1103-16		★	★	16	12	11.0	150	8.0	25	-6°			3	BFTX0307A	2.0	
	C16R-STUP R/L1103-18		★	★	18	16	15.0	200	9.0	30	-4°			3	BFTX0306A	2.0	
	C16R-STUP R/L1103-20		★	★	20	16	15.0	200	10.0	30	-2°			3	BFTX0307A	2.0	
	C20S-STUP R/L1103-22		★	★	22	20	18.0	250	11.0	35	-2°			3			
	C20S-STUP R/L1604-25		★	★	25	20	18.0	250	12.5	35	-3°	TP□□1604	B110	3	BFTX0410A	3.4	TRX15
Carbide Long	C08M-STUB R/L0601-08		★	★	8	8	7.0	150	4.0	50	-12°	TB□□0601	B98 ~	1	BFTX0204A	0.5	TRX06
	C08M-STUP R/L0802-10		★		10	8	7.0	150	5.0	18	-10°	TP□□0802	B103 ~	3	BFTX0204A	0.5	TRX06
	C10Q-STUP R/L1103-12		★	★	12	10	9.0	180	6.0	19	-8°	TP□□1103	B107 ~	3	BFTX0306A	2.0	TRX10
	C12R-STUP R/L1103-14		★		14	12	11.0	200	7.0	25	-7°			3			
	C12R-STUP R/L1103-16	C12R-STUP R/L 11	★		16	12	11.0	200	8.0	25	-6°			3	BFTX0307A	2.0	
	C16S-STUP R/L1103-18		★		18	16	15.0	250	9.0	30	-4°			3	BFTX0306A	2.0	
	C16S-STUP R/L1103-20	C16S-STUP R/L 11	★		20	16	15.0	250	10.0	30	-2°			3	BFTX0307A	2.0	
Carbide Short	C16M-STUP R/L1103-18		★	★	18	16	15.0	150	9.0	30	-4°	TP□□1103	B107 ~	3	BFTX0306A	2.0	TRX10
	C16M-STUP R/L1103-20		★	★	20	16	15.0	150	10.0	30	-2°			3	BFTX0307A	2.0	
	C20M-STUP R/L1103-22		★	★	22	20	18.0	150	11.0	35	-2°			3			
	C20M-STUP R/L1604-25		★	★	25	20	18.0	150	12.5	35	-3°	TP□□1604	B110	3	BFTX0410A	3.4	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
C08H-STUB R/L0601-08K requires the separately sold HBB616 adapter sleeve.
Actual products marked with * show an ISO type code.

Smart Damper™ E14

Fig 1



Adapter Sleeve

Cat. No.	Stock	Fig
HBB 616	●	1

Adapter sleeve is optional.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

E-STUP type



Internal Finishing to Medium Cutting
Screw-on

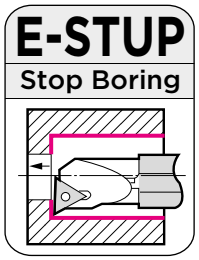
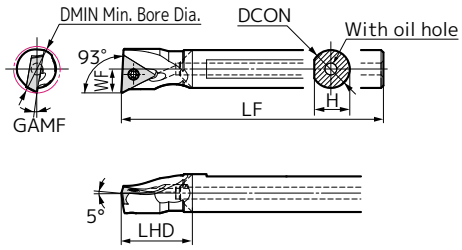


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock	Min. Bore Dia.	Diameter	Height	Overall Length	Cutting Edge Distance	Head	Rake Angle	Applicable Insert		Fig	Flat Insert Screw		Wrench
		R	DMIN	DCON	H	LF	WF	LHD	GAMF	ISO Cat. No.	Ref. Page			N·m	(For Torx hole)
Carbide with Oil Hole	**E08H-STUP R0802-10**	★	**10**	8	7.5	100	5	18	-10°	TP□□0802	B103 ~	1	BFTX0204A	**0.5**	TRX06
	E10K-STUP R1103-12	★	**12**	10	9.5	125	6	19	-8°	TP□□1103	B107 ~	1	BFTX0306A	**2.0**	TRX10
	E12M-STUP R1103-14	★	**14**	12	11.5	150	7	25	-7°			1			
	E12M-STUP R1103-16	★	**16**	12	11.5	150	8	25	-6°			1	BFTX0307A	**2.0**	
	E16R-STUP R1103-18	★	**18**	16	15.5	200	9	30	-4°			1	BFTX0306A	**2.0**	
	E16R-STUP R1103-20	★	**20**	16	15.5	200	10	30	-2°			1	BFTX0307A	**2.0**	

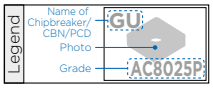
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Smart Damper™ E14

Applicable Inserts ◂·· S-STUB type / C-STUB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

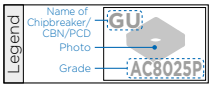


Application Range / Process	P (Steel)		M (Stainless Steel)		N (Non-Ferrous)	H (Hardened Steel)
	Finishing	Medium Cutting	Finishing	Medium Cutting	—	Uncoated
High-precision	**FW** **T1500Z**	**FX** **AC1030U**	**FW** **AC1030U**	**FX** **AC1030U**	**SUMIDIA** **DA1000**	**SUMIBORON** **BN2000**
Recommended Cutting Conditions	A10 ~		A14 ~		A22 ~	A20 ~

Applicable Inserts ◂·· S-STUP type / A-STUP type / B-STUP type / D-STUP type / C-STUP type / E-STUP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)			M (Stainless Steel)			K (Cast Iron)		S (Exotic Alloy)	N (Non-Ferrous)		H (Hardened Steel)		Hard Brittle Materials
	Finishing	Medium Cutting	Roughing	Finishing	Medium Cutting	Roughing	High-speed Finishing	Finishing to Medium Cutting	Finishing to Medium Cutting	High-precision/ Finishing	Finishing to Medium Cutting	Coated	Uncoated	—
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**MU** **AC8020P**	**LB** **AC6030M**	**GU** **AC6030M**	**MU** **AC6030M**	**SUMIBORON** **BN7125**	**MU** **AC4015K**	**FX** **AC5015S**	**SUMIDIA** **DA1000**	**AY** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA1090**
High-precision	**FF** **AC1030U**	—	—	—	—	—	**SUMIBORON** **BN7125**	—	**FX** **AC5015S**	**SUMIDIA** **DA1000**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
Recommended Cutting Conditions	A10 ~			A14 ~			A16 ~		A18 ~	A22 ~		A20 ~		M2 ~

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

S-CTFP type



Internal General-purpose
Clamp-on

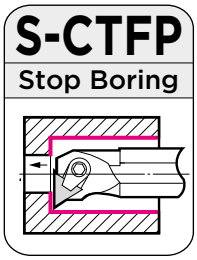


Fig 1

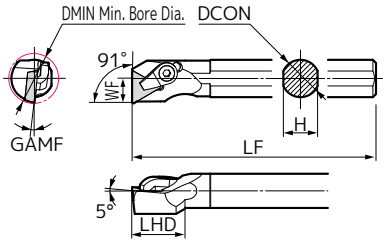


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Plate	Double Screw	Wrench (For Hexagonal hole)
Steel	**S12M-CTFP R/L1103-16**	★	★	**16**	12	11	150	8.0	17	-6°	TP□□1103	B111 ~	1	CCM5BSL/R	WB5-10	LH025
	S16Q-CTFP R/L1103-20	★	★	**20**	16	15	180	10.0	18	-4°			1			
	S20R-CTFP R/L1103-25	★	★	**25**	20	18	200	12.5	18	-2°			1			
	S25S-CTFP R/L1603-32	★	★	**32**	25	23	250	16.0	38	-2°	TP□□1603	B112	1	CCM8UL/R	WB8R/L-16T	LT27

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-CTFP type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel)		K (Cast Iron)			S (Exotic Alloy)		N (Non-Ferrous)	H (Hardened Steel)
	Finishing	Medium Cutting	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	Medium to Roughing	—	Uncoated
General Machining	FK T1500Z	SF AC8025P	SUMIBORON BN7000/BN500	No Chipbreaker AC4015K	No Chipbreaker AC4015K	No Chipbreaker AC5015S	No Chipbreaker AC5025S	SUMIDIA DA1000	SUMIBORON BN2000
Recommended Cutting Conditions	☞ A10 ~		☞ A16 ~			☞ A18 ~		☞ A22 ~	☞ A20 ~

11° inserts with holes can also be used.

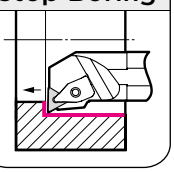
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-DTFN type / D-DTFN type



Medium Diameter General-purpose
Double Clamp

S-DTFN
Stop Boring



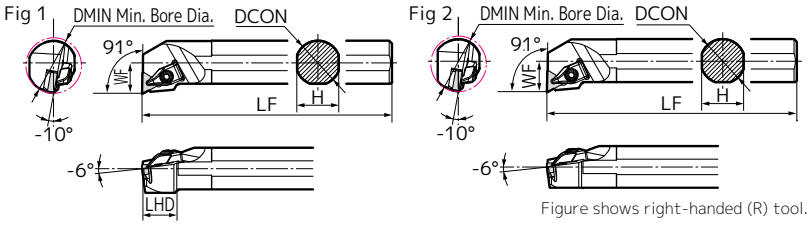


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
Steel	**S32S-DTFN R/L1604-40**	★	★	**40**	32	30	250	22.0	26	TN□□1604	**B48 ~**	1	SCP1	**5.0**	TNS1604B	BFTX0307N	LH040	LH025
	S40T-DTFN R/L1604-50	★	★	**50**	40	37	300	27.0	26			1						
	S50U-DTFN R/L1604-63	★	★	**63**	50	47	350	31.5	—			2						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

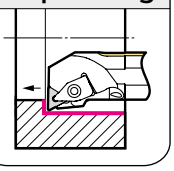
Clamp Set Parts ☞E86
Smart Damper™ ☞E15



Medium Diameter General-purpose
Double Clamp

SumiTurn X-eco Bar

D-DTFN
Stop Boring



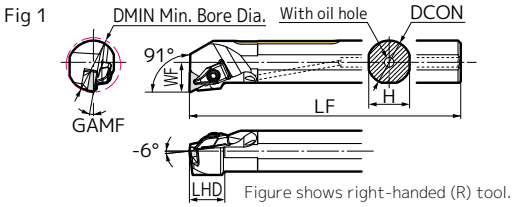


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
Steel with Anti-Vibration Mechanism and Oil Hole	**D25T-DTFN R/L1604-32**	★	★	**32**	25	23	300	17	21	-12°	TN□□1604	**B48 ~**	1	SCP1	**5.0**	TNS1603B	BFTX0307N	LH040	LH025
	D32T-DTFN R/L1604-40	★	★	**40**	32	30	300	22	26	-10°			1			TNS1604B			
	D40U-DTFN R/L1604-50	★	★	**50**	40	37	350	27	26	-10°			1						

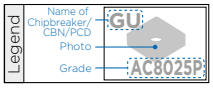
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Clamp Set Parts ☞E86
Smart Damper™ ☞E15

Applicable Inserts ◂·· S-DTFN type / D-DTFN type / S-PTFN type / B-PTFN type / S-ETFN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE **T1500Z**	GU **AC8115P**	MU **AC8020P**	EF **AC6020M**	EG **AC6020M**	EM **AC6030M**	SUMIBORON BN7125/BNC500	UZ **AC4010K**	GZ **AC4010K**	EF **AC5015S**	EG **AC5015S**	EM **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
General Machining	SU **AC8115P**	GU **AC8025P**	MU **AC8025P**	EF **AC6030M**	EG **AC6030M**	EM **AC6135M**	SUMIBORON BN7125/BNC500	GZ **AC4015K**	GZ **AC4015K**	EF **AC5015S**	EG **AC5015S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
Interrupted Cutting	SX **AC8025P**	UX **AC8035P**	MX **AC8035P**	EF **AC6030M**	EH **AC6135M**	EM **AC6145M**	SUMIBORON BN7125/BNC500	GZ **AC4125K**	GZ **AC4125K**	EF **AC5025S**	EG **AC5025S**	EM **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2135**	SUMIBORON **BN350**
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~	☞ A20 ~	

★ mark: Global stocked item
Blank: Made-to-order item
BNC500 is for ductile cast iron.
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

S-PTFN type / B-PTFN type



Medium Diameter General-purpose
Lever Lock

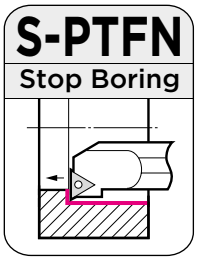
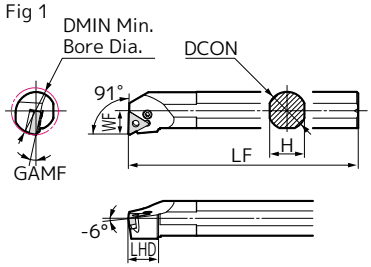


Fig 1



Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
																		 (For Hexagonal hole)
Steel	**S20S-PTFN R/L 11**			**25**	20	18	250	30	13	-12°	-		1	LCL3T-SD	LCS3B-SD	-	-	LH020
	S25T-PTFN R/L 16	★	★	**32**	25	23	300	43,3	17	-13°	TN□□1604		1	LCL3SD	LCS3TB-SD	LST317SD	LSP3SD	LH025
	S32U-PTFN R/L 16	★	★	**40**	32	30	350	49,6	27	-12°			1					
	S40V-PTFN R/L 16	★		**50**	40	37	400	49,5	27	-11°			1					
	S50W-PTFN R/L 16			**63**	50	47	450	56	35	-10°			1					
	S40V-PTFN R/L 22	★		**50**	40	37	400	59	27	-11°	TN□□2204		1	LCL4SD	LCS42BS-SD	LST42SD	LSP4SD	LH030
	S50W-PTFN R/L 22			**63**	50	47	450	66	35	-10°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Medium Diameter General-purpose
Lever Lock

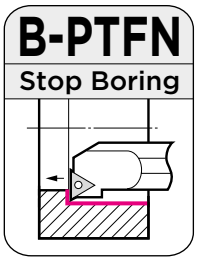


Fig 1

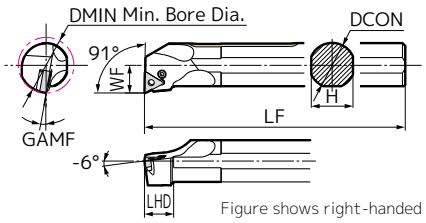


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
																		 (For Hexagonal hole)
Steel with Anti-Vibration Mechanism	**B25T-PTFN R/L1604-32**	★		**32**	25	23	300	16	21	-12°	TN□□1604	B48 ~	1	LCL3	LCS3	LST317CA	LSP3	LH025
	B32U-PTFN R/L1604-40	★		**40**	32	30	350	20	21	-10°			1					
	B40W-PTFN R/L1604-50	★		**50**	40	37	450	25	21	-10°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S-ETFN type

Steel

Medium Diameter General-purpose
Pin Lock

S-ETFN
Stop Boring

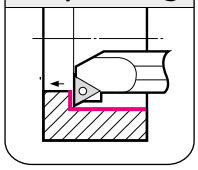


Fig 1

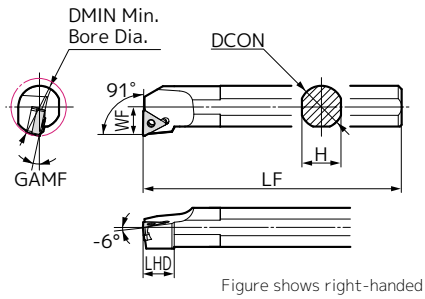


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench
																 (For Hexagonal hole)
Steel	**S25R-ETFN R/L1604-34**	★		**34**	25	23	200	17	18	-12°	TN□□1604	**B48 ~**	1	STW323	CPB34	LH025
	S32S-ETFN R/L1604-44	★		**44**	32	30	250	22	20	-10°			1		CPB35	
	S40T-ETFN R/L2204-54	★		**54**	40	37	300	27	25	-10°	TN□□2204	**B53 ~**	1	STW434	CPB44T	LH030
	S50U-ETFN R/L2204-70			**70**	50	47	350	35	32	-10°			1		CPB45T	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-DTFN type / D-DTFN type / S-PTFN type / B-PTFN type / S-ETFN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD Photo — GU; Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-Ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE T1500Z	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	SUMIBORON BN7125/BNC500	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIDIA DA1000	SUMIBORON BNC2115	SUMIBORON BN1000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	SUMIBORON BN7125/BNC500	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	SUMIBORON BN7125/BNC500	GZ AC4125K	GZ AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2135	SUMIBORON BN350
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~			☞ A18 ~			☞ A22 ~	☞ A20 ~	

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S-SVJB type / B-SVJB type



Internal Profiling
Screw-on

S-SVJB

Concave Facing and Bottom Facing

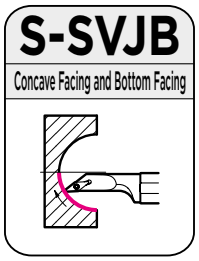


Fig 1

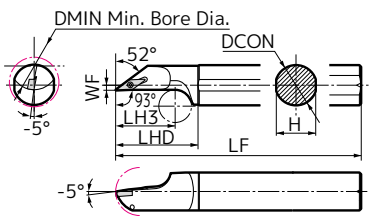


Fig 2

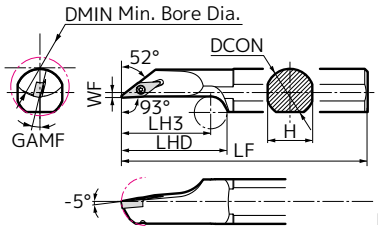


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Head LH3	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S20R-SVJB R/L1103-25**	★	★	**25**	20	19	200	2.0	42	29	—	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	S25S-SVJB R/L1103-30	★	★	**30**	25	24	250	3.5	50	36	—			1			
	S32T-SVJB R/L1604-40	★	★	**40**	32	30	300	3.5	75	60	-8°	VB□□1604	**B118**	2	BFTX03508	**2.0**	TRX10
	S40T-SVJB R/L1604-50	★	★	**50**	40	37	300	4.5	95	75	-7°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

B-SVJB

Concave Facing and Bottom Facing

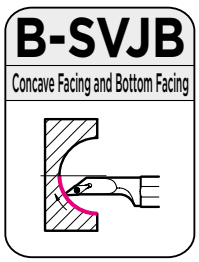


Fig 1

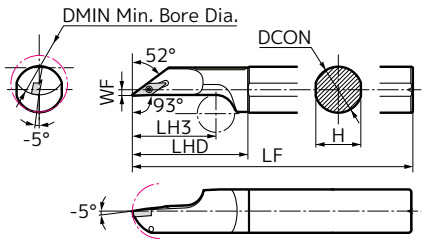


Figure shows right-handed (R) tool.

SumiTurn X-Bar

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Head LH3	Applicable Insert ISO Cat. No.	Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B20R-SVJB R/L1103-25**	★	★	**25**	20	19	200	2.0	55	37.5	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	B25S-SVJB R/L1103-30	★	★	**30**	25	24	250	3.5	62	45			1			

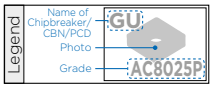
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts

◀·· S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	FB **T1500Z**	GU **AC8025P**	LB **AC6030M**	GU **AC6030M**	SUMIBORON BN7125/BNC500	No Chipbreaker **AC4015K**	SI **AC5015S**	AY **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
High-precision	FYS **AC1030U**	SI **AC1030U**	FYS **AC1030U**	SI **AC1030U**	SUMIBORON BN7125/BNC500	—	SI **AC5015S**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A16 ~		☞ A18 ~	☞ A22 ~	☞ A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

S-SVJC type



Internal Profiling
Screw-on

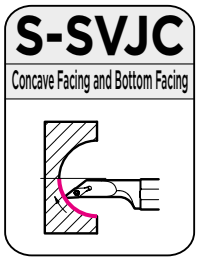


Fig 1

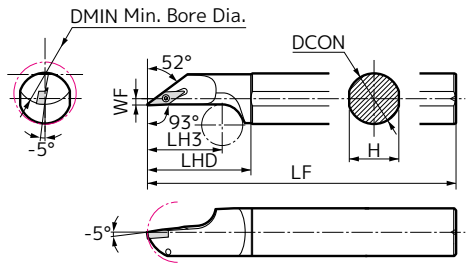


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Head LH3	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S12M-SVJC R/L0802-16**	★	★	**16**	12	11	150	2.0	30	21	VC□□0802	**B119**	1	BFTX0204N	**0.5**	TRX06
	S16Q-SVJC R/L0802-20	★	★	**20**	16	15	180	2.0	40	29			1			

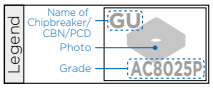
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts

◀·· S-SVJC type / S-SVQC type / A-SVQC type / S-SVUC type / A-SVUC type / S-SVZC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	FB T1500Z	SU AC8025P	LB AC6030M	SU AC6030M	SU AC5015S	SU AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000	SUMIDIA DA1090
High-precision	FC T1500A	SI AC1030U	FC AC1030U	SI AC1030U	FC AC5015S	SI AC5015S	SUMIBORON BNC2115	SUMIBORON BN2000	SUMIDIA BINDERLESS NPD10
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A18 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-SVQB type / B-SVQB type



Internal Profiling
Screw-on

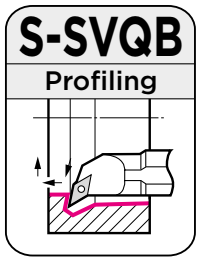


Fig 1

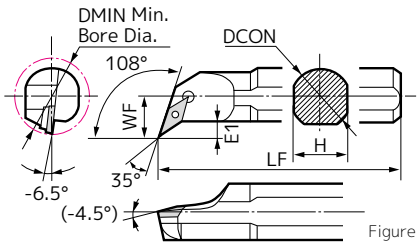


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Bolt	Shim	Flat Insert Screw	N·m	Wrench	Wrench for Bolt
																		(For Torx hole)	(For Hexagonal hole)
Steel	S16R - SVQB R/L 11	★	★	22	16	15	200	13		VB□□1103		1	—	—	—	BFTX02506N	1.5	TRX08	—
	S20S - SVQB R/L 11	★	★	27	20	18	250	15				1							
	S25T - SVQB R/L 16	★	★	35	25	23	300	20,5		VB□□1604		1	—	—	—	BFTX03508	2.0	TRX10	—
	S32U - SVQB R/L 16	★	★	40	32	30	350	22				1	VP32B	BH03504	SVP32				LH020
	S40V - SVQB R/L 16			50	40	37	400	27				1	VP40B						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Zu E1: Weder Klaus noch ich wissen wo wir das herbekommen. KI

Smart Damper™ ☞E14



Internal Profiling
Screw-on

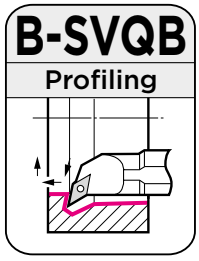


Fig 1

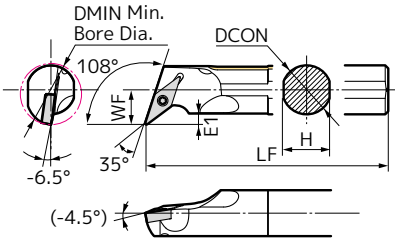


Figure shows right-handed (R) tool.

SumiTurn X-Bar

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench
															(For Torx hole)
Steel with Anti-Vibration Mechanism	B16R-SVQB R/L1103-20	★		20	16	15	200	11.5	4	VB□□1103	B116 ~	1	BFTX02508NV	1.5	TRX08
	B20R-SVQB R/L1103-25	★		25	20	18	200	14.5	5			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

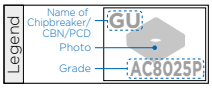
Smart Damper™ ☞E14

Applicable Inserts

◀·· S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	FB T1500Z	GU AC8025P	LB AC6030M	GU AC6030M	SUMIBORON BN7125/BNC500	No Chipbreaker AC4015K	SI AC5015S	AY H1	SUMIBORON BNC2125	SUMIBORON BN2000
High-precision	FYS AC1030U	SI AC1030U	FYS AC1030U	SI AC1030U	SUMIBORON BN7125/BNC500	—	SI AC5015S	—	SUMIBORON BNC2115	SUMIBORON BN1000
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A16 ~		☞ A18 ~	☞ A22 ~	☞ A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)
BNC500 is for ductile cast iron.

C-SVQB type



Internal Profiling
Screw-on

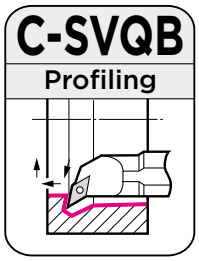


Fig 1

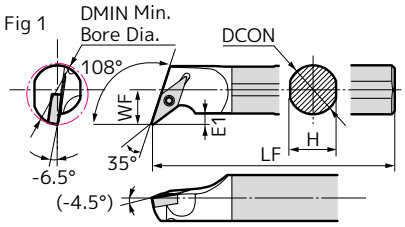


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Carbide	**C16R-SVQB R/L1103-20**	★		**20**	16	15	200	11.5	4	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	C20R-SVQB R/L1103-25	★		**25**	20	18	200	14.5	5			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

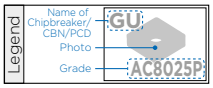
Smart Damper™ ☞ E14

Applicable Inserts

◀·· S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SUMIBORON** BN7125/BNC500	**No Chipbreaker** **AC4015K**	**SI** **AC5015S**	**AY** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**
High-precision	**FYS** **AC1030U**	**SI** **AC1030U**	**FYS** **AC1030U**	**SI** **AC1030U**	**SUMIBORON** BN7125/BNC500	—	**SI** **AC5015S**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A16 ~		☞ A18 ~	☞ A22 ~	☞ A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

S-SVQC type / A-SVQC type



Internal Profiling
Screw-on

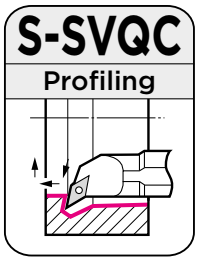


Fig 1

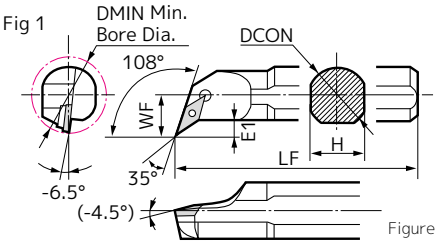


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S10M-SVQC R/L0802-14**	★	★	**14**	10	9	150	8.5	4.5	VC□□0802	**B119**	1	BFTX0204N	**0.5**	TRX06
	S12M-SVQC R/L0802-16	★	★	**16**	12	11	150	9.5	4.5			1			
	S16Q-SVQC R/L1103-20	★	★	**20**	16	15	180	11.5	4.5	VC□□1103	**B119 ~**	1	BFTX02508NV	**1.5**	TRX08

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

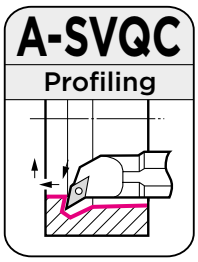


Fig 1

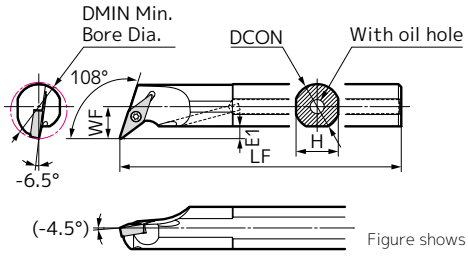


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

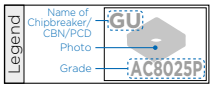
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A16Q-SVQC R/L1103-20**	★	★	**20**	16	15	180	11.5	4.5	VC□□1103	**B119 ~**	1	BFTX02508NV	**1.5**	TRX08
	A20R-SVQC R/L1103-25	★	★	**25**	20	18	200	14.5	5.5			1			
	A25S-SVQC R/L1103-32	★	★	**32**	25	23	250	19.0	7.5	VC□□1604		1	BFTX03508	**2.0**	TRX10
	A25S-SVQC R/L1604-34	★	★	**34**	25	23	250	20.5	9.0		**B120 ~**	1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SVJC type / S-SVQC type / A-SVQC type / S-SVUC type / A-SVUC type / S-SVZC type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SU** **AC5015S**	**SU** **AC5025S**	**SUMIDIA** **DA1000**	**AG** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA90**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC5015S**	**SUMIDIA** **DA1000**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
Recommended Cutting Conditions	**A10 ~**		**A14 ~**		**A18 ~**		**A22 ~**		**A20 ~**		**M2 ~**

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-SVUB type / B-SVUB type



Internal Profiling
Screw-on

S-SVUB

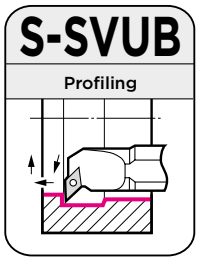


Fig 1

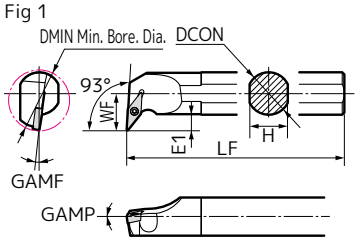


Fig 2

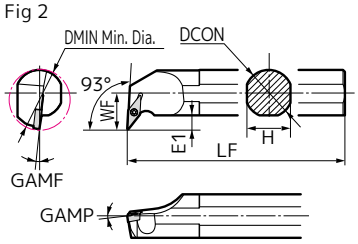


Fig 3

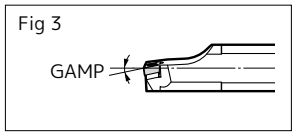


Figure shows right-handed (R) tool.

Dimensions (mm)

Holder

Parts

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Rake Angle GAMP	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Bolt	Shim	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)	Wrench for Bolt (For Hexagonal hole)
Steel	**S16R-SVUB R/L1102-22**	★	★	**22**	16	15	200	13.0	5.0	-7.0	-2.8	VB□□1102	B116 ~	1	—	—	—	BFTX02506N	**1.5**	TRX08	—
	S20S-SVUB R/L1102-27	★	★	**27**	20	18	250	15.0	5.0	-5.0	-2.8			1							
	S20R-SVUB R/L1103-28	★	★	**28**	20	18	200	17.5	7.5	-7.5	-3.0	VB□□1103		1	—	—	—	BFTX02508NV			—
	S25S-SVUB R/L1103-32	★	★	**32**	25	23	250	19.0	7.5	-6.5	-2,5			1	—	—	—				—
	S25S-SVUB R/L1604-34	★	★	**34**	25	23	250	20.5	9.0	-7.5	-3.0	VB□□1604	B118 ~	2	—	—	—	BFTX03508	**2.0**	TRX10	—
	S25T-SVUB R/L1604-35	★	★	**35**	25	23	300	20.5	9.0	-7.5	-2.8			2	VP32B	BH03504	SVP32				—
	S32T-SVUB R/L1604-40	★	★	**40**	32	30	300	23.5	10.5	-7.5	-3.0			2	VP32B	BH03504	SVP32				LH020
	S32U-SVUB R/L1604-40	★	★	**40**	32	30	350	22.0	9.0	-7.5	-2.8			2	VP40B	BH03504	SVP32				
	S40T-SVUB R/L1604-50	★	★	**50**	40	37	300	29.5	12.5	-7.5	-3.0			2	VP40B	BH03504	SVP32				

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E14



Internal Profiling
Screw-on

SumiTurn X-Bar

SumiSmall

B-SVUB

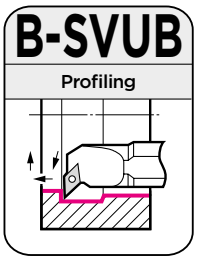


Fig 1

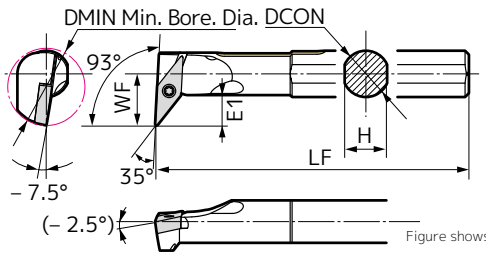


Figure shows right-handed (R) tool.

Dimensions (mm)

Holder

Parts

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench
Steel with Anti-Vibration Mechanism	**B12M-SVUB R/L1103-20**	★		**20**	12	11	150	13.5	8	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	B16R-SVUB R/L1103-25	★		**25**	16	15	200	16.5	9			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

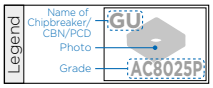
Smart Damper™ E14

Applicable Inserts

◀·· S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	FB **T1500Z**	GU **AC8025P**	LB **AC6030M**	GU **AC6030M**	SUMIBORON BN7125/BNC500	No Chipbreaker **AC4015K**	SI **AC5015S**	AY **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
High-precision	FYS **AC1030U**	SI **AC1030U**	FYS **AC1030U**	SI **AC1030U**	SUMIBORON BN7125/BNC500	—	SI **AC5015S**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
Recommended Cutting Conditions	A10 ~		A14 ~		A16 ~		A18 ~	A22 ~	A20 ~	

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

BNC500 is for ductile cast iron.

D-SVUB type/C-SVUB type



Internal Profiling
Screw-on

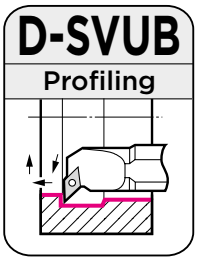


Fig. 1

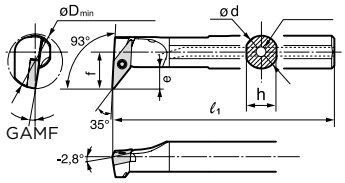
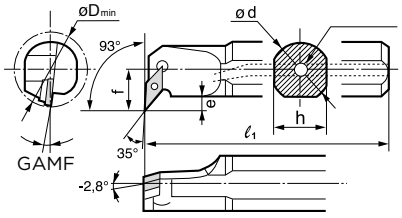


Fig. 2



SumiTurn X Bar

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**D16R - SVUB R/L 1103-22**	★	★	**22**	16	15	200	13	5	-7°	VB□□1103		1	BFTX02508NV	-	TRX08
	D20S - SVUB R/L 1103-27	★	★	**27**	20	18	250	15	5	-5°			1			
	D25T - SVUB R/L 1604-35	★	★	**35**	25	23	300	20.5	9	-7,5°	VB□□1604		2	BFTX03508	**2.0**	TRX10
	D32T - SVUB R/L 1604-40	★	★	**40**	32	30	300	22	9	-7,5°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Smart Damper™ E14



Internal Profiling
Screw-on

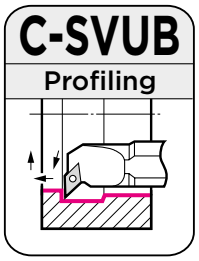


Fig 1

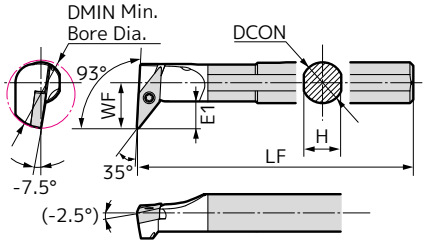


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Carbide	**C12M-SVUB R/L1103-20**	★		**20**	12	11	150	13.5	8	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	C16R-SVUB R/L1103-25	★		**25**	16	15	200	16.5	9			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

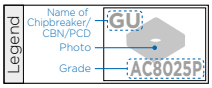
Smart Damper™ E14

Applicable Inserts

S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	FB **T1500Z**	GU **AC8025P**	LB **AC6030M**	GU **AC6030M**	SUMIBORON BN7125/BNC500	No Chipbreaker **AC4015K**	SI **AC5015S**	AY **H1**	SUMIBORON **BNC2125**	SUMIBORON **BN2000**
High-precision	FYS **AC1030U**	SI **AC1030U**	FYS **AC1030U**	SI **AC1030U**	SUMIBORON BN7125/BNC500	—	SI **AC5015S**	—	SUMIBORON **BNC2115**	SUMIBORON **BN1000**
Recommended Cutting Conditions	A10 ~		A14 ~		A16 ~		A18 ~	A22 ~	A20 ~	

BNC500 is for ductile cast iron.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-SVUC type / A-SVUC type



Internal Profiling
Screw-on

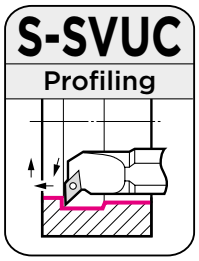


Fig 1

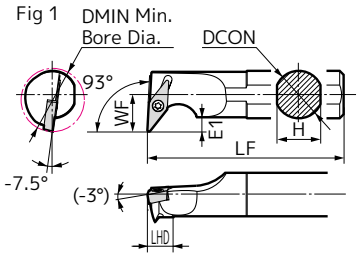


Fig 2

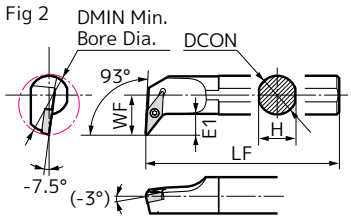


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel	**S12M-SVUC R/L0802-16**	★	★	**16**	12	11	150	9.5	6.5	3.5	VC□□0802	**B119**	1	BFTX0204N	**0.5**	TRX06
	S16Q-SVUC R/L0802-20	★	★	**20**	16	15	180	11.5	—	3.5			2			
	S16Q-SVUC R/L1103-25	★	★	**25**	16	15	180	16.5	—	8.5	VC□□1103	B119 ~	2	BFTX02508NV	**1.5**	TRX08

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

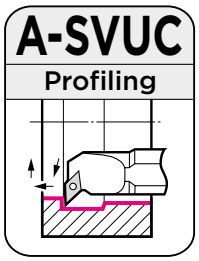


Fig 1

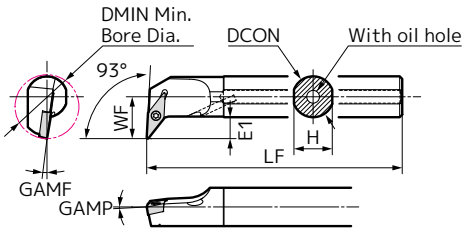


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

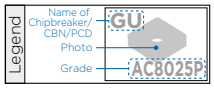
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Rake Angle GAMP	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Oil Hole	**A16Q-SVUC R/L1103-25**	★	★	**25**	16	15	180	16.5	8.5	-7.5°	-3.0°			1			
	A20R-SVUC R/L1103-28	★	★	**28**	20	18	200	17.5	7.5	-7.5°	-3.0°	VC□□1103	B119 ~	1	BFTX02508NV	**1.5**	TRX08
	A25S-SVUC R/L1103-32	★	★	**32**	25	23	250	19.0	7.5	-6.5°	-2.5°			1			
	A25S-SVUC R/L1604-34	★	★	**34**	25	23	250	20.5	9.0	-7.5°	-3.0°	VC□□1604	B120 ~	1	BFTX03508	**2.0**	TRX10

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SVJC type / S-SVQC type / A-SVQC type / S-SVUC type / A-SVUC type / S-SVZC type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SU** **AC5015S**	**SU** **AC5025S**	**SUMIDIA** **DA1000**	**AG** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA90**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC5015S**	**SUMIDIA** **DA1000**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A18 ~		☞ A22 ~		☞ A20 ~		☞ M2 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)
N·m Recommended Tightening Torque (N·m)

S-SVZB type / B-SVZB type



Internal Profiling
Screw-on

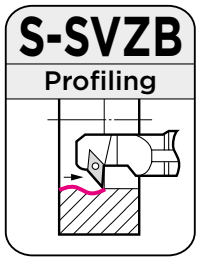


Fig 1

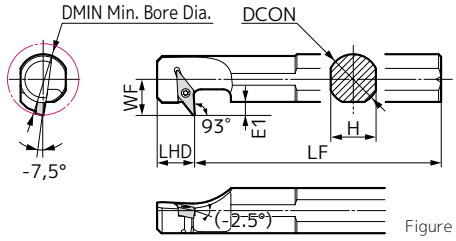


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Bolt	Shim	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)	Wrench for Bolt (For Hexagonal hole)
Steel	**S16R-SVZB R/L1102-22**	★	★	**22**	16	15	200	—	13.0	5.0	VB□□1102	B116 ~	1	—	—	—	BFTX02506N	**1.5**	TRX08	—
	S20S-SVZB R/L1102-27	★	★	**27**	20	18	250	—	15.0	5.0			1	—	—	—				—
	S20R-SVZB R/L1103-25	★	★	**25**	20	18	200	15	14.5	5.5	VB□□1103		1	—	—	—	BFTX02508NV			—
	S25S-SVZB R/L1103-32	★	★	**32**	25	23	250	15	19.0	7.5			1	—	—	—				—
	S25S-SVZB R/L1604-34	★	★	**34**	25	23	250	20	20.5	9.0	VB□□1604	B118 ~	2	—	—	—	BFTX03508	**2.0**	TRX10	—
	S25T-SVZB R/L1604-35	★	★	**35**	25	23	300	—	20.5	9.0			2	VP32B	BH03504	SVP32				—
	S32T-SVZB R/L1604-40	★	★	**40**	32	30	300	20	22.0	9.0			2							LH020
	S32U-SVZB R/L1604-40	★	★	**40**	32	30	350	—	22.0	9.0			2	VP40B						
	S40T-SVZB R/L1604-50	★	★	**50**	40	37	300	20	27.0	10.0			2							

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.



Internal Profiling
Screw-on

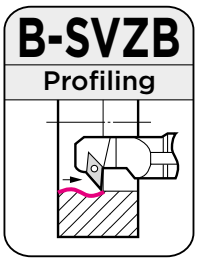


Fig 1

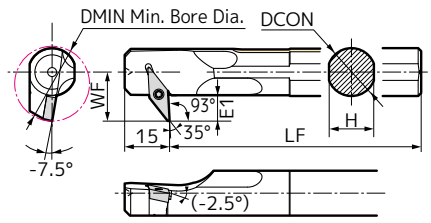


Figure shows right-handed (R) tool.

SumiTurn X-Bar

SumiSmall

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel with Anti-Vibration Mechanism	**B12M-SVZB R/L1103-20**	★		**20**	12	11	150	13.5	8	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	B16R-SVZB R/L1103-25	★		**25**	16	15	200	16.5	9			1			

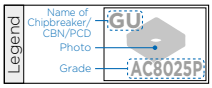
Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts

S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	**FB T1500Z**	**GU AC8025P**	**LB AC6030M**	**GU AC6030M**	**SUMIBORON BN7125/BNC500**	**No Chipbreaker AC4015K**	**SI AC5015S**	**AY H1**	**SUMIBORON BNC2125**	**SUMIBORON BN2000**
High-precision	**FYS AC1030U**	**SI AC1030U**	**FYS AC1030U**	**SI AC1030U**	**SUMIBORON BN7125/BNC500**	—	**SI AC5015S**	—	**SUMIBORON BNC2115**	**SUMIBORON BN1000**
Recommended Cutting Conditions	A10 ~		A14 ~		A16 ~		A18 ~	A22 ~	A20 ~	

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

C-SVZB type / D-SVZB type

Internal Profiling
Screw-on

C-SVZB
Profiling

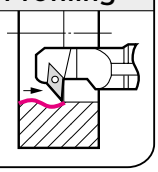


Fig 1

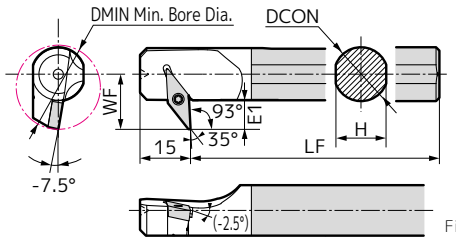


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Parts: Flat Insert Screw	Parts: Wrench (N·m)	Parts: Wrench (For Torx hole)
Carbide	**C12M-SVZB R/L1103-20**	★		**20**	12	11	150	13.5	8	VB□□1103	B116 ~	1	BFTX02508NV	**1.5**	TRX08
	C16R-SVZB R/L1103-25	★		**25**	16	15	200	16.5	9			1			

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Internal Profiling
Screw-on

D-SVZB
Copying

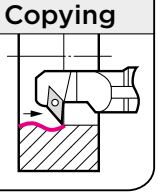


Fig.1

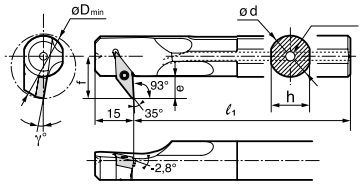
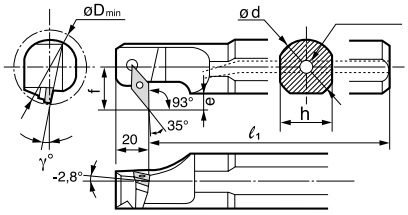


Fig.2



Holder

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	γ	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Parts: Flat Insert Screw	Parts: Wrench (N·m)	Parts: Wrench (For Torx hole)
Steel	**D16R - SVZB R/L 1103-22**	★	★	**22**	16	15	200	13	5	-7°	VB□□1103		1	BFTX02508NV	**1.5**	TRX08
	D20S - SVZB R/L 1103-27	★	★	**27**	20	18	250	15	5	-5°			1			
	D25T - SVZB R/L 1604-35	★	★	**35**	25	23	300	20,5	9	-7,5°	VB□□1604		2	BFTX03508	**2.0**	TRX10
	D32T - SVZB R/L 1604-40	★	★	**40**	32	30	300	22	9	-7,5°			2			

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts

◀·· S-SVJB type / B-SVJB type / S-SVQB type / B-SVQB type / C-SVQB type / S-SVUB type / B-SVUB type / C-SVUB type / S-SVZB type / B-SVZB type / C-SVZB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SUMIBORON** BN7125/BNC500	**No Chipbreaker** **AC4015K**	**SI** **AC5015S**	**AY** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**
High-precision	**FYS** **AC1030U**	**SI** **AC1030U**	**FYS** **AC1030U**	**SI** **AC1030U**	**SUMIBORON** BN7125/BNC500	—	**SI** **AC5015S**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A16 ~		☞ A18 ~	☞ A22 ~	☞ A20 ~	

BNC500 is for ductile cast iron.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

S-SVZC type



Internal Profiling
Screw-on

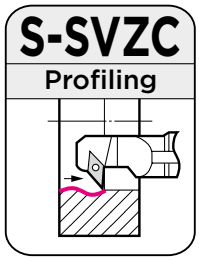
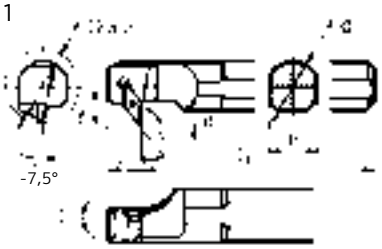


Fig 1



Holder

Parts

Dimensions (mm)

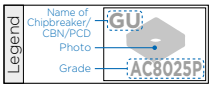
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Offset E1	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	Flat Insert Screw N·m	Wrench (For Torx hole)
Steel	**S12M-SVZC R/L0802-16**	★	★	**16**	12	11	150	10	9.5	4.5	VC□□0802	**B119**	1	BFTX0204N	**0.5**	TRX06
	S16Q-SVZC R/L1103-20	★	★	**20**	16	15	180	15	11.5	4.5	VC□□1103	**B119~**	1	BFTX02508NV	**1.5**	TRX08

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-SVJC type / S-SVQC type / A-SVQC type / S-SVUC type / A-SVUC type / S-SVZC type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-Ferrous) High-precision/ Finishing	N (Non-Ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Materials —
General Machining	**FB** **T1500Z**	**GU** **AC8025P**	**LB** **AC6030M**	**GU** **AC6030M**	**SU** **AC5015S**	**SU** **AC5025S**	**SUMIDIA** **DA1000**	**AG** **H1**	**SUMIBORON** **BNC2125**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA90**
High-precision	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC1030U**	**FF** **AC1030U**	**SI** **AC5015S**	**SUMIDIA** **DA1000**	—	**SUMIBORON** **BNC2115**	**SUMIBORON** **BN1000**	**SUMIDIA BINDERLESS** **NPD10**
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A18 ~		☞ A22 ~		☞ A20 ~		☞ M2 ~

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

S-SWUB type



Internal Finishing (Small Diameter)
Screw-on

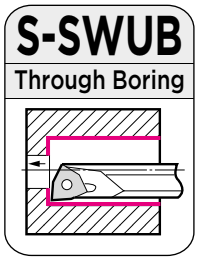


Fig 1

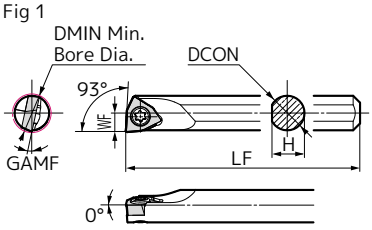


Fig 2

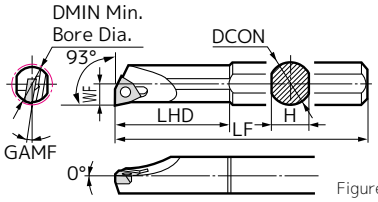


Figure shows right-handed (R) tool.

SumiSmall

Holder

Dimensions (mm)

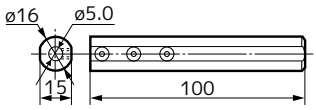
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig
Steel	S05H-SWUB R/L0601-06K	★	★	5.5	5	4.7	100	2.75	—	-12°	WB□□0601	B124	1
	S08H - SWUB R/L 06-01	★	★	5.5	8	7.0	100	3.00	18	-12°			1
	S08H-SWUB R/L0601-06	★	★	5.5	8	7.0	100	2.75	18	-12°			2
	S08H-SWUB R/L0601-08	★	★	8.0	8	7.0	100	4.00	30	-10°			2
	S08H-SWUB R/L0802-10	★	★	10.0	8	7.0	100	5.00	18	-13°	WB□□0802	B124	2
	S10K-SWUB R/L0802-12	★	★	12.0	10	9.0	125	6.00	20	-10°			2

Parts

Flat Insert Screw	Wrench (N·m)	Wrench (For Torx hole)
BFTX0203N	0.5	TRX06
BFTX02205N	0.5	TRX06

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
S05H-SWUB R/L0601-06K requires the separately sold HBB516 adapter sleeve.
Holders marked with * show an ISO Cat. No.

Fig 1



Adapter Sleeve

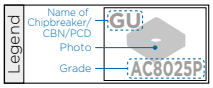
Cat. No.	Stock	Fig
HBB 516	★	1

Adapter sleeve is optional.

Applicable Inserts ◂·· S-SWUB type / C-SWUB type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 -).
- Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-Ferrous) —	H (Hardened Steel) Uncoated
General Machining	FW T1500A	FX AC1030U	FX AC1030U	FX AC1030U	SUMIBORON BN7125	FX AC5015S	SUMIDIA DA1000	SUMIBORON BNX20
High-precision	FW T1500A	FX AC1030U	FX AC1030U	FX AC1030U	SUMIBORON BN7125	FX AC5015S	SUMIDIA DA1000	SUMIBORON BNX20
Recommended Cutting Conditions	☞ A10 ~		☞ A14 ~		☞ A16 ~	☞ A18 ~	☞ A22 ~	☞ A20 ~

The FY type chipbreaker (corner radius RE 0.2mm and below) and SUMIBORON and SUMIDIA inserts can also be used for stop-boring.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

C-SWUP type /S-SWUP type



Internal Finishing (Small Diameter)
Screw-on

C-SWUB
Through Boring

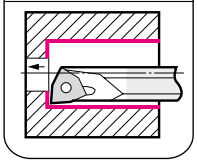


Fig 1

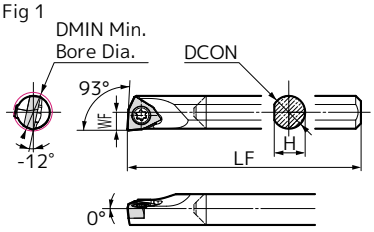


Fig 2

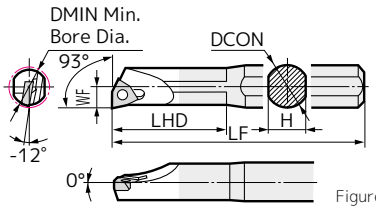


Figure shows right-handed (R) tool.

SumiSmall

Holder

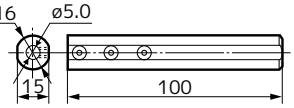
Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Carbide	**C05H-SWUB R/L0601-06K**	★	★	**5.5**	5	4.7	100	2.75	—	WB□□0601	**B124**	1	BFTX0203N	**0.5**	TRX06
	C08K - SWUB R/L 06	★	★	**5.5**	8	7.0	125	3.00	30			2			
	C08K-SWUB R/L0601-06	★	★	**5.5**	8	7.0	125	2.75	30						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
C05H-SWUB R/L0601-06K requires the separately sold HBB516 adapter sleeve.
Holders marked with * show an ISO Cat. No.

Fig 1



Adapter Sleeve

Cat. No.	Stock	Fig
HBB 516	★	1

Adapter sleeve is optional.



Internal Finishing (Small Diameter)
Screw-on

S-SWUP
Through Boring

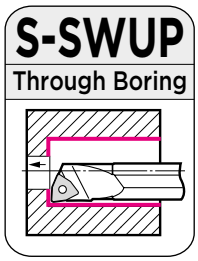


Fig 1

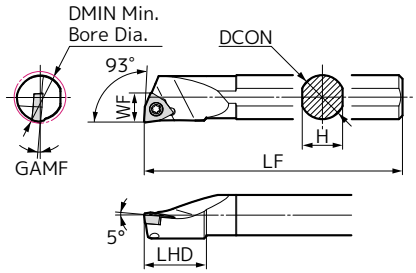


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

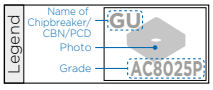
Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
Steel	**S12M-SWUP R/L1102-14**	★	★	**14**	12	11	150	7	17	-6°	WP□□1102	**B125**	1	BFTX02505N	**1.1**	TRX08
	S16Q-SWUP R/L1102-18	★	★	**18**	16	15	180	9	18	-3°			1			
	S16Q-SWUP R/L1603-18	★	★	**18**	16	15	180	9	18	-3°	WP□□1603	**B125**	1	BFTX0407N	**3.4**	TRX15
	S20R-SWUP R/L1603-22	★	★	**22**	20	18	200	11	18	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◀·· S-SWUP type

1st Recommended Insert

★ Refer as well to the Insert Selection Guide (Page A10 ~).
★ Depending on the insert size, some combinations cannot be made to order or manufactured.



Application Range / Process	P (Steel)	M (Stainless Steel)
	Medium Cutting	Medium Cutting
General Machining	LB AC8025P	LB AC6030M
Recommended Cutting Conditions	A10 ~	A14 ~

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-DWLN type / D-DWLN type



Medium Diameter General-purpose
Double Clamp

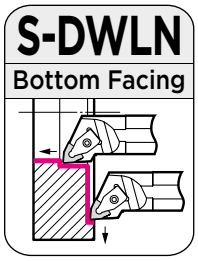


Fig 1

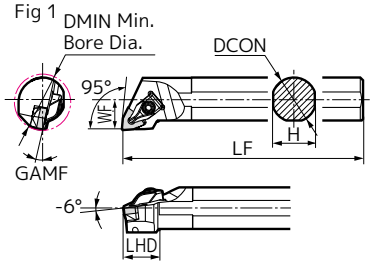


Fig 2

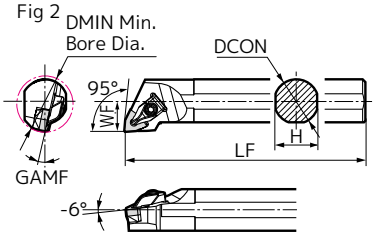


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
Steel	**S32S-DWLN R/L0604-40**	★	★	**40**	32	30	250	22.0	29	-10°	WN□□0604	B61 ~	1	SCP4	**5.0**	WNS0603B	BFTX0307N	LH040	LH025
	S25R-DWLN R/L0804-32	★	★	**32**	25	23	200	17.0	26	-12°	WN□□0804	B63 ~	1	SCP2	**5.0**	WNS0803B	BFTX0307N	LH040	LH025
	S32S-DWLN R/L0804-40	★	★	**40**	32	30	250	22.0	26	-10°			1			WNS0804B	BFTX0409N		
	S40T-DWLN R/L0804-50	★	★	**50**	40	37	300	27.0	26	-10°			1						
	S50U-DWLN R/L0804-63	★	★	**63**	50	47	350	31.5	—	-10°			2						

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)

Clamp Set Parts ☞E86



Medium Diameter General-purpose
Double Clamp

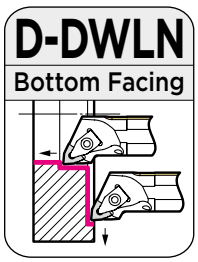


Fig 1

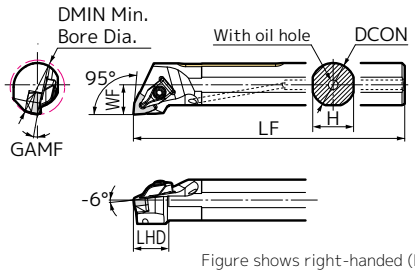


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Top Hex Wrench (For Hexagonal hole)	Bottom Hex Wrench (For Hexagonal hole)
Steel with Anti-Vibration Mechanism and Oil Hole	**D25T-DWLN R/L0804-32**	★	★	**32**	25	23	300	17	26	-12°	WN□□0804	B63 ~	1	SCP2	**5.0**	WNS0803B	BFTX0307N	LH040	LH025
	D32T-DWLN R/L0804-40	★	★	**40**	32	30	300	22	26	-10°			1			WNS0804B	BFTX0409N		
	D40U-DWLN R/L0804-50	★	★	**50**	40	37	350	27	26	-10°			1						

Feed direction of applicable inserts differs according to machining application. (Refer to * note below)

Clamp Set Parts ☞E86

***Applicable Inserts for DWLN type**

For internal boring: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

S-PWLN type

W 80° | 95° | Steel

Medium Diameter General-purpose
Lever Lock

S-MWLN
Bottom Facing

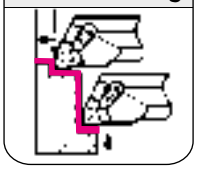
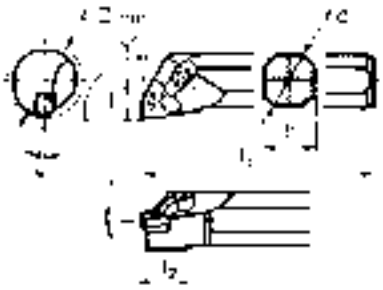


Fig 1



Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Clamp	Double screw	Shim	Pin	Wrench (For Hexagonal hole)
Steel	**S25R - MWLN R/L 08**	★	★	**32**	25	23	200	17	28	-15°			1					
	S32S - MWLN R/L 08	★	★	**40**	32	30	250	22	28	-14°	WN□□0804		1	HE060011W	WB 6-16	HE060011E	HE060011P	LH025, LH030
	S40T - MWLN R/L 08	★	★	**50**	40	37	300	27	28	-12°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

W 80° | 95° | Steel

Medium Diameter General-purpose
Lever Lock

S-PWLN
Bottom Facing

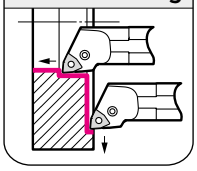


Fig 1

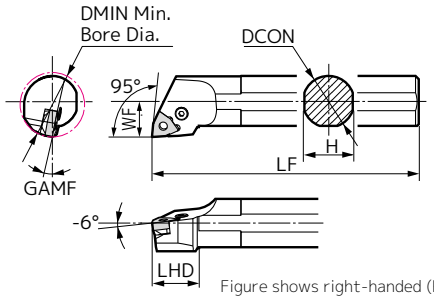


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Shank Material	ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert ISO Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench (For Hexagonal hole)
Steel	**S32S-PWLN R/L0604-40**	★	★	**40**	32	30	250	22	29	-10°	WN□□0604	**B61 ~**	1	LCL3	LCS3	LSW317	LSP3	LH025
	S32S-PWLN R/L0804-40	★	★	**40**	32	30	250	22	29	-10°			1					
	S40T-PWLN R/L0804-50	★	★	**50**	40	37	300	27	29	-10°	WN□□0804	**B63 ~**	1	LCL4	LCS4	LSW42B	LSP4	LH030

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◀·· S-DWLN type / D-DWLN type / S-PWLN type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (Page A10 ~).
- Depending on the insert size, some combinations cannot be made to order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — GU; Photo; Grade — AC8025P

Application Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	FE T150OZ	GU AC8115P	MU AC8020P	EF AC6020M	EG AC6020M	EM AC6030M	UZ AC4010K	GZ AC4010K	EF AC5015S	EG AC5015S	EM AC5015S	SUMIBORON BNC2115	SUMIBORON BN2000
General Machining	SU AC8115P	GU AC8025P	MU AC8025P	EF AC6030M	EG AC6030M	EM AC6135M	GZ AC4015K	GZ AC4015K	EF AC5015S	EG AC5015S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000
Interrupted Cutting	SX AC8025P	UX AC8035P	MX AC8035P	EF AC6030M	EH AC6135M	EM AC6145M	GZ AC4125K	No Chipbreaker AC4125K	EF AC5025S	EG AC5025S	EM AC5025S	SUMIBORON BNC2125	SUMIBORON BN2000
Recommended Cutting Conditions	☞ A10 ~			☞ A14 ~			☞ A16 ~		☞ A18 ~			☞ A20 ~	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

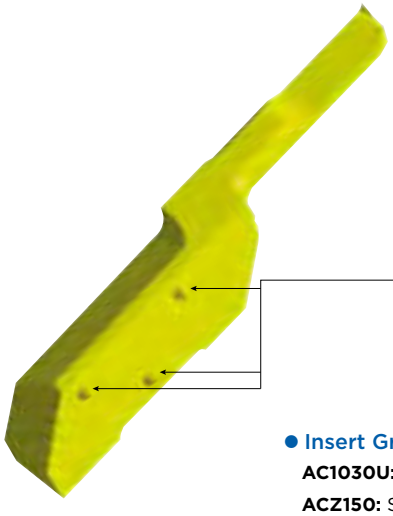
CKB series



■ Features

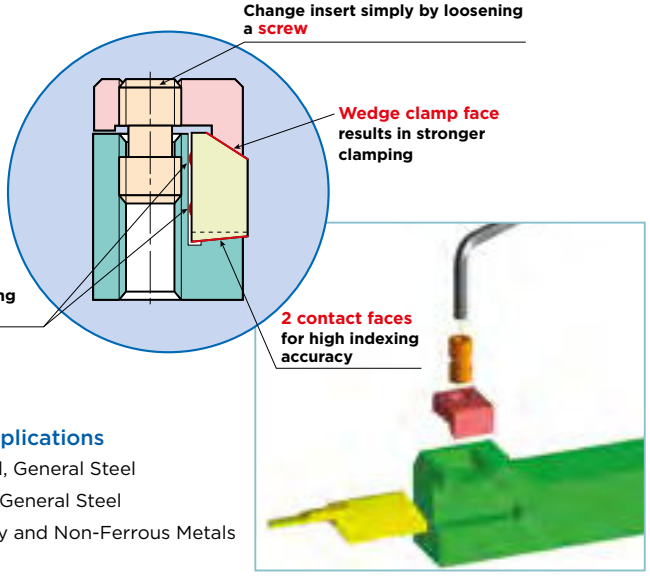
- Minimum bore diameters from ø1mm to ø5mm are now in stock.
- Maximum boring depth of 20mm (ø4, ø5mm).
- Can be used with various small lathes.
- Unique design ensures high indexing accuracy.
- Indexable inserts are easily handled.

● High indexing accuracy



3 points of contact for high indexing accuracy

● Indexable inserts are easily handled



● Insert Grades and Applications

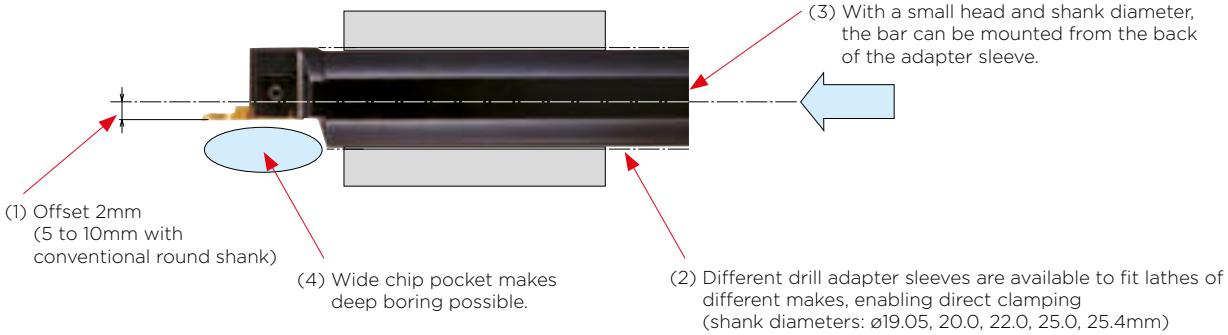
AC1030U: Stainless Steel, General Steel

ACZ150: Stainless Steel, General Steel

DA2200: Aluminum Alloy and Non-Ferrous Metals

■ Round Shank Holders (Small Offset) [S-CKB-S type]

● 2mm offset bars expand application range.

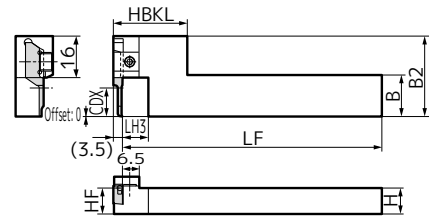


CKB series

Very Small Diameter L type
Clamp-on

SumiSmall

Fig 1



H = HF (Cutting Edge Height)

Holder

Dimensions (mm)

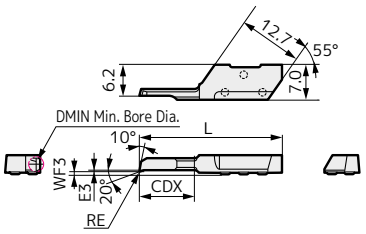
ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Boring Depth CDX	Width B2	Head HBKL	Head LH3	Applicable Insert	Fig	Parts: Clamp Plate	Parts: Double Screw	Parts: Wrench
CKBS R1016-16-06	★	10	16	125	6	26	28.5	10	KBMX L0206-OOR	1	CKBW16	WB4-8	LH020 (For Hexagonal hole)
CKBS R1016-16-11	★	10	16	125	11	31	28.5	10	KBMX L03,04,0511-OOR	1			
CKBS R1216-16-06	★	12	16	150	6	26	28.5	10	KBMX L0206-OOR	1			
CKBS R1216-16-11	★	12	16	150	11	31	28.5	10	KBMX L03,04,0511-OOR	1			
CKBS R1216-16-20	★	12	16	150	20	40	28.5	10	KBMX L04,0520-OOR	1			
CKBS R1616-16-06	★	16	16	150	6	26	34.5	16	KBMX L0206-OOR	1			
CKBS R1616-16-11	★	16	16	150	11	31	34.5	16	KBMX L03,04,0511-OOR	1			
CKBS R1616-16-20	★	16	16	150	20	40	34.5	16	KBMX L04,0520-OOR	1			

KBMX type (For Very Small Diameter L type Holder) (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge Position WF3	Offset E3	Corner Radius RE	Overall Length L	Boring Depth CDX
KBMX L0206-05R	★	**2.0**	0.5	0.25	0.05	23.5	6
KBMX L0206-20R	★	**2.0**	0.5	0.25	0.20	23.5	6
KBMX L0311-05R	★	**3.0**	0.5	0.30	0.05	28.5	11
KBMX L0311-20R	★	**3.0**	0.5	0.30	0.20	28.5	11
KBMX L0411-05R	★	**4.0**	0.5	0.50	0.05	28.5	11
KBMX L0411-20R	★	**4.0**	0.5	0.50	0.20	28.5	11
KBMX L0420-05R	★	**4.0**	0.5	0.50	0.05	37.5	20
KBMX L0420-20R	★	**4.0**	0.5	0.50	0.20	37.5	20
KBMX L0511-05R	★	**5.0**	0.5	0.50	0.05	28.5	11
KBMX L0511-20R	★	**5.0**	0.5	0.50	0.20	28.5	11
KBMX L0520-05R	★	**5.0**	0.5	0.50	0.05	37.5	20
KBMX L0520-20R	★	**5.0**	0.5	0.50	0.20	37.5	20

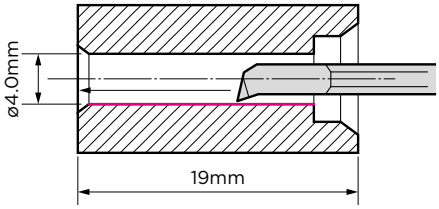
Fig 1



* Figure shows left-handed insert with a right-hand cutting edge

Application Example (1)

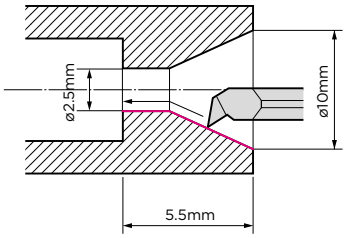
Electronic Component (Free Cutting Stainless Steel)



Holder : CKBR1212-16
Insert : **KBMXR 0420-05**
Cutting Speed : vc = 60m/min
Feed Rate : f = 0.01mm/rev
Depth of Cut : ap = 0.03mm
Coolant : Non-water-soluble coolant

Application Example (2)

Automotive Fuel Pump Component (SUS430)



Holder : CKBR1616-16
Insert : **KBMXR 0206-05T**
Cutting Speed : vc = 80m/min
Feed Rate : f = 0.03mm/rev
Depth of Cut : ap = 0.05mm
Coolant : Non-water-soluble coolant

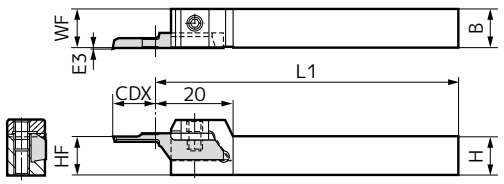
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

CKB series

Square Shank
Clamp-on

Fig 1



SumiSmall

Refer to pages E67 to E68 for E3 and CDX values.

Holder

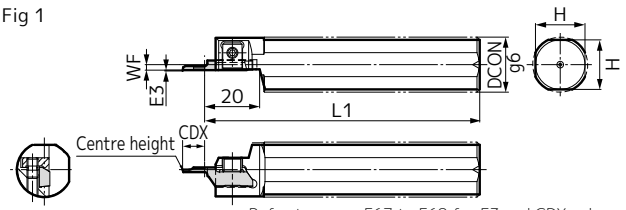
Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length L1	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp Plate	Double Screw	Wrench (For Hexagonal hole)
CKB R1010-16	★	10	10	100	10	10	1			
CKB R1212-16	★	12	12	125	12	12	1			
CKB R1616-16	★	16	16	125	16	16	1	CKBW16	WB4-8	LH020
CKB R2020-16	★	20	20	125	20	20	1			
CKB R2525-16		25	25	150	25	25	1			

Round Shank (Small Offset)
Clamp-on

Fig 1



SumiSmall

Refer to pages E67 to E68 for E3 and CDX values.

Holder

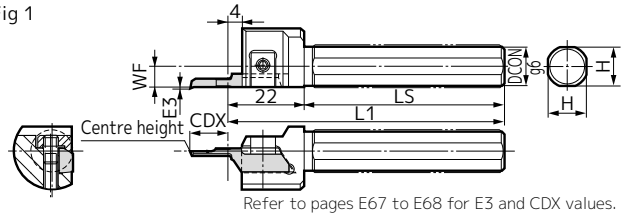
Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length L1	Cutting Edge Distance WF	Fig	Clamp Plate	Double Screw	Wrench (For Hexagonal hole)
S1905H-CKB RS-16	★	19.05	17	100	2	1			
S20H-CKB RS-16	★	20	18	100	2	1			
S22K-CKB RS-16	★	22	19	125	2	1	CKBW16	WB4-8	LH020
S25K-CKB RS-16	★	25	23	125	2	1			
S254K-CKB RS-16	★	25.4	23	125	2	1			

Round Shank
Clamp-on

Fig 1



SumiSmall

Refer to pages E67 to E68 for E3 and CDX values.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length L1	Length LS	Cutting Edge Distance WF	Fig	Clamp Plate	Double Screw	Wrench (For Hexagonal hole)
S10F-CKB R-16	★	10	9	80	58	5	1			
S12F-CKB R-16	★	12	11	80	58	6	1			
S16H-CKB R-16	★	16	15	100	78	8	1	CKBW16	WB4-8	LH020
S19K-CKB R-16	★	19.05	17	125	103	8	1			
S20K-CKB R-16	★	20	18	125	103	10	1			

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

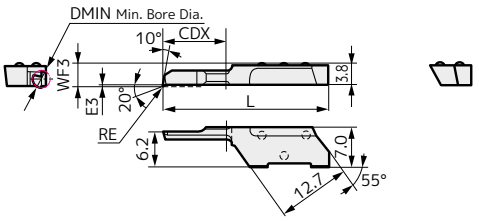
CKB series

(Coated Carbide)

KBMX type (Internal Boring)

Dimensions (mm)

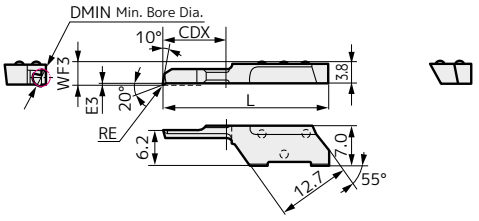
ISO Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge Position WF3	Offset E3	Corner Radius RE	Overall Length L	Boring Depth CDX
KBMX R0103-05	★	**1.0**	4.00	0.20	0.05	20.5	3
KBMX R0103-20	★	**1.0**	4.00	0.20	0.20	20.5	3
KBMX R01506-05	★	**1.5**	4.05	0.25	0.05	23.5	6
KBMX R01506-20	★	**1.5**	4.05	0.25	0.20	23.5	6
KBMX R0206-05	★	**2.0**	4.05	0.25	0.05	23.5	6
KBMX R0206-20	★	**2.0**	4.05	0.25	0.20	23.5	6
KBMX R0311-05	★	**3.0**	4.10	0.30	0.05	28.5	11
KBMX R0311-20	★	**3.0**	4.10	0.30	0.20	28.5	11
KBMX R0411-05	★	**4.0**	4.30	0.50	0.05	28.5	11
KBMX R0411-20	★	**4.0**	4.30	0.50	0.20	28.5	11
KBMX R0420-05	★	**4.0**	4.30	0.50	0.05	37.5	20
KBMX R0420-20	★	**4.0**	4.30	0.50	0.20	37.5	20
KBMX R0511-05	★	**5.0**	4.50	0.70	0.05	28.5	11
KBMX R0511-20	★	**5.0**	4.50	0.70	0.20	28.5	11
KBMX R0520-05	★	**5.0**	4.50	0.70	0.05	37.5	20
KBMX R0520-20	★	**5.0**	4.50	0.70	0.20	37.5	20



KBMX-T type (Internal Boring)

Dimensions (mm)

ISO Cat. No.	AC2150	Min. Bore Dia. DMIN	Cutting Edge Position WF3	Offset E3	Corner Radius RE	Overall Length L	Boring Depth CDX
KBMX R0103-05T	★	**1.0**	4.00	0.20	0.05	20.5	3
KBMX R0103-20T	★	**1.0**	4.00	0.20	0.20	20.5	3
KBMX R01506-05T	★	**1.5**	4.05	0.25	0.05	23.5	6
KBMX R01506-20T	★	**1.5**	4.05	0.25	0.20	23.5	6
KBMX R0206-05T	★	**2.0**	4.05	0.25	0.05	23.5	6
KBMX R0206-20T	★	**2.0**	4.05	0.25	0.20	23.5	6
KBMX R0311-05T	★	**3.0**	4.10	0.30	0.05	28.5	11
KBMX R0311-20T	★	**3.0**	4.10	0.30	0.20	28.5	11
KBMX R0411-05T	★	**4.0**	4.30	0.50	0.05	28.5	11
KBMX R0411-20T	★	**4.0**	4.30	0.50	0.20	28.5	11
KBMX R0511-05T	★	**5.0**	4.50	0.70	0.05	28.5	11
KBMX R0511-20T	★	**5.0**	4.50	0.70	0.20	28.5	11



Recommended Cutting Conditions ☞E73

KBMX type	KBMX-T type
	
Compacts chip curl for evacuation.	Evacuates chips toward the back. Lowers cutting force to prevent chattering.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

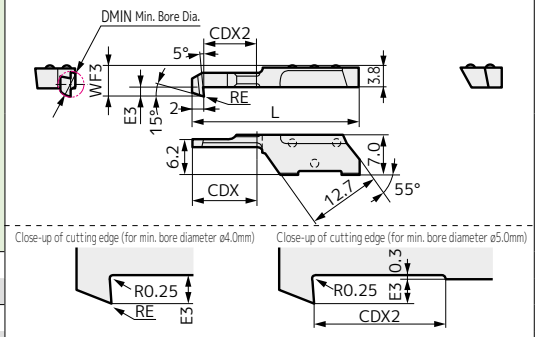
CKB series

(Coated Carbide / SUMIDIA)

KBMZ type (Internal Back Turning)

Dimensions (mm)

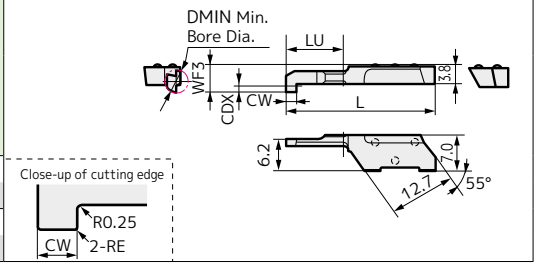
ISO Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge Distance WF3	Offset E3	Corner Radius RE	Overall Length L	Maximum Boring Depth CDX	Boring Depth CDX2
KBMZ R0411-05	★	**4.0**	5.10	1.3	0.05	28.5	11	9
KBMZ R0411-20	★	**4.0**	5.10	1.3	0.20	28.5	11	9
KBMZ R0511-05	★	**5.0**	5.10	1.3	0.05	28.5	11	9
KBMZ R0511-20	★	**5.0**	5.10	1.3	0.20	28.5	11	9



KBMG type (Internal Grooving)

Dimensions (mm)

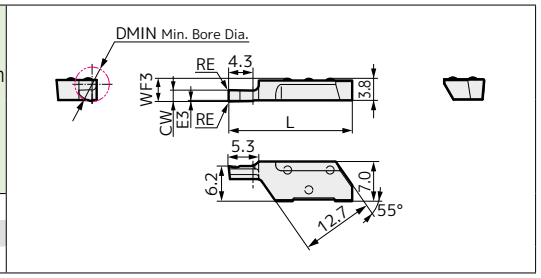
ISO Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge Distance WF3	Width of Cut CW	Corner Radius RE	Overall Length L	Maximum Groove Depth CDX	Machinable Length LU
KBMG R0411-05	★	**4.0**	4.90	1.00	0.05	28.5	0.8	11
KBMG R0411-10	★	**4.0**	4.90	2.00	0.10	28.5	0.8	11
KBMG R0511-05	★	**5.0**	5.10	1.00	0.05	28.5	1.0	11
KBMG R0511-10	★	**5.0**	5.10	2.00	0.10	28.5	1.0	11



KBMF type (Face Grooving)

Dimensions (mm)

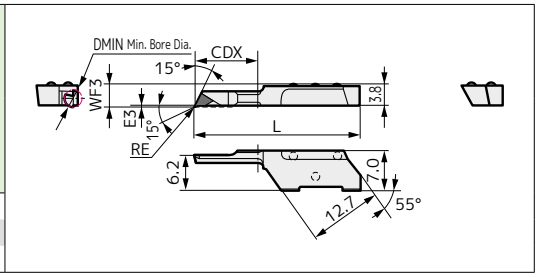
ISO Cat. No.	ACZ150	Min. Bore Dia. DMIN	Cutting Edge Distance WF3	Offset E3	Width of Cut CW	Corner Radius RE	Overall Length L	Maximum Groove Depth
KBMF R0615-05	★	**6.0**	4.0	0.2	1.5	0.05	21.8	4.0
KBMF R0620-05	★	**6.0**	4.0	0.2	2.0	0.05	21.8	4.0
KBMF R0630-05	★	**6.0**	4.0	0.2	3.0	0.05	21.8	4.0



KBMX type (SUMIDIA/Internal Boring)

Dimensions (mm)

ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	Cutting Edge Distance WF3	Offset E3	Corner Radius RE	Overall Length L	Maximum Boring Depth CDX
KBMX R0311-10	★	**3.0**	4.1	0.3	0.1	28.5	11
KBMX R0411-10	★	**4.0**	4.3	0.5	0.1	28.5	11
KBMX R0511-10	★	**5.0**	4.5	0.7	0.1	28.5	11



Recommended Cutting Conditions E73

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

Recommended Cutting Conditions (CKB series)

Work Material		P General Steel	M Stainless Steel	N Non-Ferrous Metal		S Exotic Alloy
Internal Boring	Insert Grades	ACZ150/AC1030U	ACZ150/AC1030U	ACZ150/AC1030U	DA2200	ACZ150/AC1030U
	Spindle Speed n (min^{-1})	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	5,000 to 15,000	2,000 to 6,000
	Depth of Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2
	Feed Rate f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05
Internal Back Turning	Spindle Speed n (min^{-1})	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	—	2,000 to 6,000
	Depth of Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	—	up to 0.2
	Feed Rate f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	—	up to 0.05
Internal Grooving	Spindle Speed n (min^{-1})	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	—	2,000 to 4,000
	Feed Rate f (mm/rev)	up to 0.03	up to 0.03	up to 0.05	—	up to 0.02
Face Grooving	Spindle Speed n (min^{-1})	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	—	2,000 to 4,000
	Feed Rate f (mm/rev)	up to 0.03	up to 0.03	up to 0.05	—	up to 0.02

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

BXBR series



■ Features

- Economical 2-cornered bars
- Boring depths of 5D (5 times the shank diameter)
- Usable at any desired overhang
- Shank size = min. bore diameter for easy selection. (Available from ø2.0mm to ø5.0mm in 0.5mm increments)
- KBMX type cutting edge used. Bars with no chipbreaker are also available in stock
- Corner radius expansion (RE = 0.15mm)
- AC1030U with excellent cutting edge quality now in stock (bars with chipbreaker only)

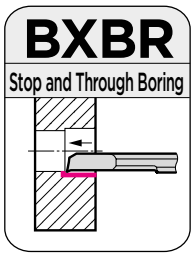
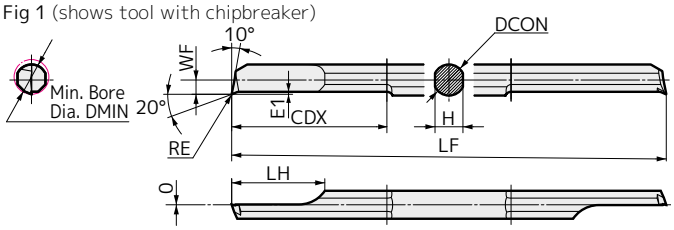


Fig 1 (shows tool with chipbreaker)



Internal Finishing (Small Diameter)
Solid

SumiSmall

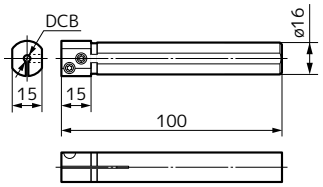
Bar (With Chipbreaker) (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U	ACZ150	AC530U	*Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LH	Maximum Boring Depth CDX	Offset E1	Corner Radius RE	Applicable Adapter Sleeve	Fig
BXBR 02005R	★	★		**2.0**	2.0	1.8	50	0.80	6.0	10.0	0.20	0.05	HBX 2016	1
BXBR 02015R	★			**2.0**	2.0	1.8	50	0.80	6.0	10.0	0.20	0.15	HBX 2016	1
BXBR 02020R	★	★		**2.0**	2.0	1.8	50	0.80	6.0	10.0	0.20	0.20	HBX 2016	1
BXBR 02505R	★	★		**2.5**	2.5	2.2	50	1.05	7.5	12.5	0.20	0.05	HBX 2516	1
BXBR 02515R	★			**2.5**	2.5	2.2	50	1.05	7.5	12.5	0.20	0.15	HBX 2516	1
BXBR 02520R	★	★		**2.5**	2.5	2.2	50	1.05	7.5	12.5	0.20	0.20	HBX 2516	1
BXBR 03005R	★	★		**3.0**	3.0	2.7	50	1.30	9.0	15.0	0.25	0.05	HBX 3016	1
BXBR 03015R	★			**3.0**	3.0	2.7	50	1.30	9.0	15.0	0.25	0.15	HBX 3016	1
BXBR 03020R	★	★		**3.0**	3.0	2.7	50	1.30	9.0	15.0	0.25	0.20	HBX 3016	1
BXBR 03505R	★	★		**3.5**	3.5	3.1	60	1.55	10.5	17.5	0.25	0.05	HBX 3516	1
BXBR 03515R	★			**3.5**	3.5	3.1	60	1.55	10.5	17.5	0.25	0.15	HBX 3516	1
BXBR 03520R	★	★		**3.5**	3.5	3.1	60	1.55	10.5	17.5	0.25	0.20	HBX 3516	1
BXBR 04005R	★	★		**4.0**	4.0	3.6	60	1.80	12.0	20.0	0.35	0.05	HBX 4016	1
BXBR 04015R	★			**4.0**	4.0	3.6	60	1.80	12.0	20.0	0.35	0.15	HBX 4016	1
BXBR 04020R	★	★		**4.0**	4.0	3.6	60	1.80	12.0	20.0	0.35	0.20	HBX 4016	1
BXBR 04505R	★	★		**4.5**	4.5	4.1	70	2.05	13.5	22.5	0.35	0.05	HBX 4516	1
BXBR 04515R	★			**4.5**	4.5	4.1	70	2.05	13.5	22.5	0.35	0.15	HBX 4516	1
BXBR 04520R	★	★		**4.5**	4.5	4.1	70	2.05	13.5	22.5	0.35	0.20	HBX 4516	1
BXBR 05005R	★	★		**5.0**	5.0	4.5	70	2.30	15.0	25.0	0.40	0.05	HBX 5016	1
BXBR 05015R	★			**5.0**	5.0	4.5	70	2.30	15.0	25.0	0.40	0.15	HBX 5016	1
BXBR 05020R	★	★		**5.0**	5.0	4.5	70	2.30	15.0	25.0	0.40	0.20	HBX 5016	1

* Boring depth CDX or less.

Fig 1



Adapter Sleeve

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2016	★	2.0	BXBR 020○○R(-NB)	1
HBX 2516	★	2.5	BXBR 025○○R(-NB)	1
HBX 3016	★	3.0	BXBR 030○○R(-NB)	1
HBX 3516	★	3.5	BXBR 035○○R(-NB)	1
HBX 4016	★	4.0	BXBR 040○○R(-NB)	1
HBX 4516	★	4.5	BXBR 045○○R(-NB)	1
HBX 5016	★	5.0	BXBR 050○○R(-NB)	1

BXBR bars can also be used with HBB type adapter sleeves.
Commercially available adapter sleeves may also be used.
Refer to page E76 for details on HBX type adapter sleeves.

Parts (for Adapter Sleeve)

Applicable Adapter Sleeve	Flat Insert Screw		Set Screw	Wrench
		N·m		 (For Torx hole)
HBX○○○○	BFTX0409N	3.4	BT06035T	TRD15

Adapter sleeve is optional.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Carbide

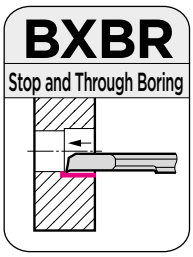
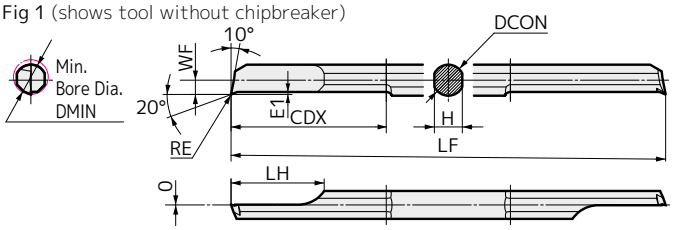


Fig 1 (shows tool without chipbreaker)



Internal Finishing (Small Diameter)
Solid

SumiSmall

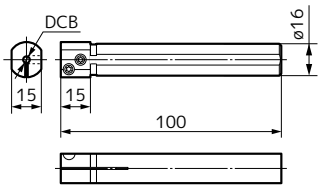
Bar (No Chipbreaker) (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U	ACZ150	AC530U	*Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LH	Maximum Boring Depth CDX	Offset E1	Corner Radius RE	Applicable Adapter Sleeve	Fig
BXBR 02005R-NB		★		**2.0**	2.0	1.8	50	0.80	6.0	10.0	0.20	0.05	HBX 2016	1
BXBR 02020R-NB		★		**2.0**	2.0	1.8	50	0.80	6.0	10.0	0.20	0.20	HBX 2016	1
BXBR 02505R-NB		★		**2.5**	2.5	2.2	50	1.05	7.5	12.5	0.20	0.05	HBX 2516	1
BXBR 02520R-NB		★		**2.5**	2.5	2.2	50	1.05	7.5	12.5	0.20	0.20	HBX 2516	1
BXBR 03005R-NB		★		**3.0**	3.0	2.7	50	1.30	9.0	15.0	0.25	0.05	HBX 3016	1
BXBR 03020R-NB		★		**3.0**	3.0	2.7	50	1.30	9.0	15.0	0.25	0.20	HBX 3016	1
BXBR 03505R-NB		★		**3.5**	3.5	3.1	60	1.55	10.5	17.5	0.25	0.05	HBX 3516	1
BXBR 03520R-NB		★		**3.5**	3.5	3.1	60	1.55	10.5	17.5	0.25	0.20	HBX 3516	1
BXBR 04005R-NB		★		**4.0**	4.0	3.6	60	1.80	12.0	20.0	0.35	0.05	HBX 4016	1
BXBR 04020R-NB		★		**4.0**	4.0	3.6	60	1.80	12.0	20.0	0.35	0.20	HBX 4016	1
BXBR 04505R-NB		★		**4.5**	4.5	4.1	70	2.05	13.5	22.5	0.35	0.05	HBX 4516	1
BXBR 04520R-NB		★		**4.5**	4.5	4.1	70	2.05	13.5	22.5	0.35	0.20	HBX 4516	1
BXBR 05005R-NB		★		**5.0**	5.0	4.5	70	2.30	15.0	25.0	0.40	0.05	HBX 5016	1
BXBR 05020R-NB		★		**5.0**	5.0	4.5	70	2.30	15.0	25.0	0.40	0.20	HBX 5016	1

* Boring depth CDX or less.

Fig 1



Adapter Sleeve

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2016	★	2.0	BXBR 020○○R(-NB)	1
HBX 2516	★	2.5	BXBR 025○○R(-NB)	1
HBX 3016	★	3.0	BXBR 030○○R(-NB)	1
HBX 3516	★	3.5	BXBR 035○○R(-NB)	1
HBX 4016	★	4.0	BXBR 040○○R(-NB)	1
HBX 4516	★	4.5	BXBR 045○○R(-NB)	1
HBX 5016	★	5.0	BXBR 050○○R(-NB)	1

BXBR bars can also be used with HBB type adapter sleeves.
Commercially available adapter sleeves may also be used.
Refer to page E76 for details on HBX type adapter sleeves.

Parts (for Adapter Sleeve)

Applicable Adapter Sleeve	Flat Insert Screw		Set Screw	Wrench
		N·m		(For Torx hole)
HBX○○○○	BFTX0409N	**3.4**	BT06035T	TRD15

Adapter sleeve is optional.

Recommended Cutting Conditions

Work Material		P General Steel	M Stainless Steel	N Non-Ferrous Metal	S Exotic Alloy
Internal Boring	Insert Grades	ACZ150/AC1030U	ACZ150/AC1030U	ACZ150/AC1030U	ACZ150/AC1030U
	Spindle Speed n (min^{-1})	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	2,000 to 6,000
	Depth of Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	up to 0.2
	Feed Rate f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	up to 0.05

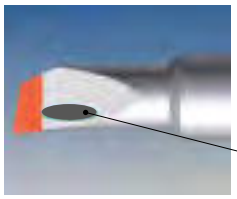
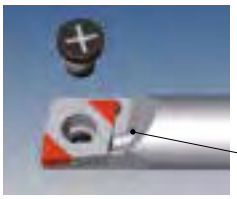
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BSME series / SEXC series



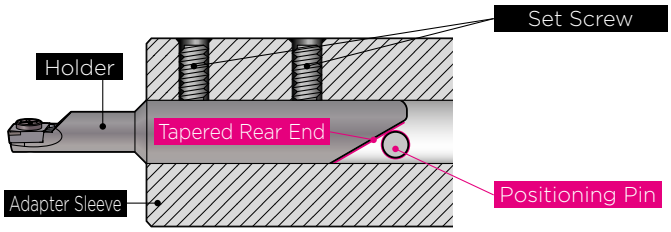
■ Features

- ★ For internal boring of hardened steel with min. bore diameters from ø2.5mm.
- ★ Achieves high-precision cutting edge positioning thanks to the newly developed clamp mechanism.
- ★ Realises high-efficiency machining by switching from grinding to cutting in the small diameter range.
- ★ BSME series (brazed type)
  Can be used with bore diameters from ø2.5 to 5.0mm.
- ★ SEXC series (indexable Insert type)
  Can be used with bore diameters from ø4.0 to 6.0mm.
  Expansion of coated carbide and cermet grades.
- ★ Economical 2-cornered insert.

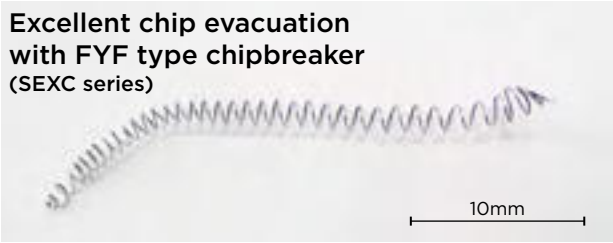
Brazed CBN type BSME series	Indexable Insert type SEXC series
Min. Bore Dia.: ø2.5 to 5.0mm	Min. Bore Dia.: ø4.0 to 6.0mm
High-quality, unique cutting edge shape  Internal Coolant Supply (Standard)	2-cornered insert used  Internal Coolant Supply (Standard)

Clamp Mechanism

Achieves high-precision cutting edge positioning by combining a holder with a tapered rear end and an adapter sleeve with an internal positioning pin. (common to BSME series and SEXC series)

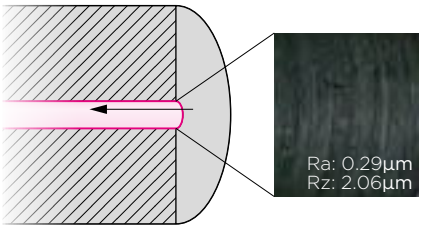


Excellent chip evacuation with FYF type chipbreaker (SEXC series)



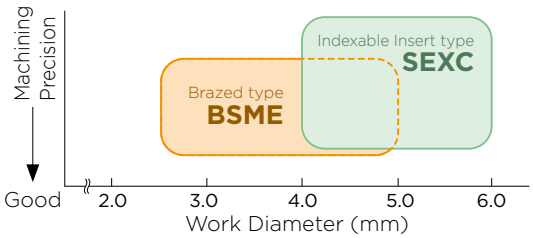
Work Material: SUS304 Internal Boring, Insert: ECEM 03X102L-FYF (AC1030U)
Cutting Conditions: vc = 100m/min, f = 0.05mm/rev, ap = 0.03mm, Work Dia.: ø4

Excellent machined surface quality with cermet grade (SEXC series)

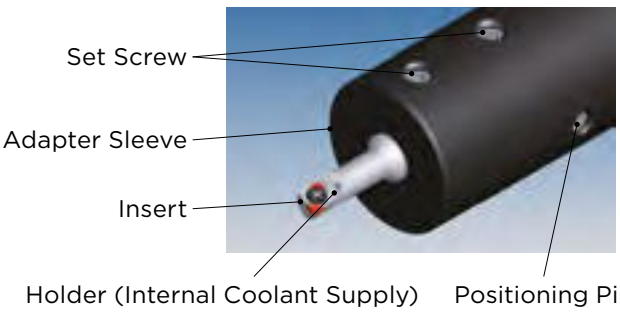


Work Material: SCM415 Internal Boring, Insert: ECEM 03X102L-FYF (T1500A)
Cutting Conditions: vc = 100 m/min, f = 0.03 mm/rev, ap = 0.03 mm

Application Range



Basic Configuration



BSME series

CBN

SUMIBORON
Brazed

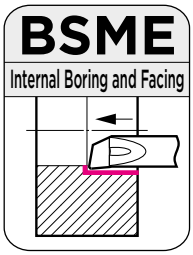


Fig 1

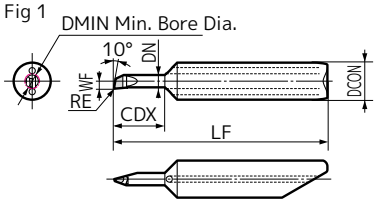


Fig 2

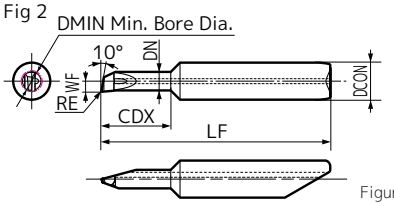


Figure shows right-handed (R) tool.

Holder (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000 R	BN2000 L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Maximum Boring Depth CDX	Corner Radius RE	Applicable Adapter Sleeve	Fig
BSME R/L25020D2S6	★	★	**2.5**	6.0	2.0	32.0	1.20	5.3	0.2		1
BSME R/L25020D3S6	★	★	**2.5**	6.0	2.0	34.5	1.20	7.8	0.2		1
BSME R/L25020D4S6			**2.5**	6.0	2.0	37.0	1.20	10.3	0.2		1
BSME R/L30020D2S6	★	★	**3.0**	6.0	2.5	32.8	1.45	6.3	0.2		2
BSME R/L30020D3S6	★	★	**3.0**	6.0	2.5	35.8	1.45	9.3	0.2		2
BSME R/L30020D4S6			**3.0**	6.0	2.5	38.8	1.45	12.3	0.2		2
BSME R/L35020D2S6	★	★	**3.5**	6.0	3.0	33.5	1.70	7.3	0.2		2
BSME R/L35020D3S6	★	★	**3.5**	6.0	3.0	37.0	1.70	10.8	0.2		2
BSME R/L35020D4S6			**3.5**	6.0	3.0	40.5	1.70	14.3	0.2	HBSM6020	2
BSME R/L40020D2S6	★	★	**4.0**	6.0	3.5	33.9	1.95	8.3	0.2	HBSM6020A	2
BSME R/L40020D3S6	★	★	**4.0**	6.0	3.5	37.9	1.95	12.3	0.2		2
BSME R/L40020D4S6			**4.0**	6.0	3.5	41.9	1.95	16.3	0.2		2
BSME R/L45020D2S6	★	★	**4.5**	6.0	4.0	35.0	2.20	9.3	0.2		2
BSME R/L45020D3S6	★	★	**4.5**	6.0	4.0	39.5	2.20	13.8	0.2		2
BSME R/L45020D4S6			**4.5**	6.0	4.0	44.0	2.20	18.3	0.2		2
BSME R/L50020D2S6	★	★	**5.0**	6.0	4.5	35.8	2.45	10.3	0.2		2
BSME R/L50020D3S6	★	★	**5.0**	6.0	4.5	40.8	2.45	15.3	0.2		2
BSME R/L50020D4S6			**5.0**	6.0	4.5	45.8	2.45	20.3	0.2		2

The BSME series requires HBSM6020(A) adapter sleeve (sold separately).

Identification Code

BSM Series Code | **E** Carbide Shank with Oil Hole | **R** Feed Direction | **350** Min. Bore Dia. | **20** Cutting Edge Corner Radius | **D2** L/D | **S6** Shank Dia.

Fig 1

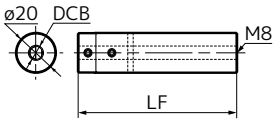
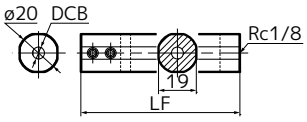


Fig 2



Adapter Sleeve (Sold Separately)

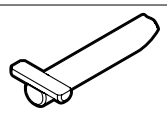
Parts Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM6020	★	6.0	80	1	BT0506	TH025
HBSM6020A	★	6.0	80	2		

Mounting Method E79

Alignment Jig (Sold Separately) For HBSM6020 adapter sleeve

ISO Cat. No.	Stock
AFBSM60	★



This jig is used for centring adapter sleeves when setting them into adapter sleeve holders.

Recommended Cutting Conditions

Work Material	H Hardened Steel	
Spindle Speed n (min^{-1})	Above 2,000	Above 2,000
Depth of Cut ap (mm)	0.01-0.15	0.01-0.15
Feed Rate f (mm/rev)	0.01-0.10	0.01-0.10

May cause chattering or chipping at the cutting edge during low-speed machining.
Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SEXC series

Expansion | Carbide Coolant Hole | CBN

Carbide / Cermet / SUMIBORON
Screw-on

SumiSmall

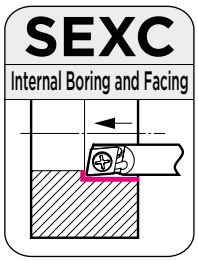


Fig 1

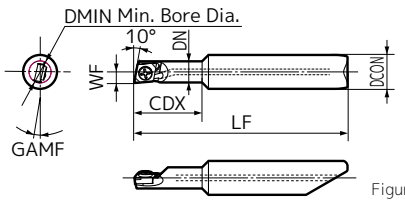


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Boring Depth CDX	Rake Angle GAMF	Applicable Adapter Sleeve	Fig	Bolt	Bolt N·m	Wrench
E06D2-SEXC R/L03-04P	★	★	**4.0**	6.0	3.75	33.75	1.95	8	-13°	HBSM6020 HBSM6020A	1	MIB1.6-2	**0.2**	SDBSM
E06D3-SEXC R/L03-04P	★	★	**4.0**	6.0	3.75	37.75	1.95	12	-13°		1			
E06D2-SEXC R/L03-05P	★	★	**5.0**	6.0	4.75	35.25	2.45	10	-12°		1	MIB1.6-2.5	**0.2**	
E06D3-SEXC R/L03-05P	★	★	**5.0**	6.0	4.75	40.25	2.45	15	-12°		1			
E06D2-SEXC R/L03-06P	★	★	**6.0**	6.0	5.75	36.75	2.95	12	-11°		1	MIB1.6-3	**0.2**	
E06D3-SEXC R/L03-06P	★	★	**6.0**	6.0	5.75	42.75	2.95	18	-11°		1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The SEXC series requires HBSM6020(A) adapter sleeve (sold separately).

Identification Code

E	06	D2	-	S	E	X	C	R	03	-	04	P
Carbide Shank with Oil Hole	Shank Dia.	L/D		Screw-on	Insert Shape	Cutting Edge Shape	Insert Relief Angle	Feed Direction	Insert Inscribed Circle		Min. Bore Dia.	Accessories

Fig 1

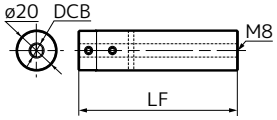
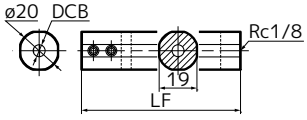


Fig 2



Adapter Sleeve (Sold Separately)

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM6020	★	6.0	80	1	BT0506	TH025
HBSM6020A	★	6.0	80	2		

Mounting Method E79

Alignment Jig (Sold Separately) For HBSM6020 adapter sleeve

ISO Cat. No.	Stock
AFBSM60	★

This jig is used for centring adapter sleeves when setting them into adapter sleeve holders.

Insert (Coated Carbide / SUMIBORON)

Dimensions (mm)

ISO Cat. No.	AC1030U R	AC1030U L	T1500A R	T1500A L	BN2000	BN7125	BN7000	Corner Radius RE	Fig
ECEM 03X1005 R/L-FYF	★	★	★	★	—	—	—	0.05	1
ECEM 03X101 R/L-FYF	★	★	★	★	—	—	—	0.1	1
ECEM 03X1015 R/L-FYF	★	★	★	★	—	—	—	0.15	1
ECEM 03X102 R/L-FYF	★	★	★	★	—	—	—	0.2	1
2NU-ECXA 030X02 LE	—	—	—	—	★			0.2	2
2NU-ECXA 030X02 LF	—	—	—	—	★	★	★	0.2	2

Fig 1

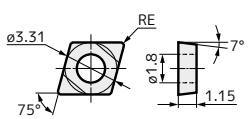
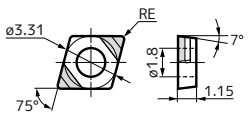


Figure shows right-handed (R) tool.

Fig 2



Part Number Suffix: LE: Honed Edge, LF: Sharp Edged, FYF: Sharp Edged (with Chipbreaker)

Recommended Cutting Conditions

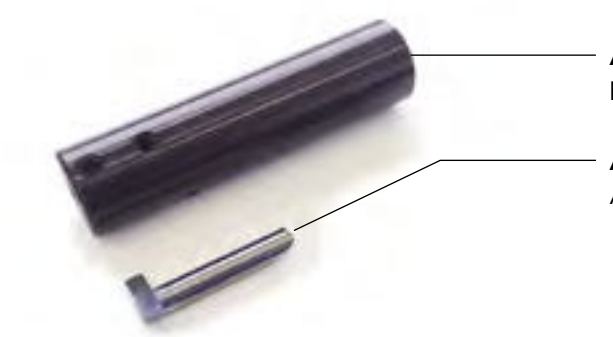
Work Material	P General Steel		M Stainless Steel		K Cast Iron		N Non-Ferrous Metal		S Exotic Alloy	H Hardened Steel		
Insert Grades	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	BN2000	BN7125	BN7000
Spindle Speed n (min⁻¹)	2,000-10,000	2,000-10,000	2,000-8,000	2,000-8,000	2,000-10,000	2,000-10,000	5,000-15,000	5,000-15,000	2,000-6,000	Above 2,000	Above 2,000	Above 2,000
Depth of Cut ap (mm)	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	0.01-0.15	0.01-0.15	0.01-0.15
Feed Rate f (mm/rev)	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	0.01-0.10	0.01-0.10	0.01-0.10

May cause chattering or chipping at the cutting edge during low-speed machining. Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.

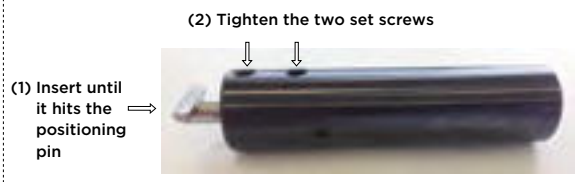
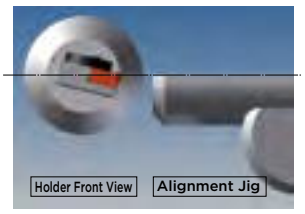
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BSME series / SEXC series

■ Dedicated Adapter Sleeve/Alignment Jig



■ Mounting Method (HBSM6020A has a side lock flat, so centring with an alignment jig is not required.)

1	Insert the alignment jig until it hits the positioning pin set in the adapter sleeve, and tighten the two set screws.	
2	Mount the adapter sleeve into the sleeve holder and temporarily tighten the fastening screws.	
3	Rotate the adapter sleeve gradually to adjust until the flat strip of the alignment jig is horizontal. 	When a boring bar is mounted into the adapter sleeve adjusted by the alignment jig, its cutting edge position will automatically be set at the centre. 
4	Using a tool presetter, measure the diameter of the tool.	

*Steps 1 and 3 above are not required when using HBSM6020A.

BNBX series



SUMIBORON
Brazed

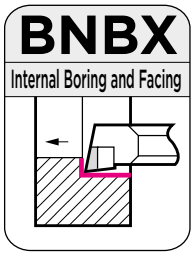
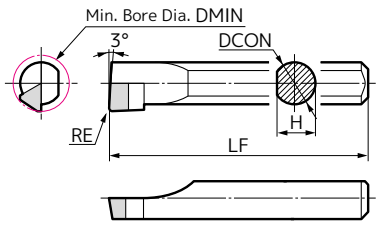


Fig 1



SumiSmall

Holder (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000	BN7125	BN7000	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
BNBX 020R	★	★	★	**2.5**	2.0	1.8	40	0.2	HBX 2016	1
BNBX 025R	★	★	★	**3.0**	2.5	2.2	40	0.2	HBX 2516	1
BNBX 030R	★	★	★	**3.5**	3.0	2.7	40	0.2	HBX 3016	1
BNBX 035R	★	★	★	**4.0**	3.5	3.2	40	0.2	HBX 3516	1
BNBX 040R	★	★	★	**4.5**	4.0	3.7	40	0.2	HBX 4016	1
BNBX 045R	★	★	★	**5.0**	4.5	4.2	40	0.2	HBX 4516	1
BNBX 050R	★	★	★	**5.5**	5.0	4.7	60	0.2	HBX 5016	1
BNBX 055R	★	★	★	**6.0**	5.5	5.2	60	0.2	HBX 5516	1
BNBX 060R	★	★	★	**6.5**	6.0	5.7	60	0.2	HBX 6016	1
BNBX 065R	★			**7.0**	6.5	6.2	60	0.2	HBB 6516	1
BNBX 070R	★			**7.5**	7.0	6.7	80	0.2	HBB 716	1
BNBX 075R	★			**8.0**	7.5	7.2	80	0.2	HBB 7516	1
BNBX 080R	★			**8.5**	8.0	7.7	80	0.2	HBB 816	1

BNBX bars can be used with HBB type adapter sleeves, but HBX type adapter sleeves are recommended for bars below ø6mm.

Fig 1

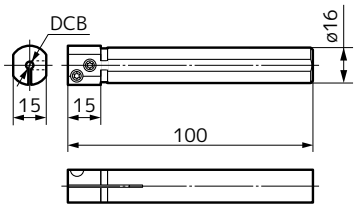
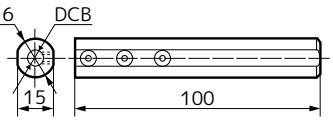


Fig 1



Adapter Sleeve (HBX type)

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2016	★	2.0	BNBX 020R	1
HBX 2516	★	2.5	BNBX 025R	1
HBX 3016	★	3.0	BNBX 030R	1
HBX 3516	★	3.5	BNBX 035R	1
HBX 4016	★	4.0	BNBX 040R	1
HBX 4516	★	4.5	BNBX 045R	1
HBX 5016	★	5.0	BNBX 050R	1
HBX 5516	★	5.5	BNBX 055R	1
HBX 6016	★	6.0	BNBX 060R	1

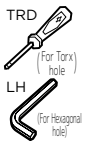
Adapter Sleeve (HBB type)

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBB 6516	★	6.5	BNBX 065R	1
HBB 716	★	7.0	BNBX 070R	1
HBB 7516	★	7.5	BNBX 075R	1
HBB 816	★	8.0	BNBX 080R	1

HBB type adapter sleeve can also be used with ø2.5 to 6.0mm holders.

Parts (for Adapter Sleeve)

Applicable Adapter Sleeve	Flat Insert Screw		Set Screw	Wrench
		N·m	 BT06035T BT0404	 TRD LH (For Torx hole) (For Hexagonal hole)
HBX2○○○	BFTX0409N	**1.5**	BT06035T	TRD15
HBX3○○○	BFTX0409N	**3.0**	BT06035T	TRD15
HBX4○○○				
HBX5○○○				
HBX6○○○				
HBB○○○○	—	—	BT0404	LH020

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

BNZ series

95° CBN

SUMIBORON
Screw-on

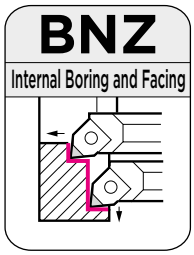
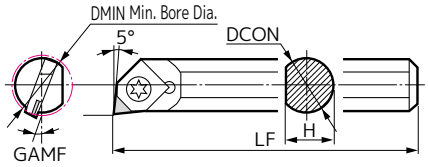


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Flat Insert Screw		Wrench	Adapter Sleeve
										 (For Torx hole)	
BNZ 606R	★	**7.0**	6.0	5.5	80	-14°	1	BFTX0204N	**0.5**	TRX06	HBB616
BNZ 608R	★	**9.0**	8.0	7.5	100	-12°	1				HBB816
BNZ 610R	★	**11.0**	10.0	9.5	125	-10°	1				—
BNZ 612R	★	**13.0**	12.0	11.0	130	-8°	1				
BNZ 616R	★	**17.0**	16.0	15.0	145	-6°	1				
BNZ 620R	★	**21.0**	20.0	19.0	160	-5°	1				

Insert (SUMIBORON)

Dimensions (mm)

Quantity	ISO Cat. No.	BNC2010	BNC2020	BN1000	BN2000	BN7125	BN7000	Corner Radius RE
Single pack	**NU-ZNEX 040102**	—	—	★	★	★	★	0.2
	NU-ZNEX 040104	—	—	★	★	★	★	0.4
	NC-ZNEX 040102LE	★	—	—	—	—	—	0.2
	NC-ZNEX 040104LE	★	—	—	—	—	—	0.4
	NC-ZNEX 040102LT	—	★	—	—	—	—	0.2
	NC-ZNEX 040104LT	—	★	—	—	—	—	0.4
10 pack	**T-NU-ZNEX 040102**	—	—		★			0.2
	T-NU-ZNEX 040104	—	—		★			0.4

Fig 1

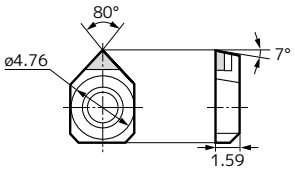
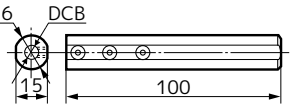


Fig 1



Adapter Sleeve

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Holder	Fig
HBB 616	★	6.0	BNZ 606R	1
HBB 816	★	8.0	BNZ 608R	1

HBX type adapter sleeve (HBX6016) can also be used with BNZ606R.

BNB series

CBN PCD

SUMIBORON
Clamp-on

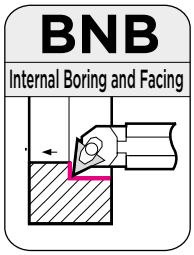
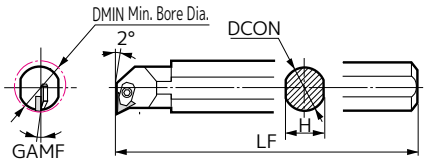


Fig 1



SumiSmall

Holder

Dimensions (mm)

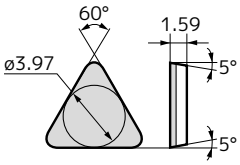
ISO Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Parts: Clamp Plate	Bolt	Nut	Wrench
BNB 508R	★	**10.0**	8.0	7.0	140	-9°	1	BNBC	BH0306	BNBW-2	TH020
BNB 510R	★	**12.0**	10.0	9.0	140	-8°	1				
BNB 512R	★	**14.0**	12.0	11.0	160	-6°	1		FBUP3-A0-9	BNBW-4	
BNB 516R	★	**18.0**	16.0	14.0	180	-5°	1				
BNB 520R	★	**22.0**	20.0	18.0	180	-4°	1		BH0310	BNBW-7	

Insert (SUMIBORON, SUMIDIA)

Dimensions (mm)

ISO Cat. No.	SUMIBORON BNX10	BNX20	BN2000	BN350	BN500	BN7125	BN7000	SUMIDIA DA150	DA1000	Corner Radius RE
TBGN 060102B		★	★					★	★	0.2
TBGN 060104B	★	★	★	★	★	★	★	★	★	0.4
TBGN 060108B		★	★	★	★	★	★			0.8
TBGN 060102-BSTN[*1]	—	★	—	—	—	—	—	—	—	0.2
TBGN 060104-BSTN[*1]	—	★	—	—	—	—	—	—	—	0.4
TBGN 060108-BSTN[*1]	—	★	—	—	—	—	—	—	—	0.8
NF-TBGN 060102[*2]	—	—	—	—	—	—	—	—	★	0.2
NF-TBGN 060104[*2]	—	—	—	—	—	—	—	—	★	0.4

Fig 1



*1: TBGN OOOOOO-BSTN is only available in BNX20 grade and has a smaller negative land angle. (BSTN: -15° , B: -25° . However, the negative land angle is uniquely configured for each grade.)
*2: NF-TBGN is a single corner insert. (This is not a Full-top insert)

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

MEMO

DABB series

PCD

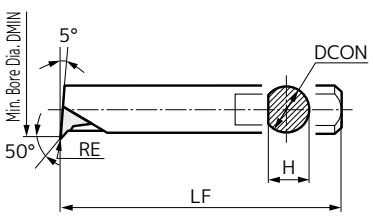
SUMIDIA Brazed

SumiSmall

DABB-C

Stop-Boring, Through-Boring and Back Chamfering

Fig 1



Holder (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
DABB 025CR	★	**3.0**	2.5	2.2	60	0.1	HBB 2516	1
DABB 035CR	★	**4.0**	3.5	3.2	60	0.1	HBB 3516	1
DABB 045CR	★	**5.0**	4.5	4.1	80	0.1	HBB 4516	1
DABB 060CR	★	**7.0**	6.0	5.2	80	0.1	HBB 616	1

PCD

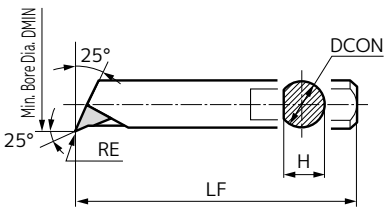
SUMIDIA Brazed

SumiSmall

DABB-N

Stop-Boring, Through-Boring and Necking

Fig 1

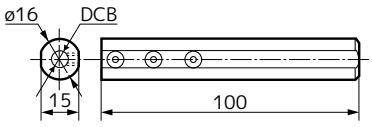


Holder (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
DABB 025NR	★	**3.0**	2.5	2.2	60	0.1	HBB 2516	1
DABB 035NR	★	**4.0**	3.5	3.2	60	0.1	HBB 3516	1
DABB 045NR	★	**5.0**	4.5	4.1	80	0.1	HBB 4516	1
DABB 060NR	★	**7.0**	6.0	5.2	80	0.1	HBB 616	1

Fig 1



Adapter Sleeve

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Fig	Set Screw	Wrench
HBB 2516	★	2.5	1	BT0404	LH020
HBB 3516	★	3.5	1		
HBB 4516	★	4.5	1		
HBB 616	★	6.0	1		





HBX type adapter sleeve can also be used.

Recommended Cutting Conditions

Work Material	Spindle Speed	Depth of Cut ap	Feed Rate f	Coolant
N Aluminum Alloy	Above 2,000 min^{-1}	0.1mm or below	0.1mm/rev or below	Wet

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DABX series

SUMIDIA BINDERLESS
Brazed

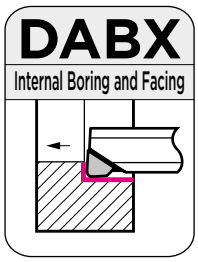
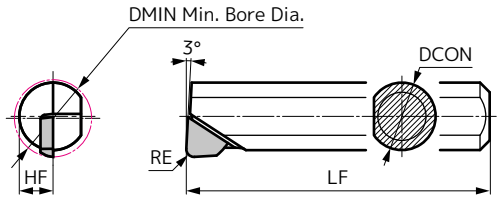


Fig 1



Holder

Dimensions (mm)

ISO Cat. No.	NPD10	Min. Bore Dia. DMIN	Diameter DCON	Cutting Edge Height HF	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
DABX025R-01	★	**3.0**	2.5	1.25	40	0.1	HBX 2516	1
DABX025R-02	★	**3.0**	2.5	1.25	40	0.2	HBX 2516	1
DABX025R-04	★	**3.0**	2.5	1.25	40	0.4	HBX 2516	1
DABX035R-01	★	**4.0**	3.5	1.75	40	0.1	HBX 3516	1
DABX035R-02	★	**4.0**	3.5	1.75	40	0.2	HBX 3516	1
DABX035R-04	★	**4.0**	3.5	1.75	40	0.4	HBX 3516	1

DABX series bars can be used with HBB type adapter sleeves, but HBX type adapter sleeves are recommended for machining when rigidity is required.

Fig 1

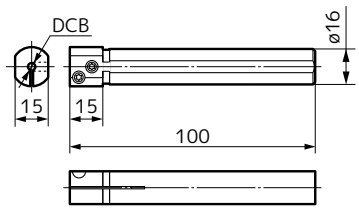
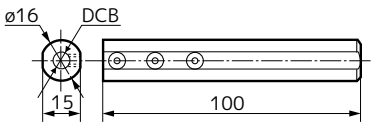


Fig 2



Adapter Sleeve (HBX type)

Dimensions (mm)

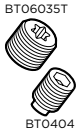
ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2516	★	2.5	DABX 025R	1
HBX 3516	★	3.5	DABX 035R	1

Adapter Sleeve (HBB type)

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBB 2516	★	2.5	DABX 025R	2
HBB 3516	★	3.5	DABX 035R	2

Parts (for Adapter Sleeve)

Applicable Adapter Sleeve	Flat Insert Screw		Set Screw	Wrench
		N·m		
HBX 2516	BFTX0409N	**1.5**	BT06035T	TRD15
HBX 3516	BFTX0409N	**3.0**	BT06035T	TRD15
HBB ○○○○	—	—	BT0404	LH020

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Clamp Set Parts

Parts

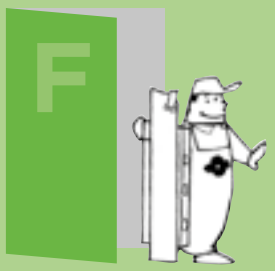
Applicable Clamp Set ISO Cat. No.	Spring 	Stock	Cap Screw 	Stock	N·m
SCP1	CSP08	★	CP-M5-20-1	★	
SCP2	CSP08	★	CP-M5-20-1	★	
SCP3	CSP08	★	CP-M5-20-1	★	**5.0**
SCP4	CSP25	★	CP-M5-20-1	★	
SCP5	CSP08	★	CP-M5-20-1	★	
SCP6	CSP12	★	CP-M8-25-1	★	**6.0**

CP-M5-20-1 can also be fastened from the other end of the screw.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Grooving/Cut-off Threading Tools F1 to F78

F



Grooving Tools

SEC-Grooving Tool Holders GWC series

Chipbreaker Insert for GWC series

SEC-Grooving Tool Holders GND series

External Grooving
Face Grooving
Internal Grooving

CBN

SEC-Grooving Tool Holder series Selection Guide F2
GWC series (Shallow Grooves) F4
GWCS type (Shallow Grooves) / GWCI type (Internal Shallow Grooves) F5
Inserts for GWC series F6
SumiTurn B-Groove BF type F9
GWC series Special Grooving Insert Request Form F10
GND series Selection Guide F12
GND series Recommended Cutting Conditions F21
GNDM type / GNDL type (For Small Lathes) F28
GNDM-J type / GNDL-J type (Internal Coolant Supply for Small Lathes) F30
GNDS type (For Shallow Grooves) F32
GNDM type / GNDMS type (For General-purpose) F34
GNDM-J/JE type (General-purpose Internal Coolant Supply) F36
GNDL type / GNDLS type (For Deep Grooves) F40
GNDL-J/JE type (Deep Groove Internal Coolant Supply) F42
GNDXL type (Deep Grooves: Groove Depth up to 32mm) F46
GNDN type (For Necking) F48
GNDF type (General-purpose) F50
GNDFS type (General-purpose) F52
GNDIS type (For General-purpose Internal Grooves) F54
GNDI type (For General-purpose Internal Grooves) F56
GNDCM type (SumiPolygon) F60
GND series Special Grooving Insert Request Form F64
GND series 90° Insert Request Form F65
SGE series (For Wide Grooves) F66
CKB series (For Very Small Diameter Grooves) F67
SGIT series (For Small Diameters) F68
SSH series (For Small Diameters) F70
SUMIBORON GWB series (For Hardened Steel, Shallow Grooves) F77
SUMIBORON BNGG series (For Hardened Steel, Shallow Grooves) F78

F Cut-off Tools ···F79 ~

SEC-Cut-off Tool Holder series Selection Guide F80
SEC-Cut-off Tool Holders GLC series F82
SEC-Cut-off Tool Holders SumiGrip series F89
SEC-Small Diameter Cut-off Tool Holders SCT type F98
SEC-Cut-off Tool Holders GND series F100

F Threading Tools ···F121 ~

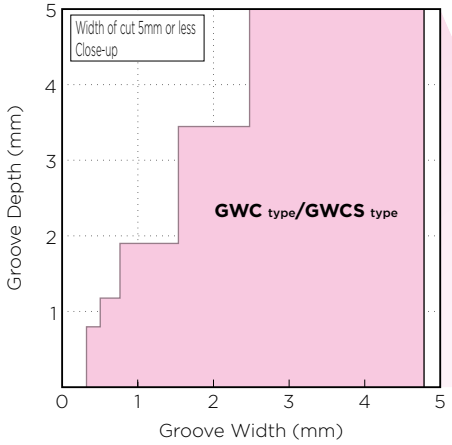
SEC-Threading Tool series Selection Guide F122
Basics of Screw Threads F125
For External/Internal Threading F126
For External Threading F134
For Internal Threading F139

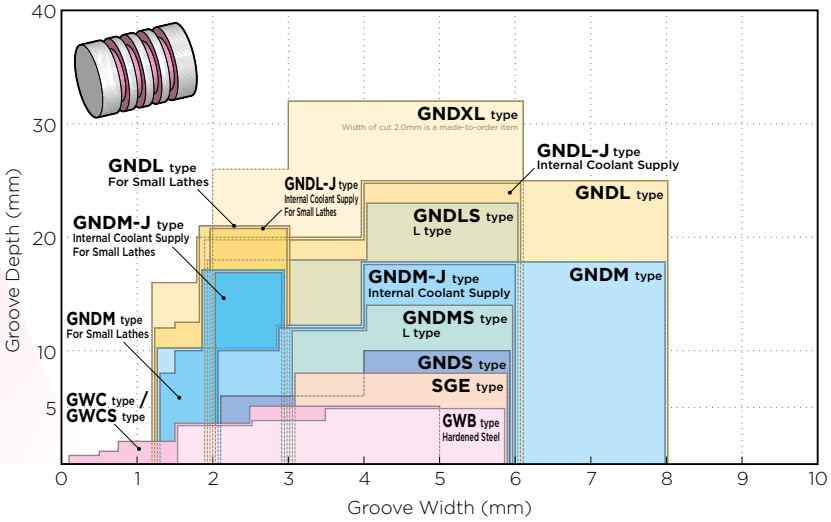
Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Selection Guide

External Grooving





■ External Grooving Tools

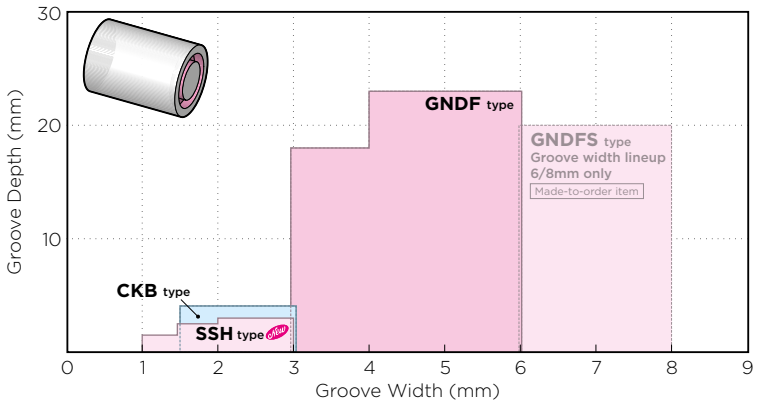
* mark: For groove depth and width combinations, refer to the above figures or the relevant page.

Application	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ) indicates no. of cutting edges	Groove Depth* / Groove Width*	Features
For Shallow Grooves	**GWC**	→F4 (→D18)	●		●	(3) (Standard, with Chipbreaker) Traverse Cutting Possible	5.0 / 4.8 / 0.33	· High rigidity double clamping (Screw-on for Mini Holders) · Triangular type insert with 3 usable corners
	GWCS	→ F5			●		5.0 / 4.8 / 0.33	· "L-shaped" (side cut) GWC holder
	GWB *1 Hardened Steel	→ F77			●	(1) Traverse Cutting Possible	5.0 / 1.5 / 6.0	· High rigidity double clamping · Employs Coated SUMIBORON for interrupted turning of hardened steel
For Shallow Grooves to General Grooves	**SGE**	→ F66		●		(2) Traverse Cutting Possible	8.0 / 3.0 / 6.0	· Traverse cutting (groove expansion) is possible
	GNDS	→ F34		●			10.0 / 2.0 / 6.0	· High-rigidity design reduces vibration · Enables high-efficiency turning and traversing thanks to its short tool overhang length
	GNDM For Small Lathes	→ F30		●			17.0 / 1.25 / 3.0	· High-rigidity design reduces vibration · 16x16, 20x12mm square shanks available
	GNDM-J Internal Coolant Supply For Small Lathes	→F32 (→D20)		●		(2)	17.0 / 2.0 / 3.0	· GNDM type with internal coolant supply for small lathes
	GNDM	→ F34		●		(2) Traverse Cutting Possible	18.0 / 1.25 / 8.0	· High-rigidity design reduces vibration · Perfect for traverse cutting and profiling
	GNDM-J/JE Internal Coolant Supply	→ F36		●			18.0 / 2.0 / 6.0	· GNDM type with internal coolant supply
	GNDMS	→ F34		●			14.0 / 3.0 / 6.0	· "L-shaped" (side cut) GNDM type
For Deep Grooves	**GNDL** For Small Lathes	→ F28		●			21.0 / 1.25 / 3.0	· High-rigidity design reduces vibration · 10x10, 12x12, 16x16, 20x12mm square shanks available
	GNDL-J Internal Coolant Supply For Small Lathes	→F30 (→D20)		●			21.0 / 1.25 / 3.0	· GNDL type with internal coolant supply for small lathes
	GNDL	→ F38		●		(2) (2)	25.0 / 1.25 / 8.0	· High-rigidity design reduces vibration · Perfect for grooving, deep grooving and cut-off applications
	GNDL-J/JE Internal Coolant Supply	→ F40		●			25.0 / 2.0 / 6.0	· GNDL type with internal coolant supply
	GNDLS	→ F38		●			25.0 / 2.0 / 6.0	· "L-shaped" (side cut) GNDL type
	GNDXL	→ F42		●		(1) (1)	32.0 / *2 2.0 / 6.0	· Supports a maximum grooving depth of 32mm

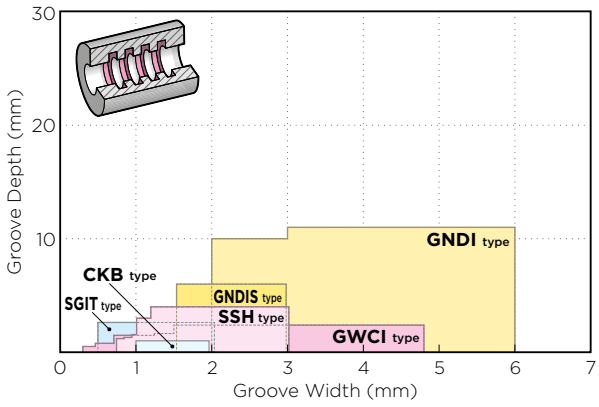
*1: For hardened steel, refer to page F78 for SUMIBORON Grooving Holder BNGG series. *2: Width of cut 2.0mm is a made-to-order item.
Page numbers in ( ) indicate Indexable Heads.

Selection Guide

Face Grooving



Internal Grooving



■ Face Grooving Tools

* mark: For groove depth and width combinations, refer to the above figures or the relevant page.

Application	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ) indicates no. of cutting edges	Groove Depth* / Groove Width*	Machining Diameter (mm)	Features
For Very Small Dia.	**CKB** For Small Lathes	→ F67		●		(1)	4.0 / 1.5–3.0	ø6 ~	· Face grooving for small lathes
For Small Diameters	**SSH** Internal Coolant Supply For Small Lathes	→ F76	●			(1) Traverse Cutting Possible	3.0 / 1.0–3.0	ø14 ~	· Face grooving for small lathes · Internal coolant supply for outstanding chip evacuation
For General Grooves to Deep Grooves	**GNDF**	→ F54		●		(2)	23 / 3.0–6.0	ø35 ~ ø1,000	· High-rigidity design reduces vibration
	GNDFS Made-to-order item	→ F56		●		(2) Traverse Cutting Possible	20 / 6.0–8.0	ø70 ~	· L-shape (horizontal) type · For wide grooves

■ Internal Grooving Tools

* mark: For groove depth and width combinations, refer to the above figures or the relevant page.

Application	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ) indicates no. of cutting edges	Groove Depth* / Groove Width*	Min. Bore Diameter (mm)	Features
For Small Diameter Grooves	**CKB** For Small Lathes	→ F68		●		(1)	1.0 / 1.0–2.0	ø4	· Very small diameter grooving · High clamping force · Wide variety of tool holders
	SGIT For Small Lathes	→ F69	●			(3)	3.2 / 0.5–2.0	ø10	· 3-cornered type
	SSH Internal Coolant Supply For Small Lathes	→ F70	●			(1) Traverse Cutting Possible	4.0 / 0.74–3.0	ø8	· Internal coolant supply for outstanding chip evacuation · Wide range of grooving widths · Tough carbide body for stable grooving · Also supports threading
For Shallow Grooves	**GWCI**	→ F5		●		(3) (Standard, with Chipbreaker)	2.5 / 0.33–4.8	ø35	· Using same inserts as GWC series holders · Inserts with chipbreakers now in stock
For General Grooves to Deep Grooves	**GNDIS** Internal Coolant Supply For Small Lathes	→ F58		●		(2) Traverse Cutting Possible	6.6 / 1.5–3.0	ø14	· Supports grooving with minimum machining diameter from ø14
	GNDI Internal Coolant Supply	→ F60		●		(2) (2) Traverse Cutting Possible	11.0 / 2.0–6.0	ø32	· High-rigidity design reduces vibration

■ Necking Tools

* mark: For groove depth and width combinations, refer to the above figures or the relevant page.

Application	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ) indicates no. of cutting edges	Groove Depth* / Groove Width*	Machining Diameter (mm)	Features
Facing Necking	**GNDN**	→ F52		●		(2)	4.0 / 2.0–6.0	ø20 ~	· Necking at corners possible

GWC series



Features of GWC series for Shallow Groove

- ★ The same insert can be used for both external and internal grooving.
- ★ Full range of insert grades to cover a wide range of work materials.
  Coated Carbide AC5015S/AC5025S/AC530U, Cemented Carbide H1, DLC Coat DL1500, Coated Cermet T2500Z, Cermet T1500A, SUMIBORON BN2000, and SUMIDIA DA2200 are now in stock.
- ★ A wide range of grooving widths from 0.33mm to 4.8mm.
- ★ SumiTurn B-Groove inserts with chipbreaker are now in stock.
- ★ Customers can modify the grooving width, corner radius and rake angle according to their own requirements using the grooving insert blanks. (Sumitomo Electric Hardmetal also accepts orders.)
- ★ Inserts for threading are now available as a series.

Inserts for Threading F7

External

Double Clamp / Screw-on
for External Shallow Grooves



Fig 1

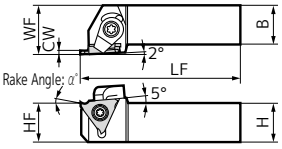


Fig 2

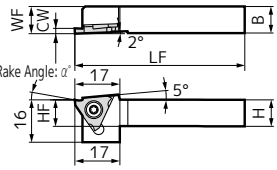


Fig 3

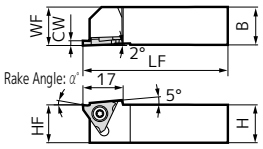
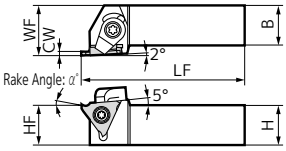


Fig 4



Note 1: Rake angle α° varies depending on the insert grade. Refer to the insert table on page F5 for details.
Note 2: Figures show right hand (R) tools.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Maximum Groove Depth	Group No.	Fig	Flat Head Screw	N·m	Wrench	Clamp Plate	Double Screw	N·m	Wrench
GWC R/L1010-3	★	★	10	10	125	10	10	0.33 to 2.80	0.8 to 2.5	1	2	BFTX0409N	3.4	TRX15	—	—	—	—
R/L1212-3	★	★	12	12	125	12	12	0.33 to 2.80	0.8 to 2.5	1	2							
R/L1616-3	★	★	16	16	125	16	16	0.33 to 2.80	0.8 to 2.5	1	3							
R/L2020-3	★	★	20	20	125	25	20	0.33 to 2.80	0.8 to 2.5	1	1				CCM6BL/R	WB6-20T/TL	5.0*	LT20
R/L2525-3	★	★	25	25	150	30	25	0.33 to 2.80	0.8 to 2.5	1	1							
GWC R/L2020-15	★	★	20	20	125	25	20	1.00 to 1.45	2.0	2	4	BFTX0511N	5.0	TRX20	CCM8UL/R	WB8-22T/TL	5.0*	LT27
R/L2020-25	★	★	20	20	125	25	20	1.50 to 2.30	3.5	3	1							
R/L2020-35	★	★	20	20	125	25	20	2.50 to 4.80	5.0	4	1							
R/L2525-15	★	★	25	25	150	30	25	1.00 to 1.45	2.0	2	4							
R/L2525-25	★	★	25	25	150	30	25	1.50 to 2.30	3.5	3	1							
R/L2525-35	★	★	25	25	150	30	25	2.50 to 4.80	5.0	4	1							

* mark: Cermet inserts have a recommended tightening torque of 4.0N · m.
Right-handed (R) tool holders are used with right-handed (R) inserts.
*Refer to TGA type insert group numbers on pages F6 to F9 for applicable inserts. Select applicable inserts for the holders by using matching group numbers.
*Right-handed (R) tool holders are compatible with left-handed clamp plates (CCMO□L) and right-handed double screws (WBO-2OT)
Left-handed (L) tool holders are compatible with right-handed clamp plates (CCMO□R) and left-handed double screws (WBO-2OTL).

Indexable Heads D18

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GWCS type/GWCI type

External

Double Clamp for External L-Shaped (Side Cut) Shallow Grooves

GWCS External Grooving

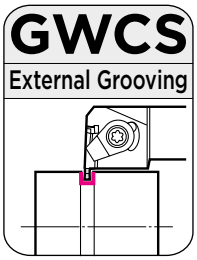
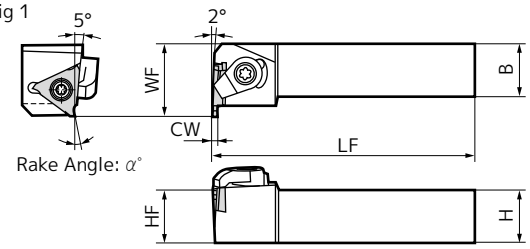


Fig 1



Note 1: Rake angle α° varies depending on the insert grade. Refer to the insert table at the bottom of this page for details.
Note 2: Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Maximum Groove Depth	Group No.	Fig	Flat Head Screw	N·m	Wrench	Clamp Plate	Double Screw	N·m	Wrench
GWCS R/L2020-3	★	★	20	20	125	25	20	0.33 to 2.80	0.8 to 2.5	1	1	BFTX0409N	**3.4**	TRX15	CCM6BR/L	WB6-20TL/T	**5.0***	LT20
R/L2525-3	★	★	25	25	150	30	25	0.33 to 2.80	0.8 to 2.5	1	1							
GWCS R/L2020-15	★	★	20	20	125	27	20	1.00 to 1.45	**2.0**	2	1	BFTX0511N	**5.0**	TRX20	CCM8UR/L	WB8-22TL/T	**5.0***	LT27
R/L2020-25	★	★	20	20	125	27	20	1.50 to 2.30	**3.5**	3	1							
R/L2020-35	★	★	20	20	125	27	20	2.50 to 4.80	**5.0**	4	1							
R/L2525-15	★	★	25	25	150	32	25	1.00 to 1.45	**2.0**	2	1							
R/L2525-25	★	★	25	25	150	32	25	1.50 to 2.30	**3.5**	3	1							
R/L2525-35	★	★	25	25	150	32	25	2.50 to 4.80	**5.0**	4	1							

*mark: Cermet inserts have a recommended tightening torque of 4.0N · m.
Right-handed (R) tool holders are used with left-handed (L) inserts.
*Refer to TGA type insert group numbers on pages F6 to F9 for GWCS type holder applicable inserts. Select applicable inserts for the holders by using matching group numbers. TTE type inserts cannot be used.
*Right-handed (R) tool holders are compatible with right-handed clamp plates (CCMO□R) and left-handed double screws (WBO-2OTL). Left-handed (L) tool holders are compatible with left-handed clamp plates (CCMO□L) and right-handed double screws (WBO-2OT).

Internal

Screw-on for Internal Diameter Shallow Grooves

GWCI Internal Grooving

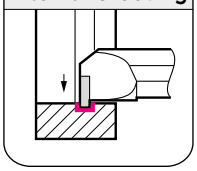
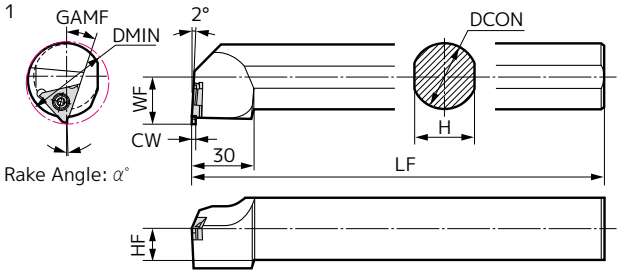


Fig 1



Note 1: Rake angle α° varies depending on the insert grade. Refer to the insert table at the bottom of this page for details.
Note 2: Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Min. Bore Dia. DMIN	Rake Angle GAMF	Width of Cut CW	Maximum Groove Depth	Group No.	Fig	Flat Head Screw	N·m	Wrench
GWCI R/L325	★	★	25	23	220	17.5	11.5	35	14°	**0.33 to 2.80**	**0.5 to 2.0**	1	1	BFTX0409N	**3.4**	TRX15
R/L432	★	★	32	30	250	23.0	15.0	40	16°	**1.25 to 4.80**	**1.7 to 2.5**	2/3/4	1	BFTX0511N	**5.0**	TRX20

Right-handed (R) tool holders are used with left-handed (L) inserts.
*Refer to TGA type insert group numbers on pages F6 to F9 for GWCI type holder applicable inserts. TTE type inserts cannot be used.

● Rake angle when mounted on a holder (α°)

	Coated Carbide AC5015S AC5025S AC530U	Cemented Carbide H1	DLC DL1500	Coated Cermet T2500Z	Cermet T1500A	SUMIBORON BN2000	SUMIDIA DA2200
External Grooving GWC GWCS	10°	20°	20°	10°	5°	0°	10°
Internal Grooving GWCI R/L325	1°	11°	11°	1°	-4°	-9°	1°
Internal Grooving GWCI R/L432	-1°	9°	9°	-1°	-6°	-11°	-1°

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GWC series

(Coated Carbide / Cemented Carbide / DLC / Cermet / SUMIBORON / SUMIDIA)

Fig 1

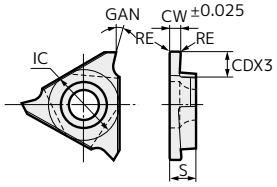
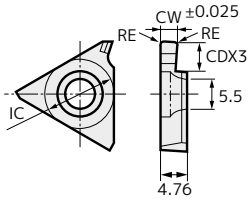


Fig 2 (For BN2000 / DA2200)



Grade		Cutting Edge Shape	GAN
Coated Carbide	AC5015S/AC5025S	Honing	15°
Coated Carbide	AC530U	Honing	15°
Cemented Carbide	H1	Sharp Edged	25°
Coated Cermet	T2500Z	Honing	15°
Cermet	T1500A	Sharp Edged	10°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp Edged	15°

* For the rake angle when fitted on the holder, refer to page F5.

Square Edged Grooving Insert

Figure shows right-handed (R) tool.

Dimensions (mm)

ISO Cat. No.*	AC5015S		AC5025S		AC530U		H1		DL1500		T2500Z		T1500A		BN2000		DA2200		Width of Cut	Maximum Depth of Cut CDX3		Corner Radius	Inscribed Circle	Thickness	Group No.	Fig
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	CW	External Turning	Internal Threading	RE	IC	S		
TGA R/L3033(E)					★	★	★	★			★	★	★	★	—	—	—	—	0.33	0.8	0.5	0.05	9.525	3.18	1	1
R/L3043(E)					★	★							★	★	—	—	—	—	0.43	0.8	0.5	0.05	9.525	3.18	1	1
TGA R/L3050(E)					★	★	★	★	★	★	★	★	★	★	—	—	—	—	0.50	1.2	0.8	0.05	9.525	3.18	1	1
R/L3053(E)					★	★							★	★	—	—	—	—	0.53	1.2	0.8	0.05	9.525	3.18	1	1
R/L3065(E)					★	★							★	★	—	—	—	—	0.65	1.2	0.8	0.05	9.525	3.18	1	1
TGA R/L3075(E)					★	★	★	★	★	★	★	★	★	★					0.75	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3080(E)					★	★							★	★					0.80	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3095(E)					★	★	★	★			★	★	★	★					0.95	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3100(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★					1.00	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3110(E)	★	★	★	★	★	★					★	★	★	★					1.10	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3120(E)					★	★							★	★					1.20	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3125(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★					1.25	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3130(E)					★	★							★	★					1.30	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3135(E)					★	★					★	★	★	★					1.35	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3140(E)					★	★							★	★					1.40	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3145(E)					★	★	★	★			★	★	★	★					1.45	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3150(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★					1.50	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3160(E)					★	★							★	★					1.60	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3165(E)					★	★					★	★	★	★					1.65	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3175(E)					★	★					★	★	★	★					1.75	2.0	1.5	0.1*3	9.525	3.18	1	1
R/L3185(E)					★	★	★	★			★	★	★	★					1.85	2.0	1.5	0.1*3	9.525	3.18	1	1
TGA R/L3200(E)	★	★	★	★	★	★	★	★	★	★	★	★	★	★					2.00	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3220(E)					★	★					★	★	★	★					2.20	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3230(E)					★	★	★	★			★	★	★	★					2.30	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3250(E)					★	★	★	★			★	★	★	★					2.50	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3265(E)					★	★					★	★	★	★					2.65	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3270(E)					★	★					★	★	★	★					2.70	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3280(E)					★	★					★	★	★	★					2.80	2.5	2.0	0.1*3	9.525	3.18	1	1
R/L3300(E)	★	★	★	★	★	★			★	★			★	★					3.00	2.5	2.0	0.1*3	9.525	3.18	1	1
TGA R/L4125(E)					★	★	★	★			★	★	★	★	★		★		1.25	2.0	1.7	0.2*2	12.70	4.76	2	1(2)
R/L4145(E)					★	★	★	★			★	★	★	★					1.45	2.0	1.7	0.2*2	12.70	4.76	2	1
R/L4150(E)					★	★	★	★			★	★	★	★	★		★		1.50	3.5	2.5	0.2*2	12.70	4.76	3	1(2)
R/L4165(E)					★	★					★	★	★	★					1.65	3.5	2.5	0.2*2	12.70	4.76	3	1
R/L4175(E)					★	★	★	★			★	★	★	★					1.75	3.5	2.5	0.2*2	12.70	4.76	3	1
R/L4185(E)					★	★	★	★			★	★	★	★					1.85	3.5	2.5	0.2*2	12.70	4.76	3	1
R/L4200(E)					★	★	★	★			★	★	★	★	★		★		2.00	3.5	2.5	0.2*2	12.70	4.76	3	1(2)
R/L4220(E)					★	★					★	★	★	★					2.20	3.5	2.5	0.2*2	12.70	4.76	3	1
R/L4230(E)					★	★	★	★			★	★	★	★					2.30	3.5	2.5	0.2*2	12.70	4.76	3	1
R/L4250(E)					★	★	★	★			★	★	★	★	★		★		2.50	5.0*1	2.5	0.3*2	12.70	4.76	4	1(2)
R/L4265(E)					★	★	★	★			★	★	★	★					2.65	5.0*1	2.5	0.3*2	12.70	4.76	4	1
R/L4270(E)					★	★					★	★	★	★					2.70	5.0*1	2.5	0.3*2	12.70	4.76	4	1
R/L4280(E)					★	★	★	★			★	★	★	★					2.80	5.0*1	2.5	0.3*2	12.70	4.76	4	1
R/L4300(E)					★	★	★	★			★	★	★	★	★		★		3.00	5.0*1	2.5	0.3*2	12.70	4.76	4	1(2)
R/L4320(E)					★	★					★	★	★	★					3.20	5.0*1	2.5	0.3*2	12.70	4.76	4	1
R/L4330(E)					★	★	★	★			★	★	★	★					3.30	5.0*1	2.5	0.3*2	12.70	4.76	4	1
R/L4350(E)					★	★	★	★			★	★	★	★	★		★		3.50	5.0	2.5	0.3*2	12.70	4.76	4	1(2)
R/L4370(E)					★	★					★	★	★	★					3.70	5.0	2.5	0.3*2	12.70	4.76	4	1
R/L4390(E)					★	★					★	★	★	★					3.90	5.0	2.5	0.3*2	12.70	4.76	4	1
R/L4400(E)					★	★	★	★			★	★	★	★	★		★		4.00	5.0	2.5	0.4*2	12.70	4.76	4	1(2)
R/L4410(E)					★	★					★	★	★	★					4.10	5.0	2.5	0.4*2	12.70	4.76	4	1
R/L4420(E)					★	★					★	★	★	★					4.20	5.0	2.5	0.4*2	12.70	4.76	4	1
R/L4430(E)					★	★	★	★			★	★	★	★					4.30	5.0	2.5	0.4*2	12.70	4.76	4	1
R/L4440(E)					★	★					★	★	★	★					4.40	5.0	2.5	0.4*2	12.70	4.76	4	1
R/L4450(E)					★	★	★	★			★	★	★	★					4.50	5.0	2.5	0.4*2	12.70	4.76	4	1
R/L4480(E)					★	★	★	★			★	★	★	★					4.80	5.0	2.5	0.4*2	12.70	5.00	4	1

*Add E as the part number suffix for T1500A. Select holders and inserts with matching group numbers. Also usable with Indexable Heads for APM series.
*1: For BN2000 and DA2200, the maximum depth of cut CDX3 is 4.0 for external turning and 2.5 for internal threading *2: RE = 0.2 for BN2000, RE = 0.1 for DA2200 *3: RE = 0.2 for T1500A

Recommended Cutting Conditions

Work Material	P General Steel			M Stainless Steel		S Exotic Alloy	N Non-Ferrous Metal			H Hardened Steel
Insert Grade	AC530U	T2500Z	T1500A	AC5015S AC5025S	AC530U	AC5015S AC5025S	H1	DL1500	DA2200	BN2000
Cutting Speed vc (m/min)	50-200	100-180	100-180	50-200	50-200	50-200	100-300	50-300	200-300	80-120
Feed Rate f (mm/rev)	0.02-0.10	0.05-0.10	0.05-0.08	0.02-0.10	0.02-0.10	0.02-0.10	0.02-0.15	0.02-0.15	0.05-0.15	0.03-0.07

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

(Coated Carbide / Cermet / Cemented Carbide)

Fig 1 (Round Edged Grooving)

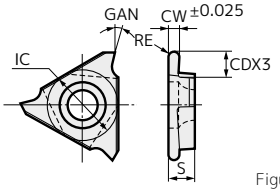


Figure shows right-handed (R) tool.

Grade		Cutting Edge Shape	GAN
Coated Carbide	AC530U	Honing	15°
Cemented Carbide	H1	Sharp Edged	25°
Coated Cermet	T2500Z	Honing	15°
Coated Cermet	T3000Z	Honing	15°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp Edged	15°

* For the rake angle when fitted on the holder, refer to page F5.

Round Edged Grooving Insert

Dimensions (mm)

ISO Cat. No.	AC530U		H1		T2500Z		Width of Cut	Maximum Depth of Cut CDX3		Corner Radius	Inscribed Circle	Thickness	* Group No.	Fig
	R	L	R	L	R	L	CW	External Turning	Internal Threading	RE	IC	S		
TGA R/L4050R	★	★	★	★	★		**1.00**	**2.0**	**1.7**	0.50	12.70	4.76	2	1
TGA R/L4075R	★	★	★	★	★		**1.50**	**3.5**	**2.5**	0.75	12.70	4.76	3	1
R/L4100R	★	★	★	★	★		**2.00**	**3.5**	**2.5**	1.00	12.70	4.76	3	1
TGA R/L4125R	★	★	★	★	★		**2.50**	**5.0**	**2.5**	1.25	12.70	4.76	4	1
R/L4150R	★	★	★	★	★		**3.00**	**5.0**	**2.5**	1.50	12.70	4.76	4	1
R/L4200R	★	★	★	★	★		**4.00**	**5.0**	**2.5**	2.00	12.70	4.76	4	1

*Refer to pages F4 and F5 for group numbers of holders that can be used with GWC, GWCS and GWCI types. Select applicable inserts for the holders by using matching group numbers.

Recommended Cutting Conditions

Work Material	P General Steel			M Stainless Steel			N Non-Ferrous Metal		H Hardened Steel
Insert Grade	AC530U	T2500Z	T1500A	AC530U	T2500Z / T3000Z	T1500A	H1	DA2200	BN2000
Cutting Speed vc (m/min)	50-200	100-180	100-180	50-200	80-150	80-120	100-300	200-300	80-120
Feed Rate f (mm/rev)	0.02-0.10	0.05-0.10	0.05-0.08	0.02-0.10	0.05-0.08	0.05-0.08	0.02-0.15	0.05-0.15	0.03-0.07

Fig 1 (Threading)

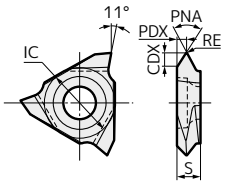


Figure shows right-handed (R) tool.

(Coated Carbide / DLC / Cermet)

Insert for Threading (General-purpose 60°/55° Threads)

Dimensions (mm)

ISO Cat. No.	AC5015S		AC5025S		AC1030U		DL1500		T1500A		Pitch		Corner Radius	X Direction	Depth of Cut	Included Angle	Inscribed Circle	Thickness	*Group No.	Fig
	R	L	R	L	R	L	R	L	R	L	mm	Threads/Inch	RE	PDX	CDX	PNA	IC	S		
TTE R/L36002075	★	★	★	★	★	★	★	★	★	★	0.20 to 0.75	80 to 32	0.05	0.55	0.65	**60**	9.525	3.18	1	1
R/L36005125	★	★	★	★	★	★	★	★	★	★	0.50 to 1.25	56 to 20	0.05	1.00	1.30	**60**	9.525	3.18	1	1
R/L3601015	★	★	★	★	★	★	★	★	★	★	1.00 to 1.50	24 to 16	0.10	1.30	1.80	**60**	9.525	3.18	1	1
R/L3601530	★	★	★	★	★	★	★	★	★	★	1.50 to 3.00	16 to 8	0.20	1.70	2.40	**60**	9.525	3.18	1	1
TTE R/L3554816	★	★	★	★	★	★	★	★	★	★	—	48 to 16	0.05	1.00	1.50	**55**	9.525	3.18	1	1
R/L3552008	★	★	★	★	★	★	★	★	★	★	—	20 to 8	0.10	1.50	2.40	**55**	9.525	3.18	1	1

*Refer to GWC series group numbers on page F4 for applicable holders. Not usable with GWCS or GWCI series. Select applicable inserts for the holders by using matching group numbers. Also usable with Indexable Heads for APM series.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

GWC series

Fig 1

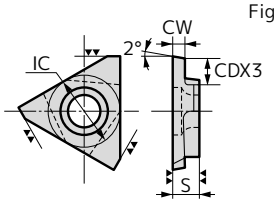


Fig 2

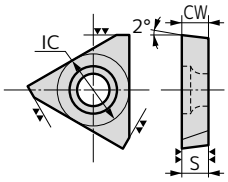


Figure shows right-handed (R) tool.

Insert Blank
(Uncompleted inserts: Width of cut, corner radius and rake angle modifications are required.)

(Cermet / Cemented Carbide)

Dimensions (mm)

ISO Cat. No.	KH03		H1		EH510		T1500A		Width of Cut	Maximun Depth of Cut	Inscribed Circle	Thickness	Fig
	R	L	R	L	R	L	R	L	CW	CDX3	IC	S	
TGA R/L3-T18	★	★	★	★	★	★	★	★	1.85	(3.4)	9.525	3.18	1
R/L3-T23	★	★	★	★	★	★	★	★	2.35	(3.4)	9.525	3.18	1
R/L3-T31	★	★	★	★	★	★	★	★	3.18	—	9.525	3.18	2
R/L4-T22	★	★	★	★	★	★	★	★	2.20	(4.8)	12.70	4.76	1
R/L4-T37	★	★	★	★	★	★	★	★	3.75	(6.2)	12.70	4.76	1
R/L4-T47	★	★	★	★	★	★	★	★	4.76	—	12.70	4.76	2

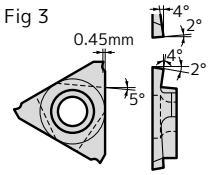
[Note] Figures in ( ) for CDX3 are reference values.

Precautions when Modifying Inserts

When modifying the cutting edge, refer to the shapes in Fig 3 for the rake face, back taper, etc. Cutting edge specifications shown in Fig 4 are when the insert is mounted on the holder.

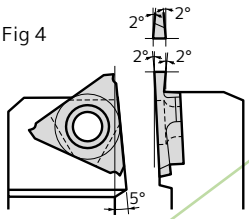
Recommended Modification

Fig 3



Cutting Edge Specifications When Mounted

Fig 4



★ Ordering TGA type Blanks and Special Inserts

Sumitomo Electric Hardmetal also accepts orders for insert blanks. Use the "Special Grooving Insert Request Form" on page F10 when ordering.
Use the "Special Grooving Insert Request Form" on page F10 when ordering special inserts (with different shapes, widths of cut, and cutting edge lengths).
Make a copy of the form, fill it out and send it to a Sumitomo Electric Hardmetal dealer or distributor.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SumiTurn B-Groove



■ General Features

SumiTurn B-Groove (BF type) inserts with chipbreaker have been added to the TGA type grooving insert lineup to solve chip control problems.

■ Features

- Achieves good chip control in a wide range of grooving processes.
- Good chip control during final wide groove touch-up with traverse cutting.
- Series covering grooving widths from 1.4mm to 4.5mm with a total of 60 stocked items.
- The AC530U grade for a longer tool life is now in stock to cover various work materials from steel and stainless steel to non-ferrous metals.

Fig 1

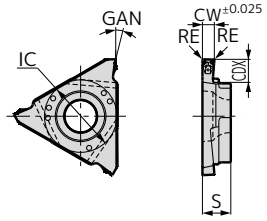
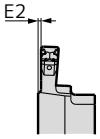


Fig 2



Grade		Cutting Edge Shape	GAN
Coated Carbide	AC530U	Honing	15°

* For the rake angle when fitted on the holder, refer to page F5.

Note 1: Please note that inserts with edge width (CW) less than 1.85mm have different cutting edge distance (E2).
Note 2: Figure shows right-handed (R) tool.

B-Groove

Chipbreaker Insert for Square Grooves BF type (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC530U R	AC530U L	Width of Cut CW	Maximum Depth of Cut CDX3 External Turning	Maximum Depth of Cut CDX3 Internal Threading	Corner Radius RE	Inscribed Circle IC	Thickness S	Cutting Edge Distance E2	Group No.	Fig
TGA R/L4140BF01	★	★	**1.40**	2.0	1.7	0.1	12.70	4.76	0.300	2	2
TGA R/L4165BF01	★	★	**1.65**	3.5	2.5	0.1	12.70	4.76	0.175	3	2
R/L4190BF01	★	★	**1.90**	3.5	2.5	0.1	12.70	4.76	—	3	1
R/L4220BF01	★	★	**2.20**	3.5	2.5	0.1	12.70	4.76	—	3	1
TGA R/L4270BF02	★	★	**2.70**	5.0	2.5	0.2	12.70	4.76	—	4	1
R/L4320BF02	★	★	**3.20**	5.0	2.5	0.2	12.70	4.76	—	4	1
R/L4420BF02	★	★	**4.20**	5.0	2.5	0.2	12.70	4.76	—	4	1
TGA R/L4150BF	★	★	**1.50**	3.5	2.5	0.2	12.70	4.76	0.250	3	2
R/L4165BF	★	★	**1.65**	3.5	2.5	0.2	12.70	4.76	0.175	3	2
R/L4175BF	★	★	**1.75**	3.5	2.5	0.2	12.70	4.76	0.125	3	2
R/L4185BF	★	★	**1.85**	3.5	2.5	0.2	12.70	4.76	0.075	3	2
R/L4200BF	★	★	**2.00**	3.5	2.5	0.2	12.70	4.76	—	3	1
R/L4220BF	★	★	**2.20**	3.5	2.5	0.2	12.70	4.76	—	3	1
R/L4230BF	★	★	**2.30**	3.5	2.5	0.2	12.70	4.76	—	3	1
TGA R/L4250BF	★	★	**2.50**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4265BF	★	★	**2.65**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4270BF	★	★	**2.70**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4280BF	★	★	**2.80**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4300BF	★	★	**3.00**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4320BF	★	★	**3.20**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4330BF	★	★	**3.30**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4350BF	★	★	**3.50**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4370BF	★	★	**3.70**	5.0	2.5	0.3	12.70	4.76	—	4	1
R/L4390BF	★	★	**3.90**	5.0	2.5	0.3	12.70	4.76	—	4	1
TGA R/L4400BF	★	★	**4.00**	5.0	2.5	0.4	12.70	4.76	—	4	1
R/L4410BF	★	★	**4.10**	5.0	2.5	0.4	12.70	4.76	—	4	1
R/L4420BF	★	★	**4.20**	5.0	2.5	0.4	12.70	4.76	—	4	1
R/L4430BF	★	★	**4.30**	5.0	2.5	0.4	12.70	4.76	—	4	1
R/L4440BF	★	★	**4.40**	5.0	2.5	0.4	12.70	4.76	—	4	1
R/L4450BF	★	★	**4.50**	5.0	2.5	0.4	12.70	4.76	—	4	1

Recommended Cutting Conditions

Work Material	Machining Details	Cutting Conditions		Groove Width CW (mm) 1.4-2.3	2.5-3.3	3.5-4.5
P General Steel	Cutting Speed vc (m/min)			50-180	50-180	50-180
	Grooving	Feed Rate f (mm/rev)		0.03-0.12	0.04-0.12	0.05-0.12
		Depth of Cut ap (mm)	External Turning	-3.5	-5.0	-5.0
			Internal Threading	-2.5	-2.5	-2.5
	Traverse Cutting	Feed Rate f (mm/rev)		0.03-0.10	0.05-0.10	0.07-0.12
		Depth of Cut ap (mm)		-0.3	-0.5	-0.7
M Stainless Steel	Cutting Speed vc (m/min)			50-160	50-160	50-160
	Grooving	Feed Rate f (mm/rev)		0.03-0.12	0.04-0.12	0.05-0.12
		Depth of Cut ap (mm)	External Turning	-3.5	-5.0	-5.0
			Internal Threading	-2.5	-2.5	-2.5
	Traverse Cutting	Feed Rate f (mm/rev)		0.03-0.10	0.05-0.10	0.07-0.12
		Depth of Cut ap (mm)		-0.3	-0.5	-0.7

*Refer to pages F4 and F5 for group numbers of holders that can be used with GWC, GWCS and GWCI series.
Select applicable inserts for the holders by using matching group numbers.

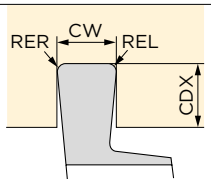
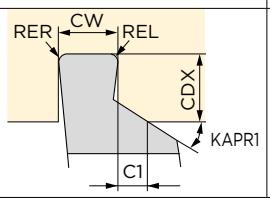
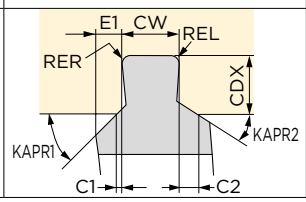
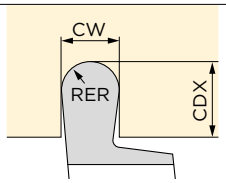
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

GWC series Special Grooving Insert Request Form

Applies to the GWC type (page F4), GWCS type (page F5) and GWCI type (page F5) inserts.

To order special grooving inserts, fill out the form below (indicate your preference by circling the item or specify dimensions), and send it to a Sumitomo Electric Hardmetal dealer or distributor. (Make a copy of this form.) For grooving inserts with shape, width of cut or grade other than those listed below, contact your nearest Sumitomo Electric Hardmetal sales office (refer to the back of this catalog).

Your Company / Contact Information (Phone / Fax / Address, etc.)

Cat. No.	(1)	(2)	(3)*	(4)
Shape				
Uses	Internal Grooving/External Grooving			
Holders	GWC type (page F4)/GWCS type (page F5)/GWCI type (page F5)			
Direction	Right Hand (R)/Left Hand (L)			
Insert Size	"3": ø9.525 "4": ø12.70			
CW				
CDX				
C1				
C2				
E1				
RER				
REL				
KAPR1				
KAPR2				
Grade				
Quantity				
Remarks				

*Inquire about applicable holders.

Form instructions

1. The above illustration shows only external right-hand and internal left-hand inserts.
   (The external left-hand and internal right-hand inserts will be opposite to the above illustration.)
2. The following two insert sizes are available.
   3: Inscribed circle 9.525mm
   4: Inscribed circle 12.70mm
3. Dimension limits for groove width and groove depth.
   (1) Maximum Width of Cut (CW): 4.8mm
   · For Models (1) and (4): CW ≤ 4.8 (SumiTurn B-Groove (BF type) is 4.5mm)
   · For Model (2) : CW + C1 ≤ 4.8 (SumiTurn B-Groove (BF type) is 4.5mm)
   · For Model (3) : CW + E1 (or C1) + C2 ≤ 4.8 (SumiTurn B-Groove (BF type) is 4.5mm)
   (2) Minimum Width of Cut (CW) · For Insert Size "3": CW ≥ 0.33mm
   · For Insert Size "4": CW ≥ 0.75mm
   (3) Groove Depth (CDX) · For Insert Size "3": CDX ≤ 0.8 to CDX ≤ 2.5mm (For I.D.: CDX ≤ 0.8 to CDX ≤ 2.0)
   · For Insert Size "4": CDX ≤ 2.0 to CDX ≤ 5.0mm (For I.D.: CDX ≤ 2.0 to CDX ≤ 2.5)
4. SumiTurn B-Groove (BF type) grooving inserts with chipbreaker are limited to insert size 4 and AC530U grade. For shape details, please contact us directly.
5. The following shows the standard tolerance for inserts.

Symbol	Standard tolerance
CW	±0.025mm
CDX	±0.05mm
KAPR1, KAPR2	±1°

   Unless otherwise specified, inserts are made to standard tolerances.
6. Insert grades are based on the catalogue numbers in stock.
7. The applicable tool holders for Models (1), (2) and (4) should match the CW dimension. Contact us for Model (3).

MEMO

GND series

VIDEO OF CUTTING



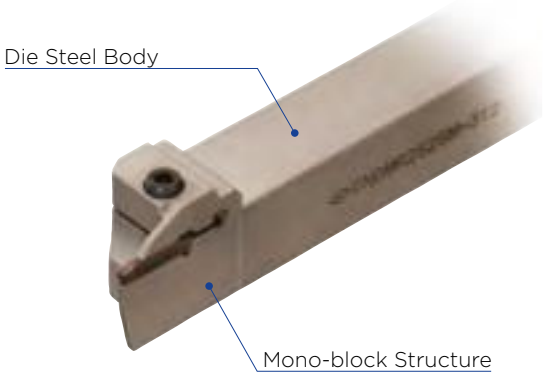
■ Features

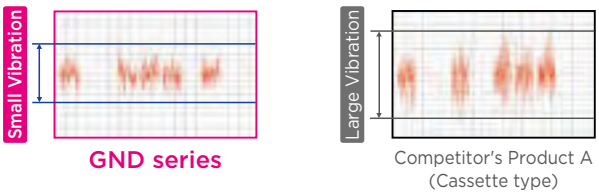
- **Suitable for a wide variety of applications**
  Applicable for grooving, traverse cutting, profiling, necking, facing and internal threading
- **Stable tool life**
  A variety of chipbreakers improve chip control in various applications
  Prevents sudden fractures due to chip clogging
- **Achieving high-efficiency grooving with reduced chattering**
  The mono-block structure and die steel body reduce vibration during grooving around 30% compared to conventional tools
- **Higher edge width precision even with unground inserts**
  High-precision sintering technology achieves width of cut precision of ±0.03mm for widths from 1.25mm to 6.0mm (lead angle of 0° or 5°)

■ Cutting Performance

Reduced chattering

High-rigidity design reduces chattering by up to 30% as compared to conventional tools

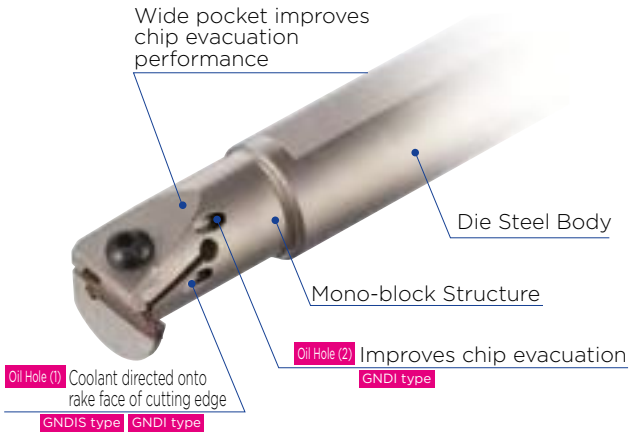


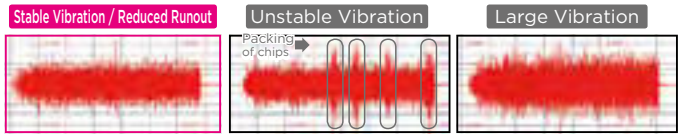


GND series — Competitor's Product A (Cassette type)

Work Material: Cf53
Holder: GNDL R2525M-220 Insert: GCM N2002-GG
Cutting Conditions: vc = 100m/min f = 0.10mm/rev ap = 20.0mm Wet

Both high rigidity and good chip evacuation performance Internal Grooving





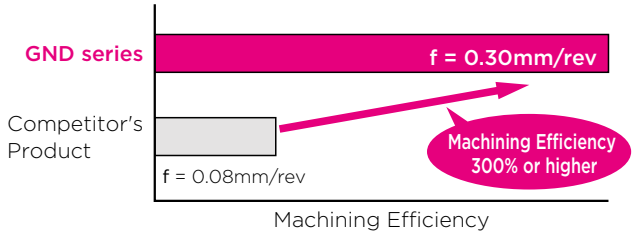
GND series — Competitor's Product B — Competitor's Product C

Work Material: 15CrMo
Holder: GNDI R2532-T306 Insert: GCM N3002-GG
Cutting Conditions: vc = 100m/min f = 0.05mm/rev ap = 3.0mm Wet

■ Application Examples

Substantially improved machining efficiency

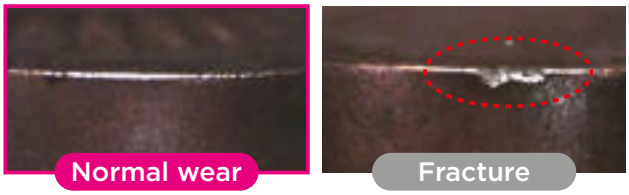
High-rigidity holder enables grooving at high feed rates



Work Material: 34CrMo4
Holder: GNDL R2525M-320 Insert: GCM N3002-GG (AC530U)
Cutting Conditions: vc = 130m/min, f = 0.30mm/rev, Wet

Long, stable tool life ensures reliable functionality even on automatic production lines!

Reduction of chattering prevents unexpected breakage



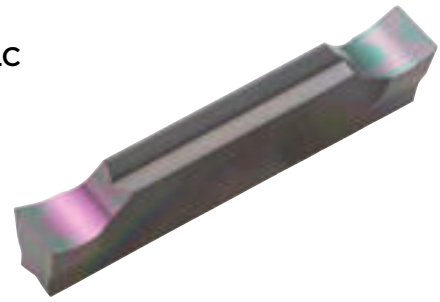
GND series — Competitor's Product

Work Material: Cf53
Holder: GNDM L2525M-618 Insert: GCM N6030-RG (AC530U)
Cutting Conditions: vc = 130m/min, f = 0.3mm/rev, Wet

GND series

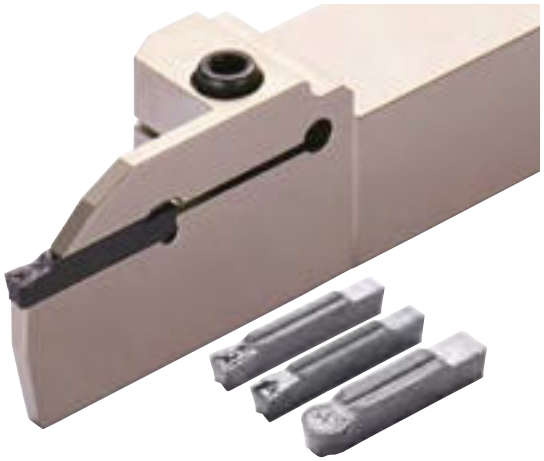
■ DL1500 Grade for Non-Ferrous Metal Grooving

- DL1500 grade for grooving of non-ferrous metals, utilising DLC Coat with a low coefficient of friction and excellent adhesion resistance, is now available as a series

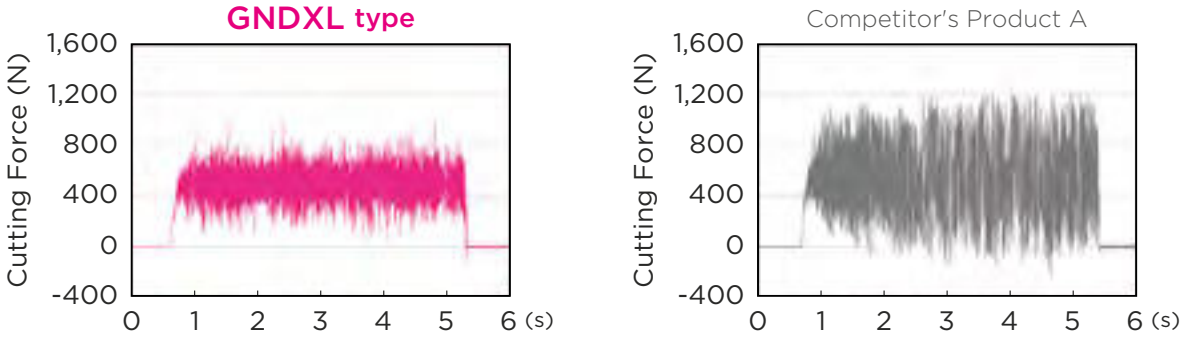


■ New Holders for Deep Grooves GNDXL type

- SEC-Grooving Tool Holders GND series lineup includes holders for deep grooves with groove depths of up to 32mm
- Mono-block high-rigidity body and insert realise superb vibration resistance with extra-strong clamp-on specifications
- Shank size lineup includes 20mm square and 25mm square
- Dedicated 1-cornered inserts for deep grooving with widths of cut from 3.0 to 6.0mm are stocked (2.0mm is a made-to-order item)
- Chipbreaker lineup includes ML type / GF type / RN type



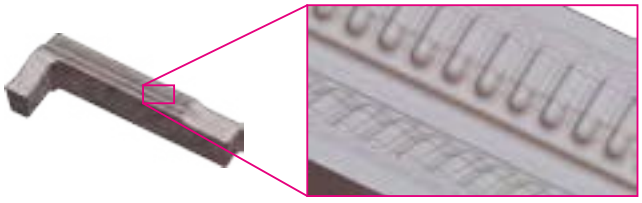
- Vibration Resistance



Work Material: X5CrNiMo17-12-2 Holder: GNDXL R2525M-332 Insert: GCMN3002-GF1 (AC530U) Cutting Conditions: vc = 100m/min f = 0.10mm/rev ap = 10mm Wet (External Coolant Supply)

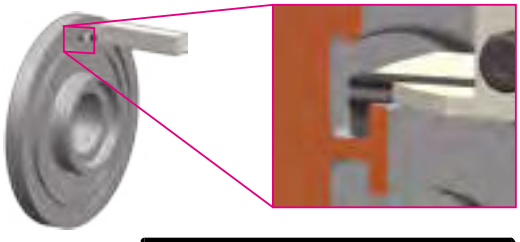
■ 90° Insert for Special Grooving (made-to-order item)

- Ideal for grooving in narrow spaces
- Widths of cut from 2.0mm to 5.0mm available as made-to-order items
- Various cutting edge designs possible with ground type inserts
- Utilises an unique insert fallout prevention design



Grip effect for extra-strong clamping

Usage Example: Aerospace Engine Disc



GND series 90° Insert Request Form F65

GND series

■ **Achieving stability and longer tool life** ... A variety of chipbreakers ensure outstanding chip evacuation performance in many different types of applications.

Grooving / Traverse Cutting		Grooving / Cut-off			Cut-off		Profiling	Profiling Necking	Non-Ferrous Metals
General-purpose	Low Feed	General-purpose	Low Feed	Low Cutting Force	General-purpose	Low Cutting Force	General-purpose	General-purpose	General-purpose
MG type	ML type	GG type	GL type	GF type	CG type	CF type	RG type	RN type	GA type
Standard chipbreaker for traverse cutting	For low-feed chip control	1st recommendation for grooving	For low-feed chip control	For low cutting force and chip control at low feeds	1st recommendation for cut-off machining	For low-feed chip control	For external profiling and radius grooving	For facing, internal profiling, radius grooving and necking	Ideal for aluminum alloy machining
Cutting Edge Cross Section 0.10 / 15°	Cutting Edge Cross Section 0.05 / 20°	Cutting Edge Cross Section 0.10 / 20°	Cutting Edge Cross Section 0.10 / 20°	Cutting Edge Cross Section 30°	Cutting Edge Cross Section Lead Angle: 5° / 25°	Cutting Edge Cross Section Lead Angle: 10°/15° / 25°	Cutting Edge Cross Section 0.05 / 25°	Cutting Edge Cross Section 0.05 / 25°	Cutting Edge Cross Section 20°
Edge Widths in Stock (mm)									
1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0
3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0
6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0
Stocked Grades									
AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P	AC8025P AC8035P
AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K
AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S	AC5015S AC5025S
AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U
AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A	AC1030U T2500A
DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10	DL1500 H10
AC9125T	AC9125T	AC9125T	AC9125T	AC9125T	AC9125T	AC9125T	AC9125T	AC9125T	AC9125T
*: GNDIS type Only					Lead Angle 5°	Lead Angle 10° / 15°			

3.0 : for AC9125T just the Grades marked with a red line are relevant

Hard grooving: See page L123

■ Improved Chip Control

Grooving



GND series (GG type Chipbreaker)



Conventional Tool

Work Material: 15CrMo5 (ECMO 80)
Holder: GNDL R2525M-320, Insert: GCM N3002-GG
Cutting Conditions: vc = 100m/min, f = 0.15mm/rev, ap = 12.0mm Wet

Traverse cutting



GND series (ML type Chipbreaker)



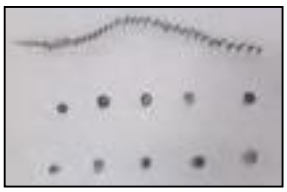
Conventional Tool

Work Material:15CrMo5 (ECMO 80)
Holder: GNDM R2525M-312 Insert: GCM N3002-ML
Cutting Conditions: vc = 100m/min, f = 0.10mm/rev, ap = 0.5mm Wet

Cut-off



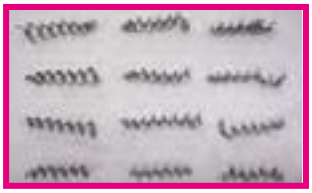
GND series (CG type Chipbreaker)



Competitor's Product

Work Material: X5CrNiMo17-12-2 (ø30mm)
Holder: GNDL R2525M-220 Insert: GCM R2002-CG-05
Cutting Conditions: vc = 100m/min, f = 0.15mm/rev Wet

Profiling



GND series (RG type Chipbreaker)



Conventional Tool

Work Material: 15CrMo5 (ECMO 80)
Holder: GNDM R2525M-312 Insert: GCM N3015-RG
Cutting Conditions: vc = 100m/min, f = 0.15mm/rev, ap = 0.1mm Wet

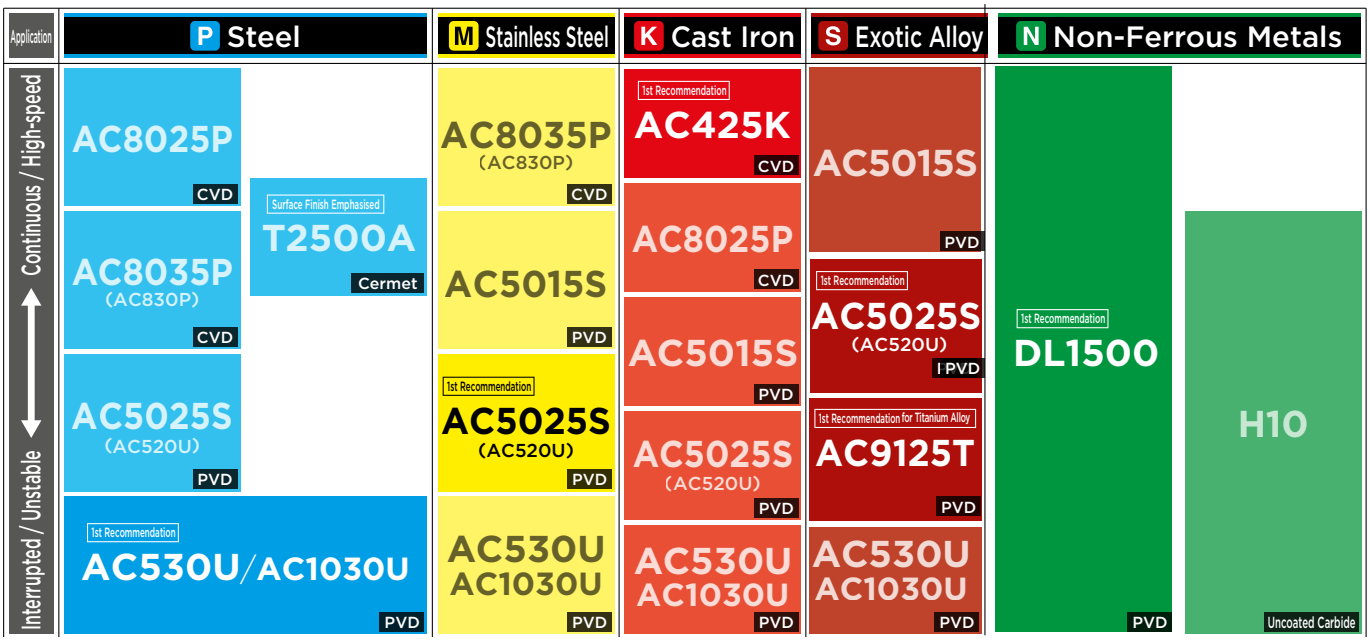
GND series

■ Chipbreaker Selection





■ Insert Grade Selection



Only AC5015S / AC5025S / AC520U / AC1030U inserts are stocked for GNDIS type holders.

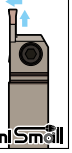
GND series

For External Turning (For Small Lathes)

SumiSmall

Traverse Cutting / Profiling (Cut-off)

GNDM type
Straight type

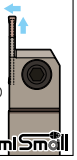


Shank Size (H x W)
16 × 16mm
20 × 12mm
F26

Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

GNDM-J type
Straight type
With Indexable Head
Internal Coolant Supply



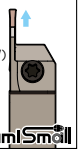
Shank Size (H x W)
16 × 16mm
20 × 12mm
F28

Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

Grooving / Cut-off (Traverse Cutting)

GNDL type
Straight type

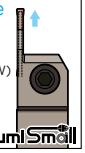


Shank Size (H x W)
10 × 10mm
12 × 12mm
16 × 16mm
20 × 12mm
F26

Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

GNDL-J type
Straight type
With Indexable Head
Internal Coolant Supply



Shank Size (H x W)
12 × 12mm
16 × 16mm
20 × 12mm
F28

Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

For External Turning For Small Lathes series

MG: Multi-functional / General-purpose type　ML: Multi-functional / Low-feed type　GG: Grooving / General-purpose type　GL: Grooving / Low-feed type　GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type　CF: Cut-off / Low cutting force type　RG: Profiling / General-purpose type　RN: Facing / Necking / General-purpose type　GA: Non-Ferrous Metal / General-purpose type

Type	Shank Size (mm) Height H	Shank Size (mm) Width B	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Ref. Page	Applicable Chipbreakers MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
For Small Lathes	10	10	1.25	GNDL	10	F26					◎					
			1.5	GNDL	10	F26					◎					
			2	GNDL	10	F26		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDL	10	F26	○	○	◎	◎	◎	◎	◎	◎	○	◎
	12	12	1.25	GNDL	12	F26					◎					
			1.5	GNDL	12	F26					◎					
			2	GNDL	12.5	F26		○	◎	◎	◎	◎	◎		◎	◎
			2	GNDL-J (Internal Coolant Supply)	12.5	F28		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDL	12.5	F26	○	○	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL-J (Internal Coolant Supply)	12.5	F28	○	○	◎	◎	◎	◎	◎	◎	○	◎
	16	16	1.25	GNDM	8	F26					◎					
			1.25 1.5	GNDL	12.5	F26					◎					
			1.5	GNDM	10	F26					◎					
			2	GNDM	12	F26		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDM-J (Internal Coolant Supply)	12	F28		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDL	16	F26		○	◎	◎	◎	◎	◎		◎	◎
			2	GNDL-J (Internal Coolant Supply)	16	F28		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDM	12	F26	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDM-J (Internal Coolant Supply)	12	F28	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL	16	F26	○	○	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL-J (Internal Coolant Supply)	16	F28	○	○	◎	◎	◎	◎	◎	◎	○	◎
	20	12	2	GNDM	17	F26		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDM-J (Internal Coolant Supply)	17	F28		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDL	21	F26		○	◎	◎	◎	◎	◎		◎	◎
			2	GNDL-J (Internal Coolant Supply)	21	F28		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDM	17	F26	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDM-J (Internal Coolant Supply)	17	F28	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL	21	F26	○	○	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL-J (Internal Coolant Supply)	21	F28	○	○	◎	◎	◎	◎	◎	◎	○	◎

: In Stock

◎: Best ○: Suitable

Indexable Heads D20

GND series

For External Turning (Straight Type, Groove Depth up to 25mm)

For External Machining (Straight Edge type Groove Depth up to 32mm)

Traverse Cutting / Profiling (Cut-off)

GNDS type — Straight type — For Shallow Grooves
Shank Size (H x W)
20 × 20mm
25 × 25mm
F30
Available Edge Widths (mm): 1.25 1.5 2.0 / 3.0 4.0 5.0 / 6.0 7.0 8.0
Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

GNDM type — Straight type
Shank Size (H x W)
20 × 20mm
25 × 25mm
32 × 25mm
32 × 32mm
F32
Available Edge Widths (mm): 1.25 1.5 2.0 / 3.0 4.0 5.0 / 6.0 7.0 8.0
Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

GNDM-J/JE type — Straight type — Internal Coolant Supply
Shank Size (H x W)
20 × 20mm
25 × 25mm
F34
Available Edge Widths (mm): 1.25 1.5 2.0 / 3.0 4.0 5.0 / 6.0 7.0 8.0
Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

Grooving / Cut-off (Traverse Cutting)

GNDL type — Straight type
Shank Size (H x W)
20 × 20mm
25 × 25mm
32 × 25mm
32 × 32mm
F36
Available Edge Widths (mm): 1.25 1.5 2.0 / 3.0 4.0 5.0 / 6.0 7.0 8.0
Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

GNDL-J/JE type — Straight type — Internal Coolant Supply
Shank Size (H x W)
20 × 20mm
25 × 25mm
F38
Available Edge Widths (mm): 1.25 1.5 2.0 / 3.0 4.0 5.0 / 6.0 7.0 8.0
Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

Grooving / Cut-off (Traverse Cutting)

GNDXL type — Straight type
Shank Size (H x W)
20 × 20mm
25 × 25mm
F40
Available Edge Widths (mm): 2.0 3.0 4.0 / 5.0 6.0
Applicable Chipbreaker: ML GF RN

Inserts are dedicated products.

For External Machining Straight type series (Groove Depth up to 25mm)

MG: Multi-functional / General-purpose type　ML: Multi-functional / Low-feed type　GG: Grooving / General-purpose type　GL: Grooving / Low-feed type　GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type　CF: Cut-off / Low cutting force type　RG: Profiling / General-purpose type　RN: Facing / Necking / General-purpose type　GA: Non-Ferrous Metal / General-purpose type

Type	Shank Size (mm) Height H	Shank Size (mm) Width B	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Ref. Page	Applicable Chipbreakers MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
Straight type	20	20	1.25 1.5	GNDM	10	F32					◎					
			1.25 1.5	GNDL	16	F36					◎					
			2	GNDS	6	F30		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDM	10	F32		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDM-J/JE	10	F34		◎	◎	◎	◎	◎	◎		◎	◎
			2	GNDL	20	F36		○	◎	◎	◎	◎	◎		◎	◎
			2	GNDL-J/JE	20	F38		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDS	6	F30	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDM	12	F32	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDM-J/JE	12	F34	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
	20	20	3	GNDL	20	F36	○	○	◎	◎	◎	◎	◎	◎	○	◎
	25	25	3	GNDL-J/JE	20	F38	○	○	◎	◎	◎	◎	◎	◎	○	◎
			4	GNDS	10	F30	◎	◎	◎	◎	◎	◎		◎	○	◎
			4	GNDM	18	F32	◎	◎	◎	◎	◎	◎		◎	○	◎
			4	GNDM-J/JE	18	F34	◎	◎	◎	◎	◎	◎		◎	○	◎
			4	GNDL	25	F36	○	○	◎	◎	◎	◎		◎	○	◎
			4	GNDL-J/JE	25	F38	○	○	◎	◎	◎	◎		◎	○	◎
			5 6	GNDS	10	F30	◎	◎	◎	◎	◎			◎	○	◎
			5 6	GNDM	18	F32	◎	◎	◎	◎	◎			◎	○	◎
			5 6	GNDM-J/JE	18	F34	◎	◎	◎	◎	◎			◎	○	◎
			5 6	GNDL	25	F36	○	○	◎	◎	◎			◎	○	◎
			5 6	GNDL-J/JE	25	F38	○	○	◎	◎	◎			◎	○	◎
	32	25*	3	GNDM	12	F32	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDL	20	F36	○	○	◎	◎	◎	◎	◎	◎	○	◎
			4	GNDM	18	F32	◎	◎	◎	◎	◎	◎		◎	○	◎
			4	GNDL	25	F36	○	○	◎	◎	◎	◎		◎	○	◎
	32	32	5 6	GNDM	18	F32	◎	◎	◎	◎	◎			◎	○	◎
			5 6	GNDL	25	F36	○	○	◎	◎	◎			◎	○	◎
			7 8	GNDM	18	F32	◎	◎	◎	◎	◎			◎		
			7 8	GNDL	25	F36	○	○	◎	◎	◎			◎		

■: In stock　*: Made-to-order item (Shank size (height x width) 32 x 25mm)　◎: Best　○: Suitable

For External Machining Straight type series (Groove Depth up to 32mm)

ML: Multi-functional / Low-feed type　GF: Grooving / Low cutting force type　RN: Facing / Necking / General-purpose type

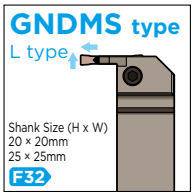
Type	Shank Size (mm) Height H	Shank Size (mm) Width B	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Ref. Page	Applicable Chipbreakers (GNDXL type Dedicated) ML	GF	RN
Straight Edge type	20	20	2	GNDXL	26	F40	○	◎	○
	25	25	3 4 5 6		32	F40	○	◎	○

■: In Stock　■: Made-to-order item　Note: Only dedicated 1-cornered inserts (insert part number suffix [1]) can be used for GNDXL type.　◎: Best　○: Suitable

GND series

For External Machining (L type)

Traverse Cutting / Profiling (Cut-off)

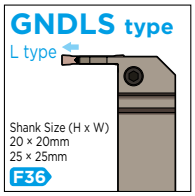


Available Edge Widths (mm)

1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

Grooving / Cut-off (Traverse Cutting)



Available Edge Widths (mm)

1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

For External Machining L type series

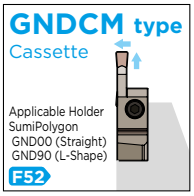
MG: Multi-functional / General-purpose type　ML: Multi-functional / Low-feed type　GG: Grooving / General-purpose type　GL: Grooving / Low-feed type　GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type　CF: Cut-off / Low cutting force type　RG: Profiling / General-purpose type　RN: Facing / Necking / General-purpose type　GA: Non-Ferrous Metal / General-purpose type

Type	Shank Size (mm) Height H	Shank Size (mm) Width B	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Ref. Page	MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
L type	20	20	2	GNDLS	16	F36		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDMS	10	F32	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDLS	16	F36	○	○	◎	◎	◎	◎	◎	◎	○	◎
			4	GNDMS	12	F32	◎	◎	◎	◎	◎	◎		◎	○	◎
			5	GNDMS	12	F32	◎	◎	◎	◎	◎			◎	○	◎
	25	25	2	GNDLS	18	F36		○	◎	◎	◎	◎	◎		◎	◎
			3	GNDMS	12	F32	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
			3	GNDLS	18	F36	○	○	◎	◎	◎	◎	◎	◎	○	◎
			4	GNDMS	14	F32	◎	◎	◎	◎	◎	◎		◎	○	◎
			4	GNDLS	23	F36	○	○	◎	◎	◎	◎		◎	○	◎
			5 6	GNDMS	14	F32	◎	◎	◎	◎	◎			◎	○	◎
			5 6	GNDLS	23	F36	○	○	◎	◎	◎			◎	○	◎

■: In Stock　　◎: Best　○: Suitable

For External Turning (SumiPolygon Cassette)

Grooving / Cut-off / Traverse Cutting / Profiling



Available Edge Widths (mm)

1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker: MG ML GG GL GF CG CF RG RN GA

SumiPolygon Cassette series

MG: Multi-functional / General-purpose type　ML: Multi-functional / Low-feed type　GG: Grooving / General-purpose type　GL: Grooving / Low-feed type　GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type　CF: Cut-off / Low cutting force type　RG: Profiling / General-purpose type　RN: Facing / Necking / General-purpose type　GA: Non-Ferrous Metal / General-purpose type

Type	Applicable SumiPolygon Holders	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Ref. Page	MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
Cassette	GND00 (Straight)	2	GNDCM	12	F52		◎	◎	◎	◎	◎	◎		◎	◎
		3		12	F52	◎	◎	◎	◎	◎	◎	◎	◎	○	◎
	GND90 (L type)	4		18	F52	◎	◎	◎	◎	◎	◎		◎	○	◎
		5 6		18	F52	◎	◎	◎	◎	◎			◎	○	◎

■: In Stock　　◎: Best　○: Suitable

GND series

For Necking

Necking

GNDN type
Straight type



Shank Size (H x W)
20 × 20mm
25 × 25mm
F42

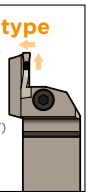
Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker
MG ML GG GL GF CG CF RG RN GA

For Facing

Grooving / Traverse Cutting / Profiling

GNDF type
Straight type

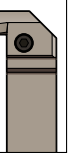


Shank Size (H x W)
20mm × 20mm
25mm × 25mm
F44

Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker
MG ML GG GL GF CG CF RG RN GA

GNDFS type
L type



Shank Size (H x W)
25mm × 25mm
32mm × 32mm
F46

Available Edge Widths (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker
MG ML GG GL GF CG CF RG RN GA

Necking series

MG: Multi-functional / General-purpose type ML: Multi-functional / Low-feed type GG: Grooving / General-purpose type GL: Grooving / Low-feed type GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type CF: Cut-off / Low cutting force type RG: Profiling / General-purpose type RN: Facing / Necking / General-purpose type GA: Non-Ferrous Metal / General-purpose type

Type	Shank Size (mm) Height H	Shank Size (mm) Width B	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Min. Bore Dia. (mm)	Ref. Page	MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
Straight type	20	20	2	GNDN	1.5	ø20	F42									◎	
			3		2.0	ø20	F42									◎	
			4		3.0	ø30	F42									◎	
	25	25	5		3.5	ø30	F42									◎	
			6		4.0	ø30	F42									◎	

: In Stock ◎: Best

For Facing
Straight / L type series

MG: Multi-functional / General-purpose type ML: Multi-functional / Low-feed type GG: Grooving / General-purpose type GL: Grooving / Low-feed type GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type CF: Cut-off / Low cutting force type RG: Profiling / General-purpose type RN: Facing / Necking / General-purpose type GA: Non-Ferrous Metal / General-purpose type

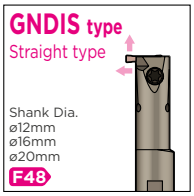
Type	Shank Size (mm) Height H	Shank Size (mm) Width B	Cutting Edge Width (mm)	Series	Max. Groove Depth (mm)	Machining Diameter (mm)	Ref. Page	MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
Straight type	20	20	3	GNDF	12	ø35 ø45	F44	◎	◎	◎	◎	◎				◎	◎
			3		12	ø40 ø55	F44	◎	◎	◎	◎	◎				◎	◎
			3		18	ø50 ø70	F44	◎	◎	◎	◎	◎				◎	◎
			3		18	ø65 ø100	F44	◎	◎	◎	◎	◎				◎	◎
			3		18	ø90 ø150	F44	◎	◎	◎	◎	◎				◎	◎
			3		18	ø140 ø200	F44	◎	◎	◎	◎	◎				◎	◎
			3		18	ø180 ø300	F44	◎	◎	◎	◎	◎				◎	◎
			4	GNDF	18	ø40 ø55	F44	◎	◎	◎	◎	◎				◎	◎
			4		23	ø50 ø70	F44	◎	◎	◎	◎	◎				◎	◎
			4		23	ø65 ø90	F44	◎	◎	◎	◎	◎				◎	◎
			4		23	ø85 ø130	F44	◎	◎	◎	◎	◎				◎	◎
			4		23	ø125 ø200	F44	◎	◎	◎	◎	◎				◎	◎
			4		23	ø180 ø300	F44	◎	◎	◎	◎	◎				◎	◎
			4		23	ø280 ø1,000	F44	◎	◎	◎	◎	◎				◎	◎
			5	GNDF	23	ø50 ø70	F44	◎	◎	◎	◎	◎				◎	◎
			5		23	ø65 ø90	F44	◎	◎	◎	◎	◎				◎	◎
			5		23	ø85 ø130	F44	◎	◎	◎	◎	◎				◎	◎
			5		23	ø125 ø200	F44	◎	◎	◎	◎	◎				◎	◎
			5		23	ø180 ø300	F44	◎	◎	◎	◎	◎				◎	◎
			5		23	ø280 ø1,000	F44	◎	◎	◎	◎	◎				◎	◎
			6	GNDF	23	ø50 ø75	F44	◎	◎	◎	◎	◎				◎	◎
			6		23	ø70 ø110	F44	◎	◎	◎	◎	◎				◎	◎
			6		23	ø100 ø200	F44	◎	◎	◎	◎	◎				◎	◎
			6		23	ø180 ø300	F44	◎	◎	◎	◎	◎				◎	◎
			6		23	ø280 ø1,000	F44	◎	◎	◎	◎	◎				◎	◎
L type	25	25	6	GNDFS	20	ø70 ø100	F46	◎	◎	◎	◎	◎				◎	◎
			6		20	ø100 ø200	F46	◎	◎	◎	◎	◎				◎	◎
			6		20	ø180 ø300	F46	◎	◎	◎	◎	◎				◎	◎
			6		20	ø280 ø1,000	F46	◎	◎	◎	◎	◎				◎	◎
			6		20	ø450 -	F46	◎	◎	◎	◎	◎				◎	◎
	32	32	8	GNDFS	20	ø70 ø100	F46	◎	◎	◎	◎	◎					
			8		20	ø100 ø200	F46	◎	◎	◎	◎	◎					
			8		20	ø180 ø300	F46	◎	◎	◎	◎	◎					
			8		20	ø280 ø1,000	F46	◎	◎	◎	◎	◎					
			8		20	ø450 -	F46	◎	◎	◎	◎	◎					

: In Stock : Made-to-order item ◎: Best

GND series

For Internal Machining (Bore Dia.: ø14mm ~)

Grooving / Traverse Cutting / Profiling



Available Edge Widths (mm)

1.5	2.0	3.0

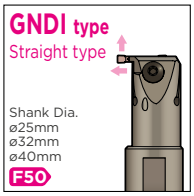
Applicable Chipbreaker

ML	GF

Inserts are dedicated products.

For Internal Machining (Bore Dia.: ø32mm ~)

Grooving / Traverse Cutting / Profiling



Available Edge Widths (mm)

1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Chipbreaker

MG	ML	GG	GL	GF	CG	CF	RG	RN	GA

For Internal Machining
(Bore Diameter ø14mm ~)

ML: Multi-functional / Low-feed type GF: Grooving / Low cutting force type

Type	Shank Size DCON (mm)	Cutting Edge Width (mm) 1.5	2	3	Series	Max. Groove Depth (mm) 5 10 15 20 25 30	Min. Bore Dia. (mm)	Ref. Page	Applicable Chipbreakers (**Dedicated to GNDIS type**) ML	GF
Straight type	ø12	1.5			GNDIS	2.6	ø14	F48		◎
		1.5				3.6	ø14	F48		◎
			2	3		2.6	ø14	F48	◎	◎
			2	3		3.6	ø14	F48	◎	◎
	ø16	1.5			GNDIS	3.6	ø16	F48		◎
		1.5				4.6	ø20	F48		◎
			2	3		3.6	ø16	F48	◎	◎
			2	3		4.6	ø20	F48	◎	◎
	ø20	1.5			GNDIS	6.6	ø25	F48		◎
			2	3		6.6	ø25	F48	◎	◎

■: In Stock Note: Only dedicated GXM inserts can be used for GNDIS types. ◎: Best

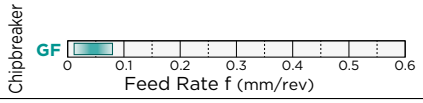
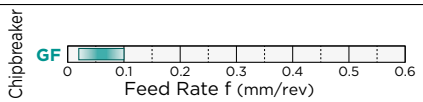
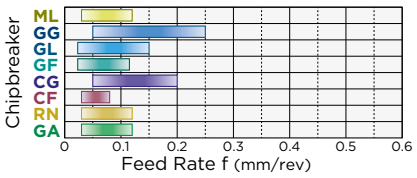
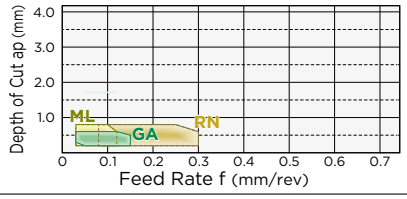
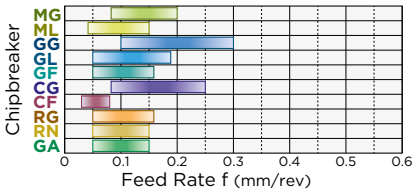
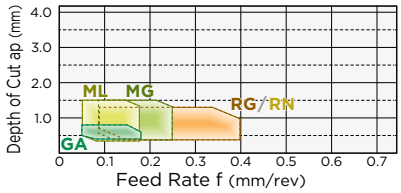
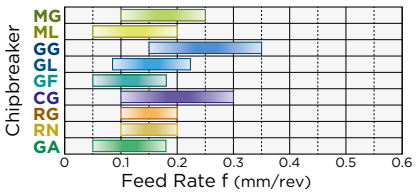
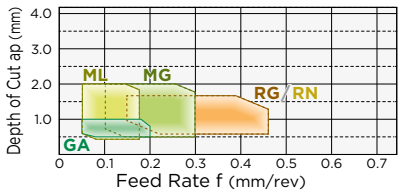
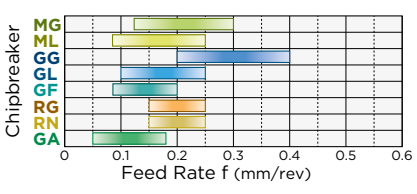
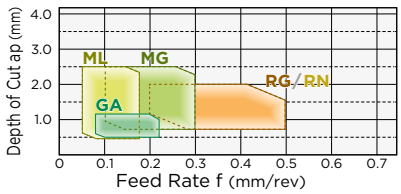
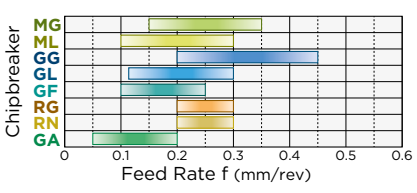
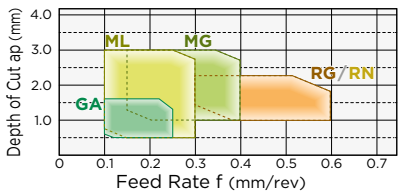
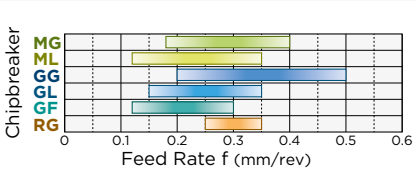
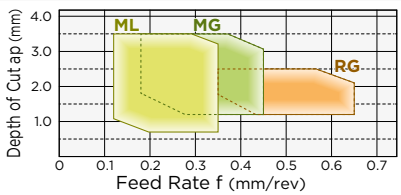
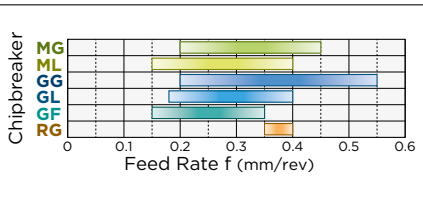
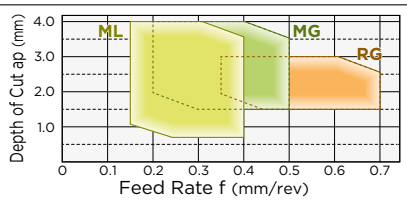
For Internal Machining
(Bore Diameter ø32mm ~)

MG: Multi-functional / General-purpose type ML: Multi-functional / Low-feed type GG: Grooving / General-purpose type GL: Grooving / Low-feed type GF: Grooving / Low cutting force type
CG: Cut-off / General-purpose type CF: Cut-off / Low cutting force type RG: Profiling / General-purpose type RN: Facing / Necking / General-purpose type GA: Non-Ferrous Metal / General-purpose type

Type	Shank Size DCON (mm)	Cutting Edge Width (mm) 2	3	4	5	6	Series	Max. Groove Depth (mm) 5 10 15 20 25 30	Min. Bore Dia. (mm)	Ref. Page	Applicable Chipbreakers MG	ML	GG	GL	GF	CG	CF	RG	RN	GA
Straight type	ø25	2					GNDI	6	ø32	F50		◎	○	◎	◎				◎	◎
			3	4	5			6	ø32	F50	○	◎	○	◎	◎				◎	◎
	ø32	2					GNDI	6	ø32	F50		◎	○	◎	◎				◎	◎
			3	4	5			10	ø40	F50	○	◎	○	◎	◎				◎	◎
	ø40		3	4	5	6	GNDI	11	ø50	F50	○	◎	○	◎	◎				◎	◎

■: In Stock ◎: Best ○: Suitable

GND series Recommended Cutting Conditions

Width of Cut (mm)	Recommended Cutting Conditions: Grooving / Cut-off (Necking)	Recommended Cutting Conditions: Traverse Cutting	Corner Radius (mm)	Applicable Insert
1.25		—	0.05	MG ML GG GL **GF** CG CF RG RN GA
1.5		—	0.05	MG ML GG GL **GF** CG CF RG RN GA
2.0			0.03	MG ML GG GL GF CG **CF** RG RN GA
			0.2	MG **ML GG GL GF CG** CF RG RN **GA**
			0.4	MG ML GG **GL GF** CG CF RG RN GA
			1.0	MG ML GG GL GF CG CF RG **RN** GA
3.0			0.03	MG ML GG GL GF CG **CF** RG RN GA
			0.2	**MG ML GG GL GF CG** CF RG RN **GA**
			0.4	**MG ML GG GL GF** CG CF RG RN GA
			1.5	MG ML GG GL GF CG CF **RG RN** GA
4.0			0.2	**MG ML GG GL GF CG** CF RG RN GA
			0.4	**MG ML GG GL GF** CG CF RG RN **GA**
			0.8	**MG ML** GG GL GF CG CF RG RN GA
			2.0	MG ML GG GL GF CG CF **RG RN** GA
5.0			0.2	MG ML **GG GL GF** CG CF RG RN GA
			0.4	**MG ML GG GL GF** CG CF RG RN **GA**
			0.8	**MG ML** GG GL GF CG CF RG RN GA
			2.5	MG ML GG GL GF CG CF **RG RN** GA
6.0			0.2	MG ML **GG GL GF** CG CF RG RN GA
			0.4	**MG ML GG GL GF** CG CF RG RN **GA**
			0.8	**MG ML** GG GL GF CG CF RG RN GA
			3.0	MG ML GG GL GF CG CF **RG RN** GA
7.0			0.2	MG ML GG GL **GF** CG CF RG RN GA
			0.4	**MG ML GG GL GF** CG CF RG RN GA
			0.8	**MG ML** GG GL GF CG CF RG RN GA
			3.5	MG ML GG GL GF CG CF **RG** RN GA
8.0			0.2	MG ML GG GL **GF** CG CF RG RN GA
			0.4	**MG ML GG GL GF** CG CF RG RN GA
			0.8	**MG ML** GG GL GF CG CF RG RN GA
			4.0	MG ML GG GL GF CG CF **RG** RN GA

For face grooving, use cutting conditions closer to the lower limit of the recommended cutting conditions to ensure that chips are long.
In cut-off applications, reduce the feed rate to around 30% to 50% near the centre of the workpiece.
As there is less space for chip evacuation when machining internal diameters (particularly small bore diameters), ML/GL/GF type chipbreakers are recommended.
Modifications to inserts and holders are required to perform operations such as radius grooving when using the RG type chipbreaker with the GNDF type holder for facing.
Use GNDXL type holders at feed rate 80% or below.

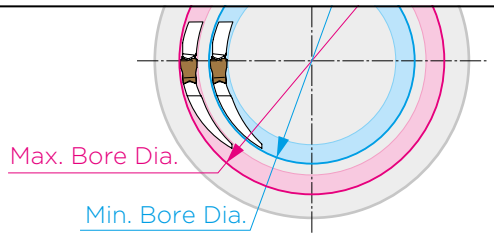
■ Recommended Cutting Conditions

Recommended Cutting Conditions for GNDIS type ☞ F55

Work Material	P Carbon Steel / Alloy Steel					M Stainless Steel			K Cast Iron				S Exotic Alloy		N Non-Ferrous Metal
Tool Grades	AC8025P	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	T2500A	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	AC8025P	AC425K	AC5015S AC520U	AC5025S AC530U AC1030U	AC5015S AC520U	AC5025S AC530U AC1030U	H10 DL1500
Cutting Speed vc (m/min)	80-250	80-200	80-200	50-200	50-200	70-150	70-150	50-150	80-200	80-200	60-200	50-200	20-80	20-60	150-300

Key Points for Facing

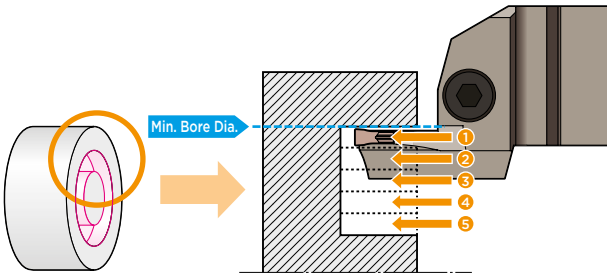
Holder Selection



- Select a holder with which the outer diameter of the first groove to be machined is between the maximum and minimum grooving diameters of the holder.
- If the turning start point is within the effective work diameter range, the work diameter will not be limited for subsequent passes.
- Select the lower limit of the recommended cutting conditions for the chipbreaker and ensure long chips for evacuation purposes. (In face grooving, very short chips easily get stuck in grooves, which causes problems.)
- For breaking chips, step feed is required.

Precautions for Groove Expansion

Recommended Chipbreakers MG ML GG GL GF GA



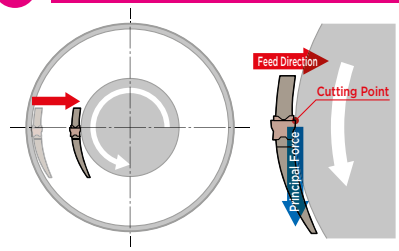
- If the first groove is within the effective work diameter range during groove expansion via plunging, the work diameter will not be limited for subsequent passes.

Precautions for Traverse Cutting

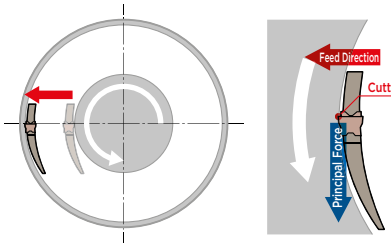
Recommended Chipbreakers MG ML RN

Considering the rigidity of the holder, we recommend turning from the outside to the inside.

○ External → Internal



× Internal → External



If turning is performed from the inner to the outer diameter, the wall thickness remaining on the principal force side will become thinner, reducing the rigidity of the holder.

- If the turning start point for traverse face cutting operation is within the effective work diameter range, the work diameter will not be limited for traverse cutting.

Key Points in Internal Machining

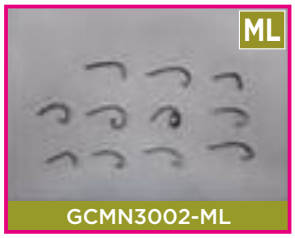
Precautions for Internal Machining

Recommended Chipbreakers ML GL GF

If the prepared hole diameter is small, use an ML type or GL type low-feed chipbreaker, both of which reduce chip curl diameter, to ensure adequate chip evacuation.



GCMN3004-MG



GCMN3002-ML



GCMN3002-GG



GCMN3002-GL

Work Material: 15CrMo5 (ECMO 80) Prepared Hole Diameter: ø25mm Holder: GNDI R2532-T306 Insert: GCM N300O-OO
Cutting Conditions: vc = 100m/min f = 0.1mm/rev ap = 3.0mm Wet

Internal Machining



External Machining



GCMN3002-GG

⚠ Chip shapes differ between internal machining and external machining even under the same cutting conditions.

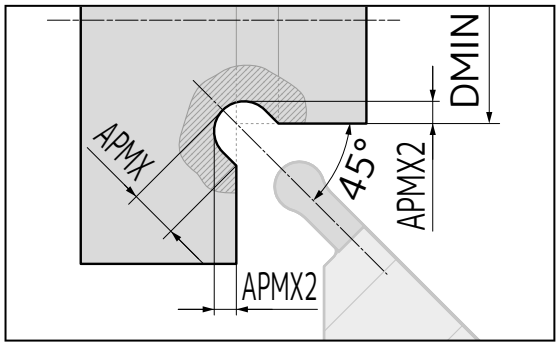
Work Material: 15CrMo5 (ECMO 80)
Holder: GNDL R2525M-320, Insert: GCM N3002-GG
Cutting Conditions: vc = 100m/min f = 0.10mm/rev ap = 5.0mm Wet

Key Points for Necking

Precautions for Necking

Recommended Chipbreaker RN

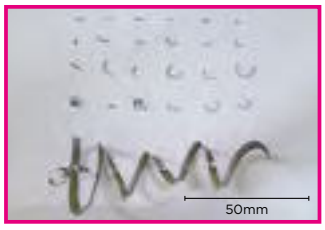
Distance from Work Material to Necking Depth

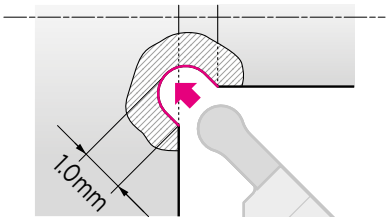


Width of Cut CW (mm)	Necking Depth APMX (mm)	Distance from Work Material to Necking Depth APMX2 (mm)
2.0	1.5	0.64
3.0	2.0	0.79
4.0	3.0	1.29
5.0	3.5	1.44
6.0	4.0	1.59

· For necking, these conditions are recommended for each width of cut when grooving with RN type chipbreakers.
· To prevent interference with the work material, the work diameter for each GNDN type holder should be set to the minimum bore diameter (DMIN) or less.

Chip Shape

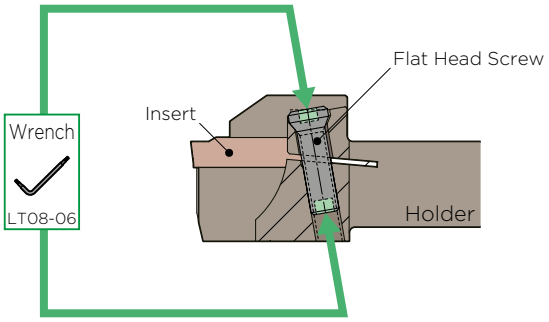




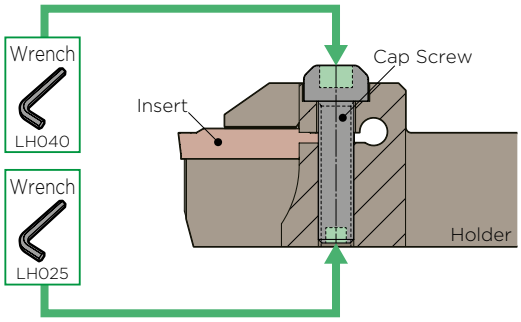
Work Material : 34CrMo4 Groove Width: 3.0mm
Holder : GNDN R2020K-320-020
Insert : GCMN3015-RN
Cutting Conditions : vc = 100m/min f = 0.1mm/rev
Necking Depth = 1.0mm Wet

Key Points in Internal Coolant Supply Holders For Small Lathes

· 12mm and 16mm square Internal Coolant Supply Holders for Small Lathes enable insert exchange from both top and bottom.



12mm square holder: **GNDL R/L**1212JX**-**OOO.OJ



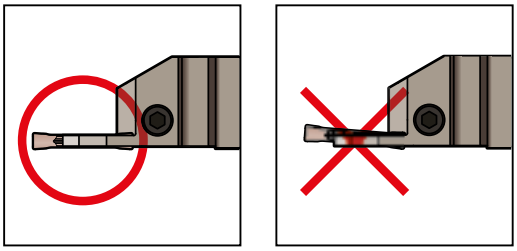
16mm square holder: **GNDM R/L**1616JX**-**OOOJ
GNDL R/L1616JX**-**OOOJ

Precautions for SEC-Grooving Tool Holders GND series

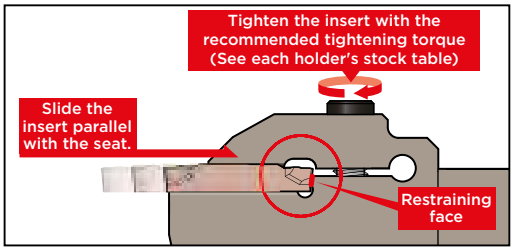
■ Insert Mounting Precautions

(1) Remove any dust, etc. from the insert seat, bolt, and bolt hole before attaching the insert.
(2) Remove any scratches or burrs found on the insert seat.
(3) Mount the insert by sliding it parallel to the seat.
(4) Clamp the insert with the opposite side (holder side) of the cutting edge secured on the constraining surface.
(5) Tighten the insert with the recommended tightening torque. If the insert is tightened with excessive torque, it may be damaged, leading to injury.
(6) When exchanging the insert, adjust the cutting edge offset value.

Mount the insert parallel to the seat



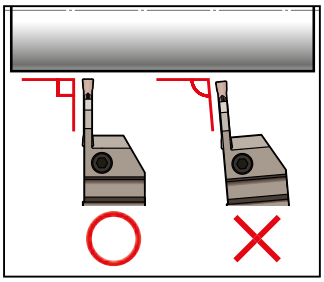
Be sure to push the insert to the end



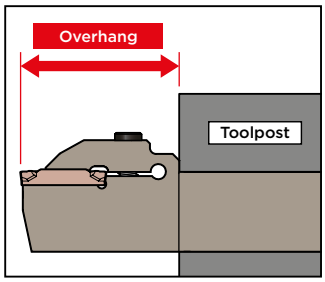
■ Precautions when Mounting Holders

(1) Remove any dust and oil from the toolpost before setting the holder.
(2) Remove any scratches or burrs found on the toolpost.
(3) Place the holder so that the insert is perpendicular to the workpiece. Failure to do so may bend the machined surface or cause chattering.
(4) The overhang of the holder should be as short as possible.
(5) When grooving or traverse cutting, adjust the centre height of the cutting edge to as close to ±0mm as possible. (Within ±0.1mm is recommended.)
Incorrect centre height adjustment may cause chattering. In cut-off applications, adjust the centre height of the cutting edge to a value from 0 to +0.2mm.
A lower centre height will result in a larger pip at the centre.
(6) Position the coolant supply nozzle so that the coolant can be directed at the top of the upper clamp unit.

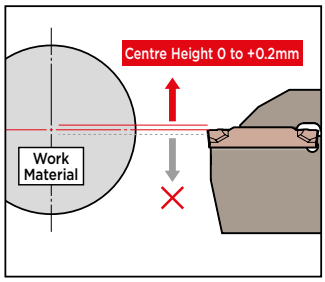
Mount the holder perpendicular to the workpiece.



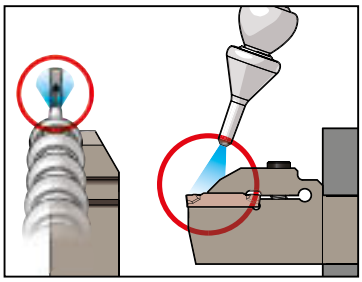
The overhang should be short.



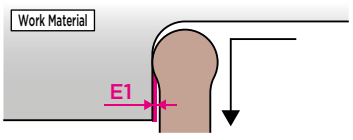
Centre height adjustment in cut-off applications



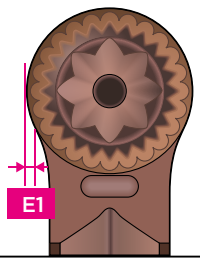
Supply coolant to the top of the upper clamp unit



■ Depth of Cut when Pulling Out with RG/RN type Chipbreakers



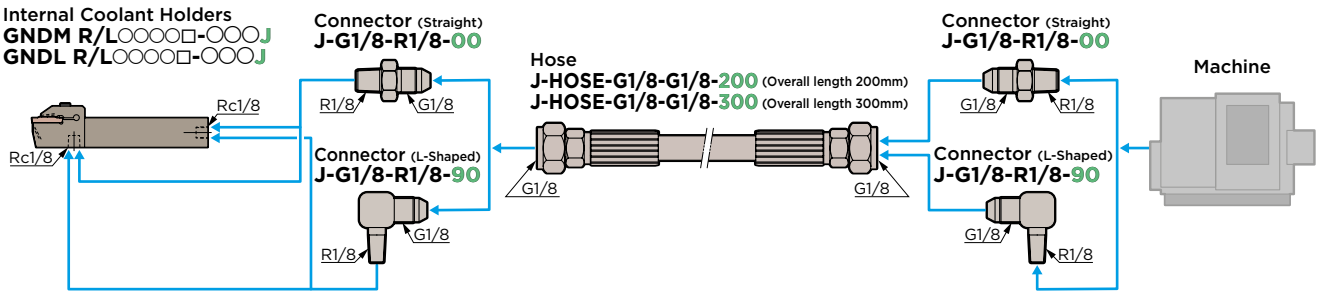
Width of Cut (mm)	Maximum Depth of Cut when Pulling Out (mm)
CW	E1
2.0*	0.10
3.0	0.15
4.0	0.20
5.0	0.25
6.0	0.30
7.0	0.35
8.0	0.40



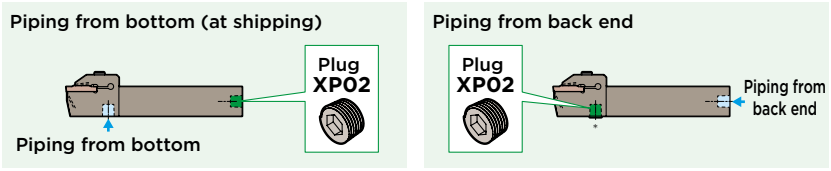
*: CW = 2.0 is RN type chipbreakers only

Precautions for SEC-Grooving Tool Holders GND series

■ Piping Method for Hose and Connectors (J-Type / Japanese Standard)

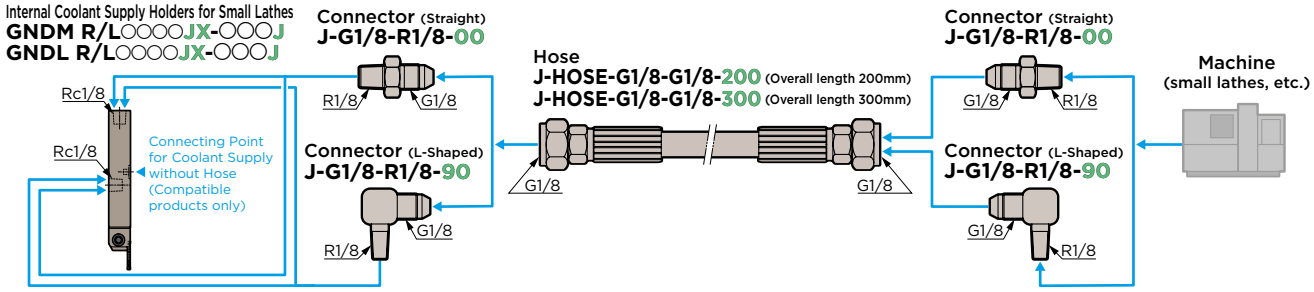


· Apply sealant such as commercial sealing tape to the piping connection parts.
· For plug mounting when piping, see the figures below.

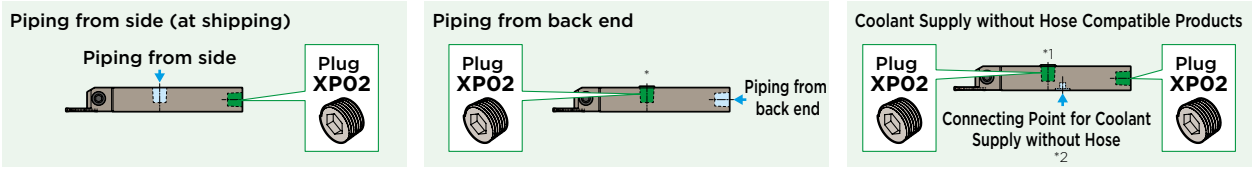


*The plug will protrude a few millimetres when mounted on the bottom.

■ Piping Method for Hoses and Connectors (For Small Lathes)



· Apply sealant such as commercial sealing tape to the piping connection parts.
· For plug mounting when piping, see the figures below.

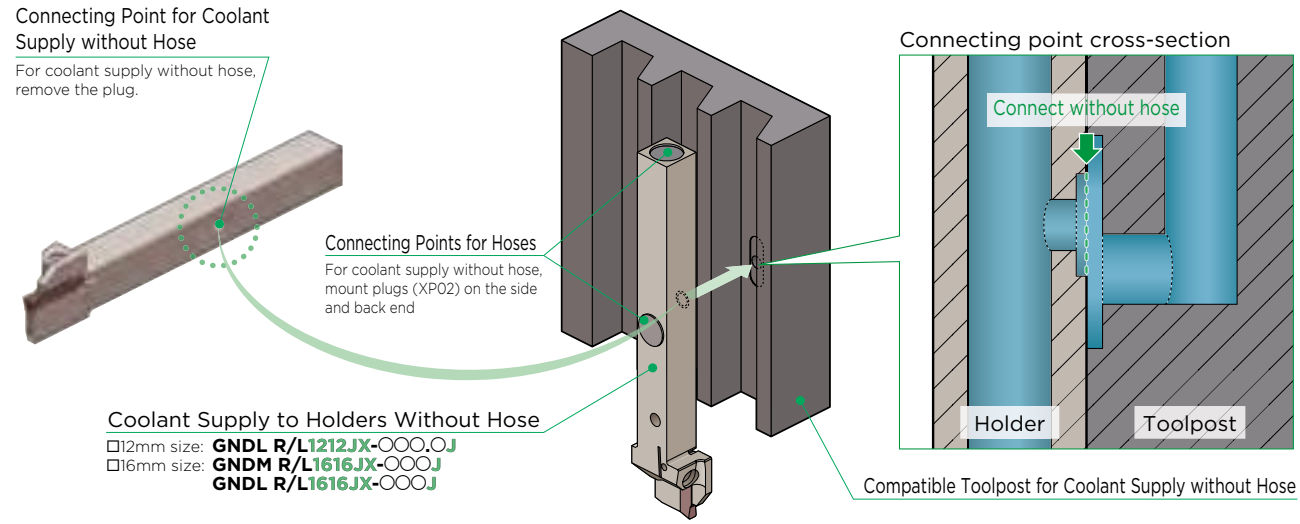


*The plug will protrude a few millimetres when mounted on the side.

*1: The plug will protrude a few millimetres when mounted on the side.
*2: The plug is mounted as default, so remove it for use with coolant supply without hose.

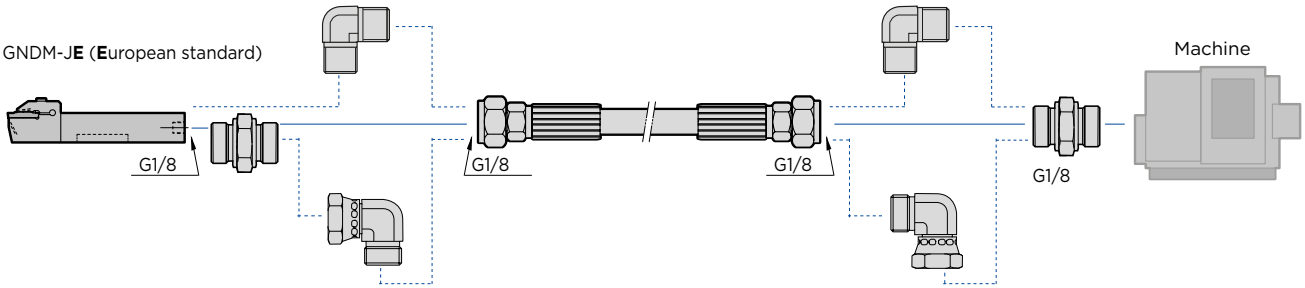
Coolant Supply to Holders Without Hose

Coolant can be supplied directly from the toolpost without a hose



Key Points for Connecting Hoses and Connectors

Piping Method for Hose and Connectors (JE-Type / European Standard)



Apply sealant such as commercial sealing tape to the piping connection parts.
GNDM-JE type holders have a plug (XP02-E) mounted on the holder back end at shipping. (see fig.1)
When piping from the holder back end, mount a grub screw (BT0505-E) on the bottom of the holder for use. (see fig. 2)

Fig. 1 Piping from bottom

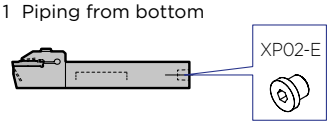
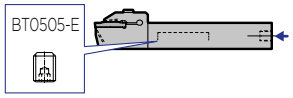


Fig. 2 Piping from back end



MEMO

GNDM type / GNDL type

External | Zero Offset

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

For Small Lathes, External Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on

GNDM

External Grooving (for Small Lathes)

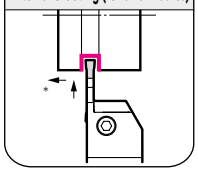


Fig 1

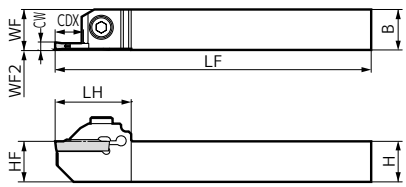
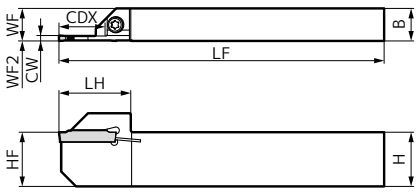


Fig 2



SumiSmall

Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Offset WF2	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw BX0515 / BFTX0414	N·m	Wrench LT15-10 / LH040
GNDM R/L1616JX-1.2508	★	★	16	16	120	(16)	16	26	0	**1.25**	**8.0**	**16**	GCM N125005-GF	1			
R/L1616JX-1.510	★	★	16	16	120	(16)	16	26	0	**1.50**	**10.0**	**20**	GCM N150005-GF	1	BX0515	**4.0**	LH040
R/L1616JX-212	★	★	16	16	120	(16)	16	30	0	**2.00**	**12.0**	**24**	GC□ □20○○-□□	1			
R/L1616JX-312	★	★	16	16	120	(16)	16	30	0	**3.00**	**12.0**	**24**	GC□ □30○○-□□	1			
GNDM R/L2012JX-217	★	★	20	12	120	(12)	20	26.5	0	**2.00**	**17.0**	**34**	GC□ □20○○-□□	2	BFTX0414	**3.0**	LT15-10
R/L2012JX-317	★	★	20	12	120	(12)	20	26.5	0	**3.00**	**17.0**	**34**	GC□ □30○○-□□	2			

Select holders and inserts with matching width of cut (CW). Refer to page F29 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F23.

External | Zero Offset

For Small Lathes, External Grooving & Cut-off Clamp-on

GNDL

External Grooving (for Small Lathes)

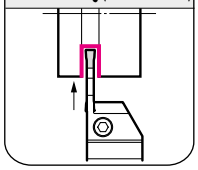


Fig 1

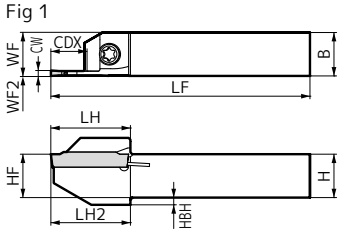


Fig 2

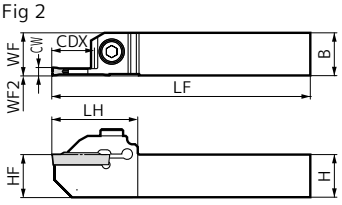
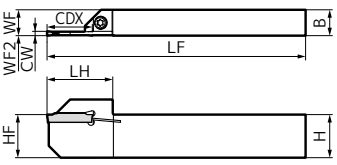


Fig 3



SumiSmall

Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Head LH	Head LH2	Offset WF2	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw / Cap Screw BFTX0412N / BFTX0414 / BX0515	N·m	Wrench LT15-10 / LH040
GNDL R/L1010JX-1.2510	★	★	10	10	120	(10)	10	2.0	18	18.3	0	**1.25**	**10.0**	**20**	GCM N125005-GF	1			
R/L1010JX-1.510	★	★	10	10	120	(10)	10	2.0	18	18.3	0	**1.50**	**10.0**	**20**	GCM N150005-GF	1	BFTX0412N	**3.0**	LT15-10
R/L1010JX-210	★	★	10	10	120	(10)	10	2.0	22	22.3	0	**2.00**	**10.0**	**20**	GC□ □20○○-□□	1			
R/L1010JX-310	★	★	10	10	120	(10)	10	2.0	22	22.3	0	**3.00**	**10.0**	**20**	GC□ □30○○-□□	1			
GNDL R/L1212JX-1.2512	★	★	12	12	120	(12)	12	2.0	19	19.3	0	**1.25**	**12.0**	**24**	GCM N125005-GF	1			
R/L1212JX-1.512	★	★	12	12	120	(12)	12	2.0	19	19.3	0	**1.50**	**12.0**	**24**	GCM N150005-GF	1	BFTX0412N	**3.0**	LT15-10
R/L1212JX-212.5	★	★	12	12	120	(12)	12	2.0	22	22.3	0	**2.00**	**12.5**	**25**	GC□ □20○○-□□	1			
R/L1212JX-312.5	★	★	12	12	120	(12)	12	2.0	22	22.3	0	**3.00**	**12.5**	**25**	GC□ □30○○-□□	1			
GNDL R/L1616JX-1.2512.5	★	★	16	16	120	(16)	16	—	28	—	0	**1.25**	**12.5**	**20**	GCM N125005-GF	2			
R/L1616JX-1.512.5	★	★	16	16	120	(16)	16	—	28	—	0	**1.50**	**12.5**	**25**	GCM N150005-GF	2	BX0515	**4.0**	LH040
R/L1616JX-216	★	★	16	16	120	(16)	16	—	32	—	0	**2.00**	**16.0**	**32**	GC□ □20○○-□□	2			
R/L1616JX-316	★	★	16	16	120	(16)	16	—	32	—	0	**3.00**	**16.0**	**32**	GC□ □30○○-□□	2			
GNDL R/L2012JX-221	★	★	20	12	120	(12)	20	—	30.5	—	0	**2.00**	**21.0**	**42**	GC□ □20○○-□□	3	BFTX0414	**3.0**	LT15-10
R/L2012JX-321	★	★	20	12	120	(12)	20	—	30.5	—	0	**3.00**	**21.0**	**42**	GC□ □30○○-□□	3			

Select holders and inserts with matching width of cut (CW). Refer to page F29 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F23.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM type / GNDL type

Inserts for GNDM type (For Small Lathes)/GNDL type (For Small Lathes)

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

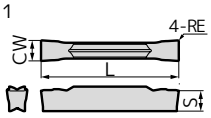


Fig 2 (Figure shows right-handed (R) tool.)

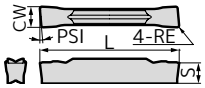


Fig 3

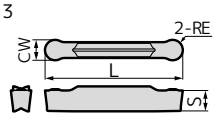
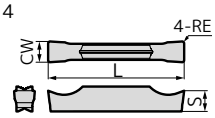


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N125005-GF	—	—	—	—	—	—	—	★		—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★		—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	3.0	±0.03	0.4	21.1	3.8		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6	5	2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8	5	3
GCM N4020-RG									★		4.0	±0.03	2.0	26.4	4.0		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★	2.0	±0.03	1.0	21.7	3.6	5	3
N3015-RN	★	★	▲	★	★	★	★	★	3.0	±0.03	1.5	22.6	3.8		3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500	CW		RE	L	S	Fig.
				Cutting Width	Tolerance				
GCG N2002 GA	★	★		2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★		3.0	±0.025	0.2	21.1	3.8	
GCM N2010 P			★	2.0	±0.025	1.0	21.7	3.6	
N3015 P			★	3.0	±0.025	1.5	22.4	3.8	2
N4020 P			★	4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF				3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF				4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★	3.0	±0.025	0.4	21.1	3.8	1
N40040 N				4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

Blank: Made-to-order item

N·m Recommended Tightening Torque (N·m)

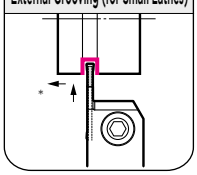
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

GNDM-J type / GNDL-J type

GNDM-J

External Grooving (for Small Lathes)



External
Zero Offset
Internal Coolant

Fig 1

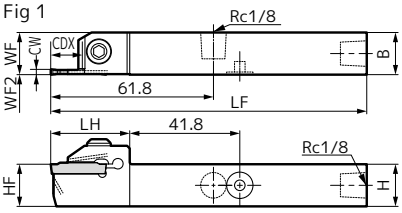


Fig 2

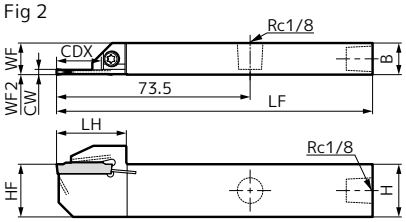
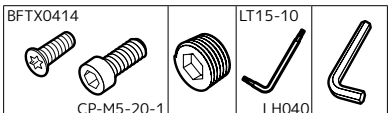


Figure shows right-handed (R) tool.

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

Parts



Holder

Dimensions (mm)

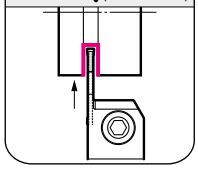
ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Offset	Width of Cut	Maximum Groove Depth	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw / Cap Screw	N·m	Plug	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	LH	WF2	CW	CDX								
GNDM R/L1616JX-212J	★	★	16	16	120	(16)	16	30.0	0	**2.0**	**12.0**	**24**	GC□ □2000-□□	1	CP-M5-20-1	**5.0**	XP02	LH040	LH025
R/L1616JX-312J	★	★	16	16	120	(16)	16	30.0	0	**3.0**	**12.0**	**24**	GC□ □3000-□□						
GNDM R/L2012JX-217J	★	★	20	12	120	(12)	20	26.5	0	**2.0**	**17.0**	**34**	GC□ □2000-□□	2	BFTX0414	**3.0**	XP02	LT15-10	—
R/L2012JX-317J	★	★	20	12	120	(12)	20	26.5	0	**3.0**	**17.0**	**34**	GC□ □3000-□□						

Select holders and inserts with matching width of cut (CW). Refer to page F29 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

Indexable Heads D20

GNDL-J

External Grooving (for Small Lathes)



External
Zero Offset
Internal Coolant

Fig 1

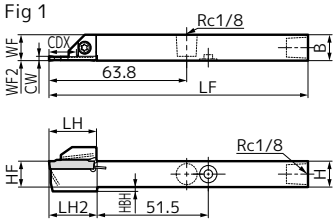


Fig 2

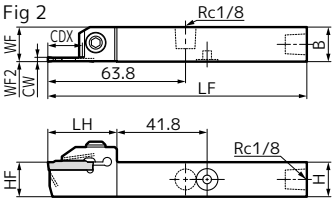


Fig 3

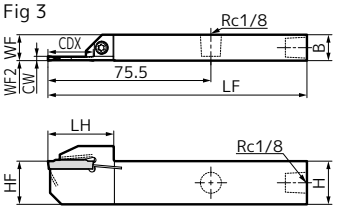
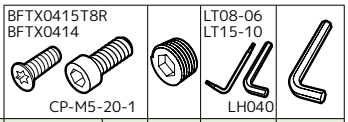


Figure shows right-handed (R) tool.

Parts



Holder

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Step	Head	Head	Offset	Width of Cut	Maximum Groove Depth	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw / Cap Screw	N·m	Plug	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	HBH	LH	LH2	WF2	CW	CDX								
GNDL R/L1212JX-212.5J	★	★	12	12	120	(12)	12	2.0	22.0	22.3	0	**2.0**	**12.5**	**25**	GC□ □2000-□□	1	BFTX0415T8R	**1.5**	XP02	LT08-06	←
R/L1212JX-312.5J	★	★	12	12	120	(12)	12	2.0	22.0	22.3	0	**3.0**	**12.5**	**25**	GC□ □3000-□□						
GNDL R/L1616JX-216J	★	★	16	16	120	(16)	16	—	32.0	—	0	**2.0**	**16.0**	**32**	GC□ □2000-□□	2	CP-M5-20-1	**5.0**	XP02	LH040	LH025
R/L1616JX-316J	★	★	16	16	120	(16)	16	—	32.0	—	0	**3.0**	**16.0**	**32**	GC□ □3000-□□						
GNDL R/L2012JX-221J	★	★	20	12	120	(12)	20	—	30.5	—	0	**2.0**	**21.0**	**42**	GC□ □2000-□□	3	BFTX0414	**3.0**	XP02	LT15-10	—
R/L2012JX-321J	★	★	20	12	120	(12)	20	—	30.5	—	0	**3.0**	**21.0**	**42**	GC□ □3000-□□						

Select holders and inserts with matching width of cut (CW). Refer to page F29 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

Indexable Heads D20

Fig 1

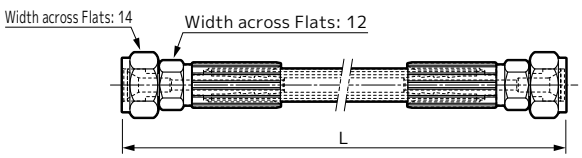


Fig 1

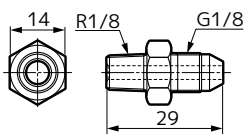
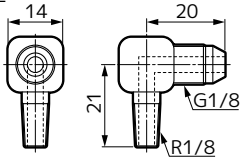


Fig 2



Parts (Hose)

Dimensions (mm)

ISO Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors F25

Parts (Connector)

Dimensions (mm)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

Connectors are sold separately.

Piping Method for Hoses and Connectors F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM-J type / GNDL-J type

Inserts for GNDM-J type (For Small Lathes)/GNDL-J type (For Small Lathes) (Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

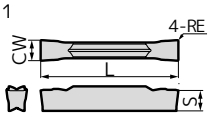


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3

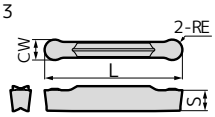
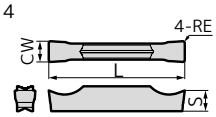


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6	5	1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6	5	2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8	5	3
N4020-RG									★		4.0	±0.03	2.0	26.4	4.0		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★	2.0	±0.03	1.0	21.7	3.6	5	3
N3015-RN	★	★	▲	★	★	★	★	★	3.0	±0.03	1.5	22.6	3.8		3

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

Blank: Made-to-order item

N·m Recommended Tightening Torque (N·m)

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

GNDS type

External

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

External Multi-Functional, Shallow Grooves (Grooving, Traverse Cutting and Profiling) Clamp-on

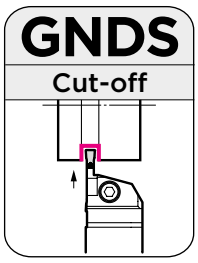


Fig 1

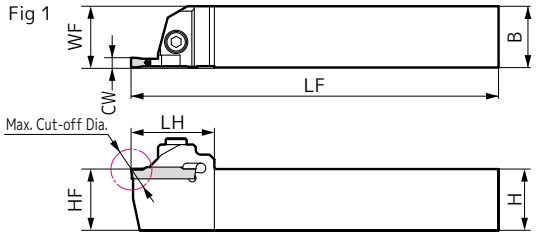


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	N·m	Wrench
GNDS R/L2020K-206	★	★	20	20	125	20	20	30	**2.0**	**6**	**12**	GC□ □20○○-□□	1			
R/L2020K-306	★	★	20	20	125	20	20	30	**3.0**	**6**	**12**	GC□ □30○○-□□	1			
R/L2020K-410	★	★	20	20	125	20	20	34	**4.0**	**10**	**20**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-510	★	★	20	20	125	20	20	34	**5.0**	**10**	**20**	GC□ N50○○-□□	1			
R/L2020K-610	★	★	20	20	125	20	20	34	**6.0**	**10**	**20**	GC□ N60○○-□□	1			
GNDS R/L2525M-206	★	★	25	25	150	25	25	30	**2.0**	**6**	**12**	GC□ □20○○-□□	1			
R/L2525M-306	★	★	25	25	150	25	25	30	**3.0**	**6**	**12**	GC□ □30○○-□□	1			
R/L2525M-410	★	★	25	25	150	25	25	34	**4.0**	**10**	**20**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-510	★	★	25	25	150	25	25	34	**5.0**	**10**	**20**	GC□ N50○○-□□	1			
R/L2525M-610	★	★	25	25	150	25	25	34	**6.0**	**10**	**20**	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW). Refer to page F31 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDS type

Inserts for GNDS type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

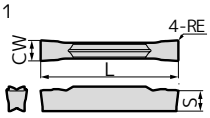


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3

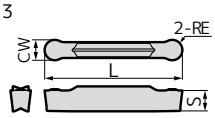
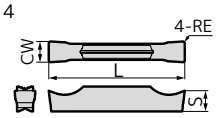


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★			—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★	★	★	★	★	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★		—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★		—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N125005-GF	—	—	—	—	—	—	—	★		—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★		—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8		3
N4020-RG	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	2.0	26.4	4.0	5	3
GCM N5025-RG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	2.5	27.2	4.1		3
N6030-RG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	3.0	27.5	4.5		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★	2.0	±0.03	1.0	21.7	3.6		3
N3015-RN	★	★	▲	★	★	★	★	★	3.0	±0.03	1.5	22.6	3.8		3
N4020-RN	★	★	▲	★	★	★	★	★	4.0	±0.03	2.0	28.2	4.0	5	3
N5025-RN	★	★	▲	★	★	★	★	★	5.0	±0.03	2.5	28.3	4.1		3
N6030-RN	★	★	▲	★	★	★	★	★	6.0	±0.03	3.0	28.3	4.5		3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	4
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	4
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	4
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

GNDM type / GNDMS type

External

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

External Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on



Fig 1

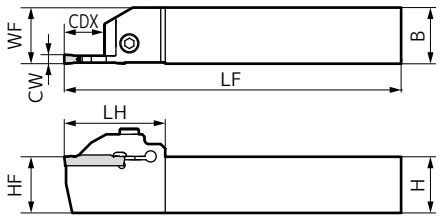


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
GNDM R/L2020K-1.2510	★	★	20	20	125	20	20	34.0	**1.25**	**10**	**20**	GCM N125005-GF	1	BX0520 / BX0620	**5.0**	LH040
R/L2020K-1.510	★	★	20	20	125	20	20	34.0	**1.50**	**10**	**20**	GCM N150005-GF	1			
R/L2020K-210	★	★	20	20	125	20	20	33.6	**2.00**	**10**	**20**	GC□ □20○○-□□	1			
R/L2020K-312	★	★	20	20	125	20	20	36.6	**3.00**	**12**	**24**	GC□ □30○○-□□	1			
R/L2020K-418	★	★	20	20	125	20	20	45.0	**4.00**	**18**	**36**	GC□ □40○○-□□	1			
R/L2020K-518	★	★	20	20	125	20	20	45.0	**5.00**	**18**	**36**	GC□ N50○○-□□	1			
R/L2020K-618	★	★	20	20	125	20	20	45.0	**6.00**	**18**	**36**	GC□ N60○○-□□	1			
GNDM R/L2525M-1.2510	★	★	25	25	150	25	25	36.0	**1.25**	**10**	**20**	GCM N125005-GF	1	BX0520	**5.0**	LH040
R/L2525M-1.510	★	★	25	25	150	25	25	36.0	**1.50**	**10**	**20**	GCM N150005-GF	1			
R/L2525M-210	★	★	25	25	150	25	25	33.6	**2.00**	**10**	**20**	GC□ □20○○-□□	1			
R/L2525M-312	★	★	25	25	150	25	25	36.6	**3.00**	**12**	**24**	GC□ □30○○-□□	1			
R/L2525M-418	★	★	25	25	150	25	25	45.0	**4.00**	**18**	**36**	GC□ □40○○-□□	1			
R/L2525M-518	★	★	25	25	150	25	25	45.0	**5.00**	**18**	**36**	GC□ N50○○-□□	1			
R/L2525M-618	★	★	25	25	150	25	25	45.0	**6.00**	**18**	**36**	GC□ N60○○-□□	1			
GNDM R/L3225P-312			32	25	170	25	32	36.6	**3.00**	**12**	**24**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L3225P-418			32	25	170	25	32	45.0	**4.00**	**18**	**36**	GC□ □40○○-□□	1			
R/L3225P-518			32	25	170	25	32	45.0	**5.00**	**18**	**36**	GC□ N50○○-□□	1			
R/L3225P-618			32	25	170	25	32	45.0	**6.00**	**18**	**36**	GC□ N60○○-□□	1			
R/L3225P-718			32	25	170	25	32	50.0	**7.00**	**18**	**36**	GCM N70○○-□□	1	BX0620	**6.0**	LH050
R/L3225P-818			32	25	170	25	32	50.0	**8.00**	**18**	**36**	GCM N80○○-□□	1			
GNDM R/L3232P-312	★	★	32	32	170	32	32	36.6	**3.00**	**12**	**24**	GC□ □30○○-□□	1	BX0620	**6.0**	LH050
R/L3232P-418	★	★	32	32	170	32	32	45.0	**4.00**	**18**	**36**	GC□ □40○○-□□	1			
R/L3232P-518	★	★	32	32	170	32	32	45.0	**5.00**	**18**	**36**	GC□ N50○○-□□	1			
R/L3232P-618	★	★	32	32	170	32	32	45.0	**6.00**	**18**	**36**	GC□ N60○○-□□	1			
R/L3232P-718	★	★	32	32	170	32	32	50.0	**7.00**	**18**	**36**	GCM N70○○-□□	1			
R/L3232P-818	★	★	32	32	170	32	32	50.0	**8.00**	**18**	**36**	GCM N80○○-□□	1			

Select holders and inserts with matching width of cut (CW). Refer to page F35 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

External

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

External L-Shaped (Side Cut), Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on

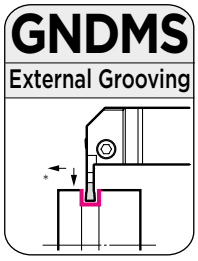


Fig 1

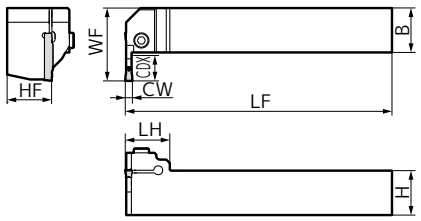


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
GNDMS R/L2020K-310	★	★	20	20	125	32	20	25.0	**3.0**	**10**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-412	★	★	20	20	125	34	20	25.0	**4.0**	**12**	GC□ □40○○-□□	1			
R/L2020K-512	★	★	20	20	125	34	20	25.0	**5.0**	**12**	GC□ N50○○-□□	1			
GNDMS R/L2525M-312	★	★	25	25	150	39	25	25.0	**3.0**	**12**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-414	★	★	25	25	150	41	25	25.0	**4.0**	**14**	GC□ □40○○-□□	1			
R/L2525M-514	★	★	25	25	150	41	25	25.0	**5.0**	**14**	GC□ N50○○-□□	1			
R/L2525M-614	★	★	25	25	150	41	25	25.0	**6.0**	**14**	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW). Refer to page F35 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM type / GNDMS type

Inserts for GNDM type/GNDMS type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

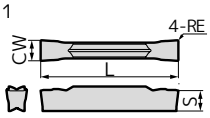


Fig 2 (Figure shows right-handed (R) tool.)

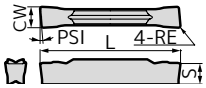


Fig 3

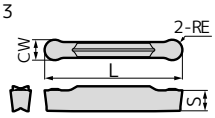
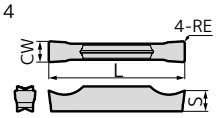


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thick-ness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-MG	★	★		★	★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-MG	★	★		★	★	★		★		—	7.0	±0.04	0.4	28.8	5.5		1
N7008-MG	★	★	▲	★	★	★	★	★		—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-MG	★	★		★	★	★		★		—	8.0	±0.04	0.4	28.8	6.0		1
N8008-MG	★	★	▲	★	★	★	★	★		—	8.0	±0.04	0.8	28.8	6.0		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6	5	1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-ML	★	★	▲	★	★	★	★	★		—	7.0	±0.04	0.4	28.8	5.5		1
N7008-ML	★	★		★	★	★		★		—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-ML	★	★	▲	★	★	★	★	★		—	8.0	±0.04	0.4	28.8	6.0		1
N8008-ML	★	★		★	★	★		★		—	8.0	±0.04	0.8	28.8	6.0		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thick-ness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6	5	1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GG		★	▲		★	★	★	★		—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GG		★	▲		★	★	★	★		—	8.0	±0.04	0.4	28.8	6.0		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GL		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GL		★	▲		★	★	★	★		—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GL		★	▲		★	★	★	★		—	8.0	±0.04	0.4	28.8	6.0		1
GCM N125005-GF	—	—	—	—	—	—	—	★		—	1.25	±0.03	0.05	17.4	3.2	5	1
GCM N150005-GF	—	—	—	—	—	—	—	★		—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GF		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7002-GF		★	▲		★	★	★	★		—	7.0	±0.04	0.2	28.8	5.5		1
N7004-GF		★	▲		★	★	★	★		—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8002-GF		★	▲		★	★	★	★		—	8.0	±0.04	0.2	28.8	6.0		1
N8004-GF		★	▲		★	★	★	★		—	8.0	±0.04	0.4	28.8	6.0		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle PSI	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6	5	2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8	5	3
N4020-RG	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	2.0	26.4	4.0		3
GCM N5025-RG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	2.5	27.2	4.1		3
N6030-RG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	3.0	27.5	4.5		3
GCM N7035-RG	★	★	▲	★	★	★	★	★		—	7.0	±0.04	3.5	29.1	5.5		3
N8040-RG	★	★	▲	★	★	★	★	★		—	8.0	±0.04	4.0	29.3	6.0		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★	2.0	±0.03	1.0	21.7	3.6	5	3
N3015-RN	★	★	▲	★	★	★	★	★	3.0	±0.03	1.5	22.6	3.8		3
N4020-RN	★	★	▲	★	★	★	★	★	4.0	±0.03	2.0	28.2	4.0		3
N5025-RN	★	★	▲	★	★	★	★	★	5.0	±0.03	2.5	28.3	4.1		3
N6030-RN	★	★	▲	★	★	★	★	★	6.0	±0.03	3.0	28.3	4.5		3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Toler-ance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	4
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	4
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	4
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

GNDM-J type

External | Internal Coolant

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

External Multi-Functional
(Grooving, Traverse Cutting and Profiling)
Internal Coolant Supply, Clamp-on

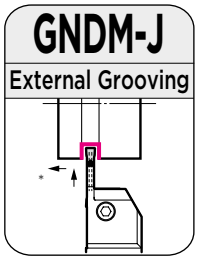


Fig 1

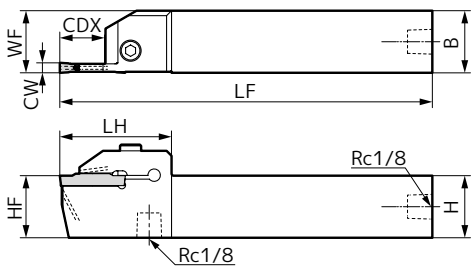


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Plug	Wrench
GNDM R/L2020K-210J	★	★	20	20	125	20	20	33.6	**2.00**	**10**	**20**	GC□ □20○○-□□	1				
R/L2020K-312J	★	★	20	20	125	20	20	36.6	**3.00**	**12**	**24**	GC□ □30○○-□□	1				
R/L2020K-418J	★	★	20	20	125	20	20	45	**4.00**	**18**	**36**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2020K-518J	★	★	20	20	125	20	20	45	**5.00**	**18**	**36**	GC□ N50○○-□□	1				
R/L2020K-618J	★	★	20	20	125	20	20	45	**6.00**	**18**	**36**	GC□ N60○○-□□	1				
GNDM R/L2525K-210J	★	★	25	25	125	25	25	33.6	**2.00**	**10**	**20**	GC□ □20○○-□□	1				
R/L2525K-312J	★	★	25	25	125	25	25	36.6	**3.00**	**12**	**24**	GC□ □30○○-□□	1				
R/L2525K-418J	★	★	25	25	125	25	25	45	**4.00**	**18**	**36**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2525K-518J	★	★	25	25	125	25	25	45	**5.00**	**18**	**36**	GC□ N50○○-□□	1				
R/L2525K-618J	★	★	25	25	125	25	25	45	**6.00**	**18**	**36**	GC□ N60○○-□□	1				

Select holders and inserts with matching width of cut (CW). Refer to page F37 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

Fig 1

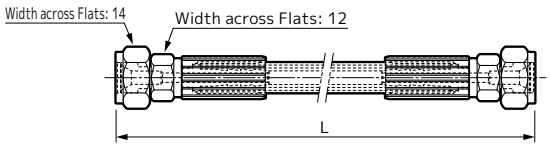


Fig 1

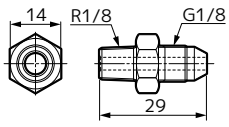
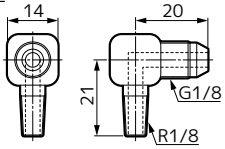


Fig 2



Parts (Hose)

Dimensions (mm)

ISO Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors ☞F25

Parts (Connector)

Dimensions (mm)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

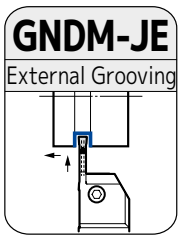
Connectors are sold separately.

Piping Method for Hoses and Connectors ☞F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM-JE type

External Multi-Purpose Type (Grooving, Turning, Profiling)

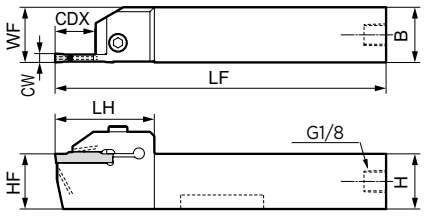


External

Internal Coolant

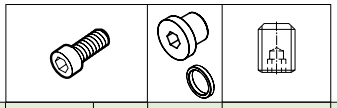
Cut-Off

Use for multi-purpose or profiling insert for turning (wide grooves).



Above figures show right hand tools.

Spare Parts



Holder

ISO Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Groov. Depth (mm)	Max. Cutt-Off Dia (mm)	Applicable Insert	Cap Screw	N·m	Plug and Sealing	Grub Screw*	Wrench
	R	L	H	B	LF	WF	HF	LH	CW	CDX							
GNDM R/L 2020 X 210 JE	★	★	20	20	100	20	20	33,6	2,00	10	20	GC□ □20OO-□□	BX0520	6,0	XP02-E	BT0505-E	LH040
GNDM R/L 2020 X 312 JE	★	★	20	20	100	20	20	36,6	3,00	12	24	GC□ □30OO-□□					
GNDM R/L 2020 X 418 JE	★	★	20	20	110	20	20	45,0	4,00	18	36	GC□ □40OO-□□					
GNDM R/L 2020 X 518 JE	★	★	20	20	110	20	20	45,0	5,00	18	36	GC□ N50OO-□□					
GNDM R/L 2020 X 618 JE	★	★	20	20	110	20	20	45,0	6,00	18	36	GC□ N60OO-□□					
GNDM R/L 2525 X 210 JE	★	★	25	25	100	25	25	33,6	2,00	10	20	GC□ □20OO-□□					
GNDM R/L 2525 X 312 JE	★	★	25	25	100	25	25	36,6	3,00	12	24	GC□ □30OO-□□					
GNDM R/L 2525 X 418 JE	★	★	25	25	110	25	25	45,0	4,00	18	36	GC□ □40OO-□□					
GNDM R/L 2525 X 518 JE	★	★	25	25	110	25	25	45,0	5,00	18	36	GC□ N50OO-□□					
GNDM R/L 2525 X 618 JE	★	★	25	25	110	25	25	45,0	6,00	18	36	GC□ N60OO-□□					

Select holders and inserts with the same grooving width (CW).

*Grub screws are sold separately (M5x5)

Fig. 1

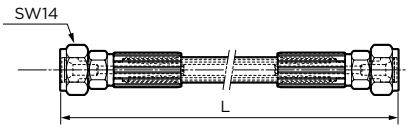


Fig. 1

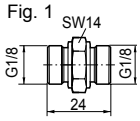


Fig. 2

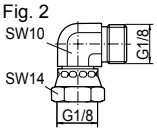
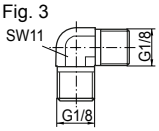


Fig. 3



Parts (Hose)

ISO Cat. No.	Stock	L (mm)	Screw Standard	Srew Standard	Fig.
J-HOSE-G1/8-G1/8-200-E	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300-E	★	300	G1/8	G1/8	1

Hoses are sold separately.

Parts (Connector)

ISO Cat. No.	Stock	Screw Stan-dard	Screw Stan-dard	
J-G1/8-G1/8-00-E	★	G1/8	G1/8	1
J-G1/8-G1/8F-90-E	★	G1/8	G1/8	2
J-G1/8-G1/8-90-E	★	G1/8	G1/8	3

Connectors are sold separately.

Recommended Cutting Conditions F21

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDM-J/JE type

Inserts for GNDM-J/JE type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

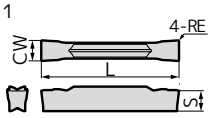


Fig 2 (Figure shows right-handed (R) tool.)

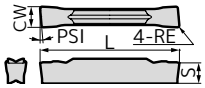


Fig 3

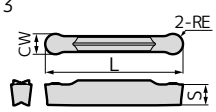
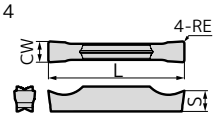


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★		3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML	★	★		★	★	★		★	★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N125005-GF	—	—	—	—	—	—	—	★		—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★		—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	—		5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	—		5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	—		5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	—		5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	—		5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	—		5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8		3
N4020-RG	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	2.0	26.4	4.0	5	3
GCM N5025-RG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	2.5	27.2	4.1		3
N6030-RG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	3.0	27.5	4.5		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★		2.0	±0.03	1.0	21.7	3.6		3
N3015-RN	★	★	▲	★	★	★	★	★		3.0	±0.03	1.5	22.6	3.8		3
N4020-RN	★	★	▲	★	★	★	★	★		4.0	±0.03	2.0	28.2	4.0	5	3
N5025-RN	★	★	▲	★	★	★	★	★		5.0	±0.03	2.5	28.3	4.1		3
N6030-RN	★	★	▲	★	★	★	★	★		6.0	±0.03	3.0	28.3	4.5		3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Toler-ance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	4
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	4
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	4
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	2
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

MEMO

GNDL type/GNDLS type

External

External Deep Grooving and Cut-off
Clamp-on

GNDL
External Grooving

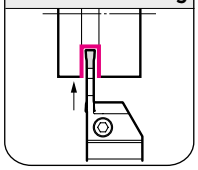


Fig 1

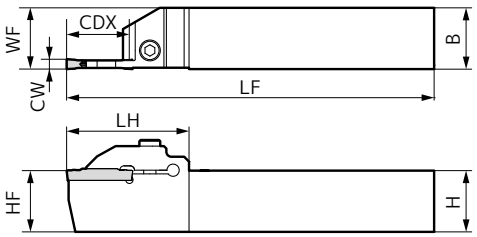


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw BX0520 / BX0620	Cap Screw N·m	Wrench
GNDL R/L2020K-1.2516	★	★	20	20	125	20	20	38.0	**1.25**	**16**	**32**	GCM N125005-GF	1			
R/L2020K-1.516	★	★	20	20	125	20	20	38.0	**1.50**	**16**	**32**	GCM N150005-GF	1			
R/L2020K-220	★	★	20	20	125	20	20	44.5	**2.00**	**20**(18)	**40**	GC□ □20○○-□□	1			
R/L2020K-320	★	★	20	20	125	20	20	44.5	**3.00**	**20**(18)	**40**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-425	★	★	20	20	125	20	20	50.0	**4.00**	**25**(23)	**50**	GC□ □40○○-□□	1			
R/L2020K-525	★	★	20	20	125	20	20	50.0	**5.00**	**25**(23)	**50**	GC□ N50○○-□□	1			
R/L2020K-625	★	★	20	20	125	20	20	50.0	**6.00**	**25**(23)	**50**	GC□ N60○○-□□	1			
GNDL R/L2525M-1.2516	★	★	25	25	150	25	25	40.0	**1.25**	**16**	**32**	GCM N125005-GF	1			
R/L2525M-1.516	★	★	25	25	150	25	25	40.0	**1.50**	**16**	**32**	GCM N150005-GF	1			
R/L2525M-220	★	★	25	25	150	25	25	44.5	**2.00**	**20**(18)	**40**	GC□ □20○○-□□	1			
R/L2525M-320	★	★	25	25	150	25	25	44.5	**3.00**	**20**(18)	**40**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-425	★	★	25	25	150	25	25	50.0	**4.00**	**25**(23)	**50**	GC□ □40○○-□□	1			
R/L2525M-525	★	★	25	25	150	25	25	50.0	**5.00**	**25**(23)	**50**	GC□ N50○○-□□	1			
R/L2525M-625	★	★	25	25	150	25	25	50.0	**6.00**	**25**(23)	**50**	GC□ N60○○-□□	1			
GNDL R/L3225P-320			32	25	170	25	32	44.5	**3.00**	**20**(18)	**40**	GC□ □30○○-□□	1			
R/L3225P-425			32	25	170	25	32	50.0	**4.00**	**25**(23)	**50**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L3225P-525			32	25	170	25	32	50.0	**5.00**	**25**(23)	**50**	GC□ N50○○-□□	1			
R/L3225P-625			32	25	170	25	32	50.0	**6.00**	**25**(23)	**50**	GC□ N60○○-□□	1			
R/L3225P-725			32	25	170	25	32	50.0	**7.00**	**25**(23)	**50**	GCM N70○○-□□	1	BX0620	**6.0**	LH050
R/L3225P-825			32	25	170	25	32	50.0	**8.00**	**25**(23)	**50**	GCM N80○○-□□	1			
GNDL R/L3232P-320	★	★	32	32	170	32	32	44.5	**3.00**	**20**(18)	**40**	GC□ □30○○-□□	1			
R/L3232P-425	★	★	32	32	170	32	32	50.0	**4.00**	**25**(23)	**50**	GC□ □40○○-□□	1			
R/L3232P-525	★	★	32	32	170	32	32	50.0	**5.00**	**25**(23)	**50**	GC□ N50○○-□□	1	BX0620	**6.0**	LH050
R/L3232P-625	★	★	32	32	170	32	32	50.0	**6.00**	**25**(23)	**50**	GC□ N60○○-□□	1			
R/L3232P-725	★	★	32	32	170	32	32	50.0	**7.00**	**25**(23)	**50**	GCM N70○○-□□	1			
R/L3232P-825	★	★	32	32	170	32	32	50.0	**8.00**	**25**(23)	**50**	GCM N80○○-□□	1			

Select holders and inserts with matching width of cut (CW). Dimensions in parentheses under maximum groove depth are for profiling inserts (RG type / RN type chipbreakers).
Refer to page F41 for applicable inserts. The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

External

External L-Shaped (Side Cut), Grooving
Clamp-on

GNDLS
External Grooving

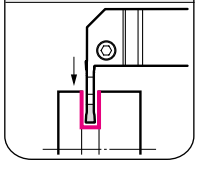


Fig 1

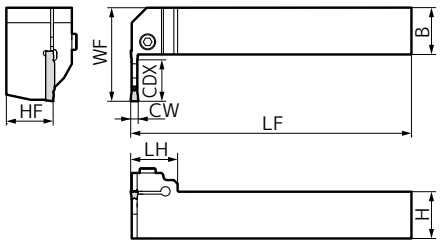


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
GNDLS R/L2020K-216	★	★	20	20	125	38	20	25	**2.0**	**16**	GC□ □20○○-□□	1			
R/L2020K-316	★	★	20	20	125	38	20	25	**3.0**	**16**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
GNDLS R/L2525M-218	★	★	25	25	150	45	25	25	**2.0**	**18**	GC□ □20○○-□□	1			
R/L2525M-318	★	★	25	25	150	45	25	25	**3.0**	**18**	GC□ □30○○-□□	1			
R/L2525M-423	★	★	25	25	150	50	25	25	**4.0**	**23**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-523	★	★	25	25	150	50	25	25	**5.0**	**23**	GC□ N50○○-□□	1			
R/L2525M-623	★	★	25	25	150	50	25	25	**6.0**	**23**	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW). Refer to page F41 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDL type/GNDLS type

Inserts for GNDL type/GNDLS type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

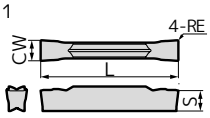


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3

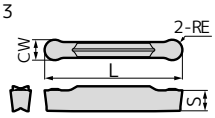
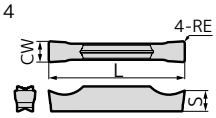


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thick-ness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★		—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-MG	★	★		★	★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-MG	★	★		★	★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-MG	★	★		★	★	★		★		—	7.0	±0.04	0.4	28.8	5.5		1
N7008-MG	★	★	▲	★	★	★	★	★		—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-MG	★	★		★	★	★		★		—	8.0	±0.04	0.4	28.8	6.0		1
N8008-MG	★	★	▲	★	★	★	★	★		—	8.0	±0.04	0.8	28.8	6.0		1
GCM N2002-ML	—	—	—	—	★	★	★			—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	—	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-ML	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-ML	★	★	▲	★	★	★	★	★		—	7.0	±0.04	0.4	28.8	5.5		1
N7008-ML	★	★		★	★	★		★		—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-ML	★	★	▲	★	★	★	★	★		—	8.0	±0.04	0.4	28.8	6.0		1
N8008-ML	★	★		★	★	★		★		—	8.0	±0.04	0.8	28.8	6.0		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thick-ness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★			—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★			—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GG		★	▲		★	★	★			—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★			—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GG		★	▲		★	★	★			—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★			—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GG		★	▲		★	★	★			—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GG		★	▲		★	★	★			—	8.0	±0.04	0.4	28.8	6.0		1
GCM N2002-GL		★	▲		★	★	★			—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★			—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GL		★	▲		★	★	★			—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GL		★	▲		★	★	★			—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GL		★	▲		★	★	★			—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GL		★	▲		★	★	★			—	8.0	±0.04	0.4	28.8	6.0		1
GCM N125005-GF	—	—	—	—	—	—	★			—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	★			—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GF		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GF		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7002-GF		★	▲		★	★	★	★		—	7.0	±0.04	0.2	28.8	5.5		1
N7004-GF		★	▲		★	★	★	★		—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8002-GF		★	▲		★	★	★	★		—	8.0	±0.04	0.2	28.8	6.0		1
N8004-GF		★	▲		★	★	★	★		—	8.0	±0.04	0.4	28.8	6.0		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8		3
N4020-RG	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	2.0	26.4	4.0		3
GCM N5025-RG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	2.5	27.2	4.1		3
N6030-RG	★	★	▲	★	★	★	★	★		—	6.0	±0.03	3.0	27.5	4.5	5	3
GCM N7035-RG	★	★	▲	★	★	★	★	★		—	7.0	±0.04	3.5	29.1	5.5		3
N8040-RG	★	★	▲	★	★	★	★	★		—	8.0	±0.04	4.0	29.3	6.0		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★	2.0	±0.03	1.0	21.7	3.6		3
N3015-RN	★	★	▲	★	★	★	★	★	3.0	±0.03	1.5	22.6	3.8		3
N4020-RN	★	★	▲	★	★	★	★	★	4.0	±0.03	2.0	28.2	4.0	5	3
N5025-RN	★	★	▲	★	★	★	★	★	5.0	±0.03	2.5	28.3	4.1		3
N6030-RN	★	★	▲	★	★	★	★	★	6.0	±0.03	3.0	28.3	4.5		3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	4
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	4
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	4
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDL-J type

External Internal Coolant

External Deep Grooving and Cut-Off
Internal Coolant Supply,
Clamp-on

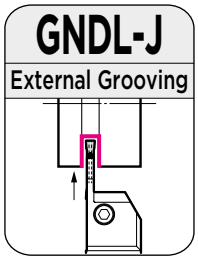


Fig 1

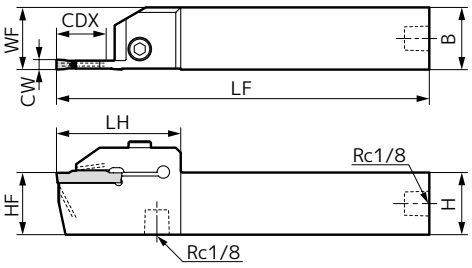


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	N·m	Plug	Wrench
GNDL R/L2020K-220J	★	★	20	20	125	20	20	44.5	**2.00**	**20**(18)	**40**	GC□ □20○○-□□	1				
R/L2020K-320J	★	★	20	20	125	20	20	44.5	**3.00**	**20**(18)	**40**	GC□ □30○○-□□	1				
R/L2020K-425J	★	★	20	20	125	20	20	50	**4.00**	**25**(23)	**50**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2020K-525J	★	★	20	20	125	20	20	50	**5.00**	**25**(23)	**50**	GC□ N50○○-□□	1				
R/L2020K-625J	★	★	20	20	125	20	20	50	**6.00**	**25**(23)	**50**	GC□ N60○○-□□	1				
GNDL R/L2525K-220J	★	★	25	25	125	25	25	44.5	**2.00**	**20**(18)	**40**	GC□ □20○○-□□	1				
R/L2525K-320J	★	★	25	25	125	25	25	44.5	**3.00**	**20**(18)	**40**	GC□ □30○○-□□	1				
R/L2525K-425J	★	★	25	25	125	25	25	50	**4.00**	**25**(23)	**50**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2525K-525J	★	★	25	25	125	25	25	50	**5.00**	**25**(23)	**50**	GC□ N50○○-□□	1				
R/L2525K-625J	★	★	25	25	125	25	25	50	**6.00**	**25**(23)	**50**	GC□ N60○○-□□	1				

Select holders and inserts with matching width of cut (CW). Dimensions in parentheses under maximum groove depth are for profiling inserts (RG type / RN type chipbreakers).
Refer to page F43 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

Fig 1

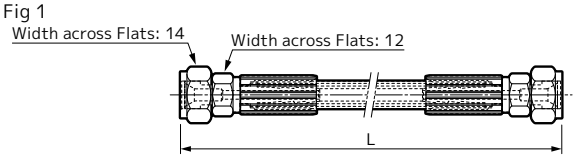


Fig 1

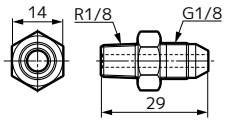
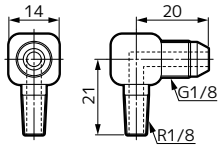


Fig 2



Parts (Hose)

Dimensions (mm)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors ☞ F25

Parts (Connector)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

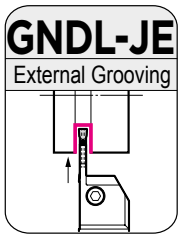
Connectors are sold separately.

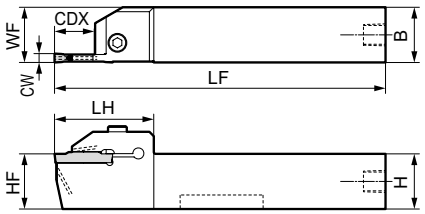
Piping Method for Hoses and Connectors ☞ F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDL-JE type

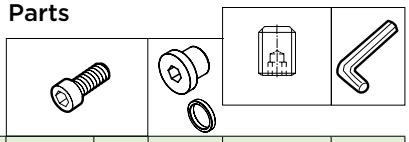
External Deep Grooving and Cut-Off
Internal Coolant Supply,
Clamp-on





Above figures show right hand tools.

Parts



Holder

ISO Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Groov. Depth (mm)	Max. Cutt-Off Dia (mm)	Applicable Insert	Cap Screw	N·m	Plug and Sealing	Grub Screw*	Wrench
	R	L	H	B	LF	WF	HF	LH	CW	CDX							
GNDL R/L 2020 X 220 JE	★	★	20	20	110	20	20	44,5	2,00	20	40	GC□ □20○○-□□	BX0520	**6.0**	XP02-E	BT0505-E	LH040
GNDL R/L 2020 X 320 JE	★	★	20	20	110	20	20	44,5	3,00	20	40	GC□ □30○○-□□					
GNDL R/L 2020 X 425 JE	★	★	20	20	115	20	20	50,0	4,00	25	50	GC□ □40○○-□□					
GNDL R/L 2020 X 525 JE	★	★	20	20	115	20	20	50,0	5,00	25	50	GC□ N50○○-□□					
GNDL R/L 2020 X 625 JE	★	★	20	20	115	20	20	50,0	6,00	25	50	GC□ N60○○-□□					
GNDL R/L 2525 X 220 JE	★	★	25	25	110	25	25	44,5	2,00	20	40	GC□ □20○○-□□					
GNDL R/L 2525 X 320 JE	★	★	25	25	110	25	25	44,5	3,00	20	40	GC□ □30○○-□□					
GNDL R/L 2525 X 425 JE	★	★	25	25	115	25	25	50,0	4,00	25	50	GC□ □40○○-□□					
GNDL R/L 2525 X 525 JE	★	★	25	25	115	25	25	50,0	5,00	25	50	GC□ N50○○-□□					
GNDL R/L 2525 X 625 JE	★	★	25	25	115	25	25	50,0	6,00	25	50	GC□ N60○○-□□					

Select holders and inserts with the same grooving width (CW).

*Grub screws are sold separately (M5x5)

Fig. 1

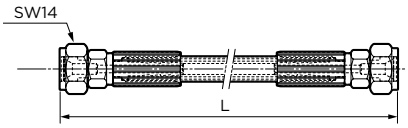


Fig. 1

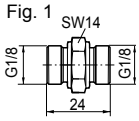


Fig. 2

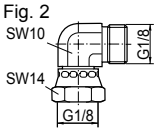
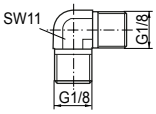


Fig. 3



Parts (Hose)

ISO Cat. No.	Stock	L (mm)	Screw Standard	Screw Standard	Fig.
J-HOSE-G1/8-G1/8-200-E	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300-E	★	300	G1/8	G1/8	1

Hoses are sold separately.

Parts (Connector)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig.
J-G1/8-G1/8-00-E	★	G1/8	G1/8	1
J-G1/8-G1/8F-90-E	★	G1/8	G1/8	2
J-G1/8-G1/8-90-E	★	G1/8	G1/8	3

Connectors are sold separately.

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

GNDL-JE type

Inserts for GNDL-JE type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

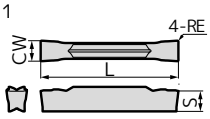


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3

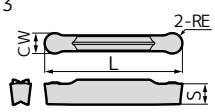
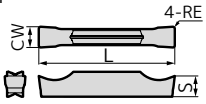


Fig 4



Grooving / Traverse Cutting

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★		★		—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	★	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★		—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1
GCM N125005-GF	—	—	—	—	—	—	—	★		—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★		—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GF		★	▲		★	★	★	★		—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★		—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★		—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

External Profiling / External Radius Grooving

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3015-RG	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8		3
N4020-RG	★	★	▲	★	★	★	★	★	★	★	4.0	±0.03	2.0	26.4	4.0	5	3
GCM N5025-RG	★	★	▲	★	★	★	★		—		5.0	±0.03	2.5	27.2	4.1		3
N6030-RG	★	★	▲	★	★	★	★		—		6.0	±0.03	3.0	27.5	4.5		3

Profiling / Radius Grooving / Necking

Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★		2.0	±0.03	1.0	21.7	3.6		3
N3015-RN	★	★	▲	★	★	★	★	★		3.0	±0.03	1.5	22.6	3.8		3
N4020-RN	★	★	▲	★	★	★	★	★		4.0	±0.03	2.0	28.2	4.0	5	3
N5025-RN	★	★	▲	★	★	★	★	★		5.0	±0.03	2.5	28.3	4.1		3
N6030-RN	★	★	▲	★	★	★	★	★		6.0	±0.03	3.0	28.3	4.5		3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Toler-ance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	4
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	4
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	4
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	4
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose	Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	ML	Multi-functional / Low feed		CF	Cut-off / Low cutting force
Grooving / Cut-off	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
	GF	Grooving / Low cutting force	For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

MEMO

GNDXL type

External

External Deep Grooving and Cut-off
Clamp-on

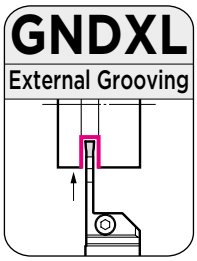


Fig 1

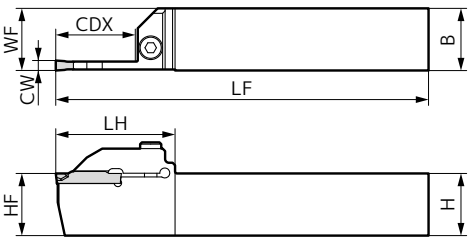


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
GNDXL R/L2020K-226			20	20	125	20	20	42.0	**2.0**	**26**	**52**	GCM N2002-GF1	1			
R/L2020K-332	★	★	20	20	125	20	20	48.0	**3.0**	**32**	**64**	GCM N30○○-□□1	1			
R/L2020K-432	★	★	20	20	125	20	20	48.0	**4.0**	**32**	**64**	GCM N40○○-□□1	1	BX0520	**5.0**	LH040
R/L2020K-532	★	★	20	20	125	20	20	48.0	**5.0**	**32**	**64**	GCM N50○○-□□1	1			
R/L2020K-632	★	★	20	20	125	20	20	48.0	**6.0**	**32**	**64**	GCM N60○○-□□1	1			
GNDXL R/L2525M-226			25	25	150	25	25	42.0	**2.0**	**26**	**52**	GCM N2002-GF1	1			
R/L2525M-332	★	★	25	25	150	25	25	48.0	**3.0**	**32**	**64**	GCM N30○○-□□1	1			
R/L2525M-432	★	★	25	25	150	25	25	48.0	**4.0**	**32**	**64**	GCM N40○○-□□1	1	BX0520	**5.0**	LH040
R/L2525M-532	★	★	25	25	150	25	25	48.0	**5.0**	**32**	**64**	GCM N50○○-□□1	1			
R/L2525M-632	★	★	25	25	150	25	25	48.0	**6.0**	**32**	**64**	GCM N60○○-□□1	1			

Select holders and inserts with matching width of cut (CW). Only 1-cornered inserts can be used. Refer to page F47 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDXL type

Inserts for GNDXL type (1-cornered)

(Coated Carbide)

Fig 1

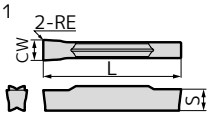
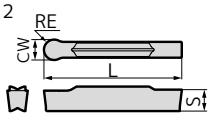


Fig 2



Grooving / Traverse Cutting (1-cornered)

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
				Width of Cut	Tolerance	RE	L	S		
GCM N3002-ML1	★	★	★	**3.0**	±0.03	0.2	21.1	3.8	5	1
N4004-ML1	★	★	★	**4.0**	±0.03	0.4	26.4	4.0		1
N5004-ML1	★	★	★	**5.0**	±0.03	0.4	26.4	4.1		1
N6004-ML1	★	★	★	**6.0**	±0.03	0.4	26.4	4.5		1

Profiling / Radius Grooving (1-cornered)

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
				Width of Cut	Tolerance	RE	L	S		
GCM N3015-RN1	★	★	★	**3.0**	±0.03	1.5	22.6	3.8	5	2
N4020-RN1				**4.0**	±0.03	2.0	28.2	4.0		2
N5025-RN1				**5.0**	±0.03	2.5	28.3	4.1		2
N6030-RN1	★	★	★	**6.0**	±0.03	3.0	28.3	4.5		2

Grooving / Cut-off (1-cornered)

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
				Width of Cut	Tolerance	RE	L	S		
GCM N2002-GF1				**2.0**	±0.03	0.2	21.1	3.6	5	1
N3002-GF1	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
N4002-GF1	★	★	★	**4.0**	±0.03	0.2	26.4	4.0		1
N5002-GF1	★	★	★	**5.0**	±0.03	0.2	26.4	4.1		1
N6002-GF1	★	★	★	**6.0**	±0.03	0.2	26.4	4.5		1

Select holders and inserts with matching width of cut (CW). Use in combination with GNDXL type holders. Not usable with GNDIS type holders.

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	**ML1**	Multi-functional / Low feed	Profiling / Radius Grooving	**RN1**	General-purpose
Grooving / Cut-off	**GF1**	Grooving / Low cutting force			

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDN type

Necking

Necking
Clamp-on

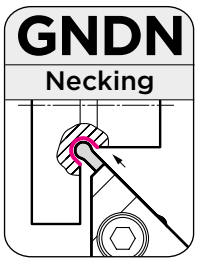
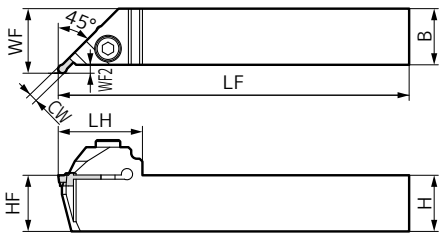


Fig 1



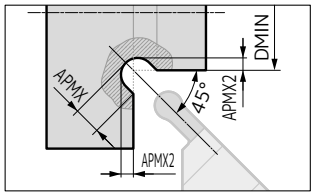


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Offset WF2	Min. Bore Dia. DMIN	Width of Cut CW	APMX	APMX2	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
GNDN R/L2020K-215-020	★	★	20	20	125	23	20	35	3.0	**20**	**2.0**	1.5	0.64	GCM N2010-RN	1			
R/L2020K-320-020	★	★	20	20	125	23	20	35	3.0	**20**	**3.0**	2.0	0.79	GCM N3015-RN	1			
R/L2020K-430-030	★	★	20	20	125	24	20	37	4.0	**30**	**4.0**	3.0	1.29	GCM N4020-RN	1	BX0520	**5.0**	LH040
R/L2020K-535-030	★	★	20	20	125	25	20	40	5.0	**30**	**5.0**	3.5	1.44	GCM N5025-RN	1			
R/L2020K-640-030	★	★	20	20	125	25	20	40	5.0	**30**	**6.0**	4.0	1.59	GCM N6030-RN	1			
GNDN R/L2525M-215-020	★	★	25	25	150	28	25	35	3.0	**20**	**2.0**	1.5	0.64	GCM N2010-RN	1			
R/L2525M-320-020	★	★	25	25	150	28	25	35	3.0	**20**	**3.0**	2.0	0.79	GCM N3015-RN	1			
R/L2525M-430-030	★	★	25	25	150	29	25	37	4.0	**30**	**4.0**	3.0	1.29	GCM N4020-RN	1	BX0520	**5.0**	LH040
R/L2525M-535-030	★	★	25	25	150	30	25	40	5.0	**30**	**5.0**	3.5	1.44	GCM N5025-RN	1			
R/L2525M-640-030	★	★	25	25	150	30	25	40	5.0	**30**	**6.0**	4.0	1.59	GCM N6030-RN	1			

Select holders and inserts with matching width of cut (CW). Refer to page F49 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

Identification Code

GND N R 20 20 K - 2 15 - 020

GND	N	R	20	20	K	2	15	020
Series Code	Application Symbol : Necking	Feed Direction	Shank Height (mm)	Shank Width (mm)	Shank Length	Width of Cut (mm)	APMX ×10 (mm)	Min. Bore Dia. (mm)

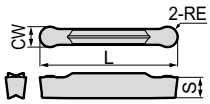
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDN type

Inserts for GNDN type

(Coated Carbide)

Fig. 1



Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★	**2.0**	±0.03	1.0	21.7	3.6		1
N3015-RN	★	★	★	★	★	★	★	★	**3.0**	±0.03	1.5	22.6	3.8		1
N4020-RN	★	★	★	★	★	★	★	★	**4.0**	±0.03	2.0	28.2	4.0	5	1
N5025-RN	★	★	★	★	★	★	★	★	**5.0**	±0.03	2.5	28.3	4.1		1
N6030-RN	★	★	★	★	★	★	★	★	**6.0**	±0.03	3.0	28.3	4.5		1

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDF type

Facing

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

Face Grooving
Clamp-on

GNDF
Face Grooving

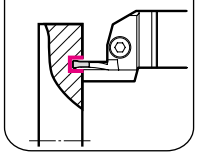


Fig 1

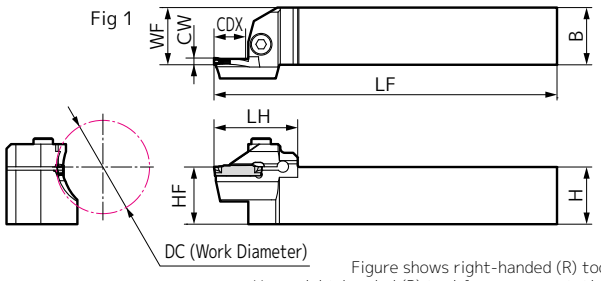
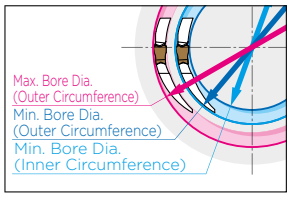


Figure shows right-handed (R) tool.
Use a right-handed (R) tool for reverse rotation.



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Work Dia. DC	Min. Bore Dia. Inner Circumference	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
GNDF R/L2020K-312-035	★	★	20	20	125	20	20	35.6	35 to 45	29	**3.0**	**12**		1			
R/L2020K-312-040	★	★	20	20	125	20	20	35.6	40 to 55	34	**3.0**	**12**		1			
R/L2020K-318-050	★	★	20	20	125	20	20	41.6	50 to 70	44	**3.0**	**18**		1			
R/L2020K-318-065	★	★	20	20	125	20	20	41.6	65 to 100	59	**3.0**	**18**	GC□ N30○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-318-090	★	★	20	20	125	20	20	41.6	90 to 150	84	**3.0**	**18**		1			
R/L2020K-318-140	★	★	20	20	125	20	20	41.6	140 to 200	134	**3.0**	**18**		1			
R/L2020K-318-180	★	★	20	20	125	20	20	41.6	180 to 300	174	**3.0**	**18**		1			
GNDF R/L2020K-418-040	★	★	20	20	125	20	20	41.6	40 to 55	32	**4.0**	**18**		1			
R/L2020K-423-050	★	★	20	20	125	20	20	46.6	50 to 70	42	**4.0**	**23**		1			
R/L2020K-423-065	★	★	20	20	125	20	20	46.6	65 to 90	57	**4.0**	**23**		1			
R/L2020K-423-085	★	★	20	20	125	20	20	46.6	85 to 130	77	**4.0**	**23**	GC□ N40○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-423-125	★	★	20	20	125	20	20	46.6	125 to 200	117	**4.0**	**23**		1			
R/L2020K-423-180	★	★	20	20	125	20	20	46.6	180 to 300	172	**4.0**	**23**		1			
R/L2020K-423-280	★	★	20	20	125	20	20	46.6	280 to 1000	272	**4.0**	**23**		1			
GNDF R/L2020K-523-050	★	★	20	20	125	20	20	46.6	50 to 70	40	**5.0**	**23**		1			
R/L2020K-523-065	★	★	20	20	125	20	20	46.6	65 to 90	55	**5.0**	**23**		1			
R/L2020K-523-085	★	★	20	20	125	20	20	46.6	85 to 130	75	**5.0**	**23**		1			
R/L2020K-523-125	★	★	20	20	125	20	20	46.6	125 to 200	115	**5.0**	**23**	GC□ N50○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-523-180	★	★	20	20	125	20	20	46.6	180 to 300	170	**5.0**	**23**		1			
R/L2020K-523-280	★	★	20	20	125	20	20	46.6	280 to 1000	270	**5.0**	**23**		1			
GNDF R/L2020K-623-050	★	★	20	20	125	20	20	46.6	50 to 75	38	**6.0**	**23**		1			
R/L2020K-623-070	★	★	20	20	125	20	20	46.6	70 to 110	58	**6.0**	**23**		1			
R/L2020K-623-100	★	★	20	20	125	20	20	46.6	100 to 200	88	**6.0**	**23**		1			
R/L2020K-623-180	★	★	20	20	125	20	20	46.6	180 to 300	168	**6.0**	**23**	GC□ N60○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-623-280	★	★	20	20	125	20	20	46.6	280 to 1000	268	**6.0**	**23**		1			
GNDF R/L2525M-312-035	★	★	25	25	150	25	25	35.6	35 to 45	29	**3.0**	**12**		1			
R/L2525M-312-040	★	★	25	25	150	25	25	35.6	40 to 55	34	**3.0**	**12**		1			
R/L2525M-318-050	★	★	25	25	150	25	25	41.6	50 to 70	44	**3.0**	**18**		1			
R/L2525M-318-065	★	★	25	25	150	25	25	41.6	65 to 100	59	**3.0**	**18**	GC□ N30○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-318-090	★	★	25	25	150	25	25	41.6	90 to 150	84	**3.0**	**18**		1			
R/L2525M-318-140	★	★	25	25	150	25	25	41.6	140 to 200	134	**3.0**	**18**		1			
R/L2525M-318-180	★	★	25	25	150	25	25	41.6	180 to 300	174	**3.0**	**18**		1			
GNDF R/L2525M-418-040	★	★	25	25	150	25	25	41.6	40 to 55	32	**4.0**	**18**		1			
R/L2525M-423-050	★	★	25	25	150	25	25	46.6	50 to 70	42	**4.0**	**23**		1			
R/L2525M-423-065	★	★	25	25	150	25	25	46.6	65 to 90	57	**4.0**	**23**		1			
R/L2525M-423-085	★	★	25	25	150	25	25	46.6	85 to 130	77	**4.0**	**23**	GC□ N40○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-423-125	★	★	25	25	150	25	25	46.6	125 to 200	117	**4.0**	**23**		1			
R/L2525M-423-180	★	★	25	25	150	25	25	46.6	180 to 300	172	**4.0**	**23**		1			
R/L2525M-423-280	★	★	25	25	150	25	25	46.6	280 to 1000	272	**4.0**	**23**		1			
GNDF R/L2525M-523-050	★	★	25	25	150	25	25	46.6	50 to 70	40	**5.0**	**23**		1			
R/L2525M-523-065	★	★	25	25	150	25	25	46.6	65 to 90	55	**5.0**	**23**		1			
R/L2525M-523-085	★	★	25	25	150	25	25	46.6	85 to 130	75	**5.0**	**23**		1			
R/L2525M-523-125	★	★	25	25	150	25	25	46.6	125 to 200	115	**5.0**	**23**	GC□ N50○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-523-180	★	★	25	25	150	25	25	46.6	180 to 300	170	**5.0**	**23**		1			
R/L2525M-523-280	★	★	25	25	150	25	25	46.6	280 to 1000	270	**5.0**	**23**		1			
GNDF R/L2525M-623-050	★	★	25	25	150	25	25	46.6	50 to 75	38	**6.0**	**23**		1			
R/L2525M-623-070	★	★	25	25	150	25	25	46.6	70 to 110	58	**6.0**	**23**		1			
R/L2525M-623-100	★	★	25	25	150	25	25	46.6	100 to 200	88	**6.0**	**23**		1			
R/L2525M-623-180	★	★	25	25	150	25	25	46.6	180 to 300	168	**6.0**	**23**	GC□ N60○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-623-280	★	★	25	25	150	25	25	46.6	280 to 1000	268	**6.0**	**23**		1			

Select holders and inserts with matching width of cut (CW). Refer to page F51 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDF type

Inserts for GNDF type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

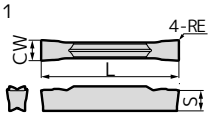


Fig 2 (Figure shows right-handed (R) tool.)

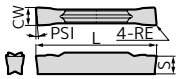
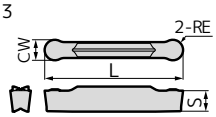


Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	★	—	**4.0**	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	**4.0**	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★		—	**5.0**	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	**5.0**	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★		—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★		—	**6.0**	±0.03	0.8	26.4	4.5		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	★	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		★	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	★	**4.0**	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	★	**4.0**	±0.03	0.8	26.4	4.0	5	1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	**5.0**	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	**5.0**	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★			—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	**6.0**	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-GG		★	▲		★	★	★	★		—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★		—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★			—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	**4.0**	±0.03	0.4	26.4	4.0		1
GCM N5002-GG		★	▲		★	★	★	★		—	**5.0**	±0.03	0.2	26.4	4.1	5	1
N5004-GG		★	▲		★	★	★	★		—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★		—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★		—	**6.0**	±0.03	0.4	26.4	4.5		1
GCM N3002-GL		★	▲		★	★	★	★		—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★		—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★		—	**4.0**	±0.03	0.4	26.4	4.0		1
GCM N5002-GL		★	▲		★	★	★	★		—	**5.0**	±0.03	0.2	26.4	4.1	5	1
N5004-GL		★			★	★		★		—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★			—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	**6.0**	±0.03	0.4	26.4	4.5		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	★	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	**4.0**	±0.03	0.4	26.4	4.0		1
GCM N5002-GF		★	▲		★	★	★	★		—	**5.0**	±0.03	0.2	26.4	4.1	5	1
N5004-GF		★			★	★		★		—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★		—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	**6.0**	±0.03	0.4	26.4	4.5		1

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3015-RN	★	★	▲	★	★	★	★	★	★	**3.0**	±0.03	1.5	22.6	3.8		2
N4020-RN	★	★	▲	★	★	★	★	★	★	**4.0**	±0.03	2.0	28.2	4.0	5	2
N5025-RN	★	★	▲	★	★	★	★	★		**5.0**	±0.03	2.5	28.3	4.1		2
N6030-RN	★	★	▲	★	★	★	★	★		**6.0**	±0.03	3.0	28.3	4.5		2

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								**2.0**	±0.025	0.2	21.1	3.6	3
N3002 GA	★	★								**3.0**	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								**4.0**	±0.025	0.4	26.4	4.0	3
N5004-GA	★	★								**5.0**	±0.025	0.4	26.4	4.1	
N6004-GA	★	★								**6.0**	±0.025	0.4	26.4	4.5	
GCM N2010 P			★							**2.0**	±0.025	1.0	21.7	3.6	2
N3015 P			★							**3.0**	±0.025	1.5	22.4	3.8	
N4020 P			★							**4.0**	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										**3.0**	±0.025	1.5	22.4	3.8	2
N4020 PLF										**4.0**	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							**3.0**	±0.025	0.4	21.1	3.8	1
N40040 N										**4.0**	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDFS type

Facing

*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

Deep Face Grooving L-Shaped (Side Cut)
Clamp-on

GNDFS
Face Grooving

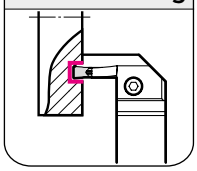
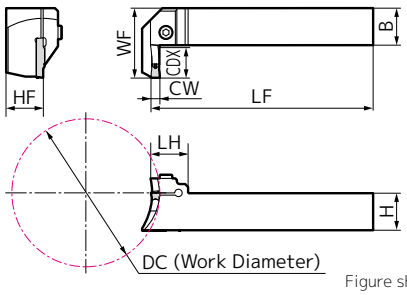


Fig 1



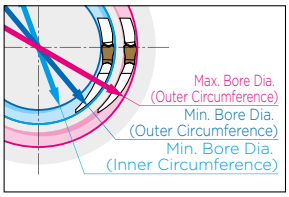


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Work Dia. DC	Min. Bore Dia. Inner Circumference	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
															BX0520 / BX0620		
GNDFS R/L2525M-620-070			25	25	150	47	25	25	70 to 100	58	**6.0**	**20**		1			
R/L2525M-620-100			25	25	150	47	25	25	100 to 200	88	**6.0**	**20**		1			
R/L2525M-620-180			25	25	150	47	25	25	180 to 300	168	**6.0**	**20**	GC□ N60○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-620-280			25	25	150	47	25	25	280 to 1000	268	**6.0**	**20**		1			
R/L2525M-620-450			25	25	150	47	25	25	450 up	438	**6.0**	**20**		1			
GNDFS R/L3232P-620-070			32	32	170	54	32	25	70 to 100	58	**6.0**	**20**		1			
R/L3232P-620-100			32	32	170	54	32	25	100 to 200	88	**6.0**	**20**		1			
R/L3232P-620-180			32	32	170	54	32	25	180 to 300	168	**6.0**	**20**	GC□ N60○○-□□	1	BX0620	**6.0**	LH050
R/L3232P-620-280			32	32	170	54	32	25	280 to 1000	268	**6.0**	**20**		1			
R/L3232P-620-450			32	32	170	54	32	25	450 up	438	**6.0**	**20**		1			
GNDFS R/L2525M-820-070			25	25	150	47	25	30	70 to 100	54	**8.0**	**20**		1			
R/L2525M-820-100			25	25	150	47	25	30	100 to 200	84	**8.0**	**20**		1			
R/L2525M-820-180			25	25	150	47	25	30	180 to 300	164	**8.0**	**20**	GCM N80○○-□□	1	BX0620	**6.0**	LH050
R/L2525M-820-280			25	25	150	47	25	30	280 to 1000	264	**8.0**	**20**		1			
R/L2525M-820-450			25	25	150	47	25	30	450 up	434	**8.0**	**20**		1			
GNDFS R/L3232P-820-070			32	32	170	54	32	30	70 to 100	54	**8.0**	**20**		1			
R/L3232P-820-100			32	32	170	54	32	30	100 to 200	84	**8.0**	**20**		1			
R/L3232P-820-180			32	32	170	54	32	30	180 to 300	164	**8.0**	**20**	GCM N80○○-□□	1	BX0620	**6.0**	LH050
R/L3232P-820-280			32	32	170	54	32	30	280 to 1000	264	**8.0**	**20**		1			
R/L3232P-820-450			32	32	170	54	32	30	450 up	434	**8.0**	**20**		1			

Select holders and inserts with matching width of cut (CW). Refer to page F53 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDFS type

Inserts for GNDFS type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

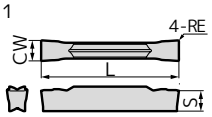
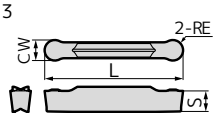


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N6004-MG	★	★		★	★	★		★	—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	**6.0**	±0.03	0.8	26.4	4.5	5	1
GCM N8004-MG	★	★		★	★	★		★	—	**8.0**	±0.04	0.4	28.8	6.0		1
N8008-MG	★	★	▲	★	★	★	★	★	—	**8.0**	±0.04	0.8	28.8	6.0		1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	**6.0**	±0.03	0.8	26.4	4.5	5	1
GCM N8004-ML	★	★	▲	★	★	★	★	★	—	**8.0**	±0.04	0.4	28.8	6.0		1
N8008-ML	★	★		★	★	★		★	—	**8.0**	±0.04	0.8	28.8	6.0	5	1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N6002-GG		★	▲		★	★	★	★	—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	**6.0**	±0.03	0.4	26.4	4.5	5	1
GCM N8004-GG		★	▲		★	★	★	★	—	**8.0**	±0.04	0.4	28.8	6.0		1
GCM N6002-GL		★	▲		★	★	★	★	—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	**6.0**	±0.03	0.4	26.4	4.5	5	1
GCM N8004-GL		★	▲		★	★	★	★	—	**8.0**	±0.04	0.4	28.8	6.0		1
GCM N6002-GF		★	▲		★	★	★	★	—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	**6.0**	±0.03	0.4	26.4	4.5	5	1
GCM N8002-GF		★	▲		★	★	★	★	—	**8.0**	±0.04	0.2	28.8	6.0		1
N8004-GF		★	▲		★	★	★	★	—	**8.0**	±0.04	0.4	28.8	6.0		1

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCM N6030-RN	★	★	▲	★	★	★	★	★	**6.0**	±0.03	3.0	28.3	4.5	5	2

Non-Ferrous Metals

Dimensions (mm)

ISO Cat. No.	H10	DL1500							Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCG N6004-GA	★	★							**6.0**	±0.025	0.4	26.4	4.5	5	3

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N6004-GA	★	★								**6.0**	±0.025	0.4	26.4	4.5	3
GCM N2010 P			★							**2.0**	±0.025	1.0	21.7	3.6	2
N3015 P			★							**3.0**	±0.025	1.5	22.4	3.8	
N4020 P			★							**4.0**	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										**3.0**	±0.025	1.5	22.4	3.8	2
N4020 PLF										**4.0**	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							**3.0**	±0.025	0.4	21.1	3.8	1
N40040 N										**4.0**	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDIS type

Internal Coolant

Internal Grooving
Clamp-on

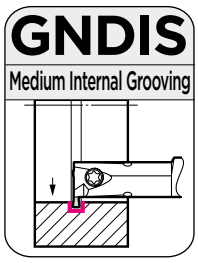


Fig 1

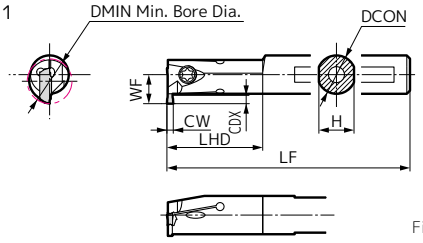


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Min. Bore Dia. DMIN	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Flat Head Screw	N·m	Wrench
GNDIS R/L1214-T1526	★	★	12	11	150	30	9.0	14	**1.5**	**2.6**	GXM N150005S-GF	1	BFTX0409N	**3.4**	LT15
R/L1214-T1536	★	★	12	11	150	30	10.0	14	**1.5**	**3.6**		1			
R/L1616-T1536	★	★	16	15	160	35	11.5	16	**1.5**	**3.6**		1			
GNDIS R/L1620-T1546	★	★	16	15	160	40	14.5	20	**1.5**	**4.6**		1	BFTX0511N	**5.0**	LT20
R/L2025-T1566	★	★	20	19	180	40	19.0	25	**1.5**	**6.6**		1			
GNDIS R/L1214-T2026	★	★	12	11	150	30	9.0	14	**2.0**	**2.6**	GXM N2002S-□□	1	BFTX0409N	**3.4**	LT15
R/L1214-T2036	★	★	12	11	150	30	10.0	14	**2.0**	**3.6**		1			
R/L1616-T2036	★	★	16	15	160	35	11.5	16	**2.0**	**3.6**		1			
GNDIS R/L1620-T2046	★	★	16	15	160	40	14.5	20	**2.0**	**4.6**		1	BFTX0511N	**5.0**	LT20
R/L2025-T2066	★	★	20	19	180	40	19.0	25	**2.0**	**6.6**		1			
GNDIS R/L1214-T3026	★	★	12	11	150	30	9.0	14	**3.0**	**2.6**	GXM N3002S-□□	1	BFTX0409N	**3.4**	LT15
R/L1214-T3036	★	★	12	11	150	30	10.0	14	**3.0**	**3.6**		1			
R/L1616-T3036	★	★	16	15	160	35	11.5	16	**3.0**	**3.6**		1			
GNDIS R/L1620-T3046	★	★	16	15	160	40	14.5	20	**3.0**	**4.6**		1	BFTX0511N	**5.0**	LT20
R/L2025-T3066	★	★	20	19	180	40	19.0	25	**3.0**	**6.6**		1			

Select holders and inserts with matching width of cut (CW). Only GXM inserts can be used. Refer to page F55 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

Identification Code

GND IS R 12 14 - T 15 26

GND	IS	R	12	14	T	15	26
Series Code	Application Symbol: Internal Grooving	Feed Direction	Shank Dia. (mm)	Min. Bore Dia. (mm)	For Internal Grooving	Width of Cut x 10 (mm)	Maximum Groove Depth x 10 (mm)

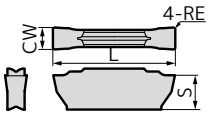
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDIS type

Inserts for GNDIS type

(Coated Carbide)

Fig 1



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC520U	AC1030U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
					Width of Cut	Tolerance	RE	L	S		
GXM N2002S-ML	★	★	★	★	**2.0**	±0.03	0.2	11.1	3.1	5	1
GXM N3002S-ML	★	★	★	★	**3.0**	±0.03	0.2	11.1	3.1		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC520U	AC1030U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
					Width of Cut	Tolerance	RE	L	S		
GXM N150005S-GF	—	—	—	★	**1.5**	±0.03	0.05	11.1	3.1	5	1
GXM N2002S-GF	★	★	★	★	**2.0**	±0.03	0.2	11.1	3.1		1
N3002S-GF	★	★	★	★	**3.0**	±0.03	0.2	11.1	3.1		1

Select holders and inserts with matching width of cut (CW). GCM/GCG inserts are not compatible.

Recommended Cutting Conditions (GNDIS)

Work Material	P Carbon Steel / Alloy Steel		M Stainless Steel		K Cast Iron		S Exotic Alloy	
Insert Grade	AC5015S AC520U	AC5025S AC1030U	AC5015S AC520U	AC5025S AC1030U	AC5015S AC520U	AC5025S AC1030U	AC5015S AC520U	AC5025S AC1030U
Cutting Speed vc (m/min)	80-200	50-200	70-150	50-150	60-200	50-200	20-80	20-60

Grooving / Cut-off / Necking

Chipbreaker		Feed Rate f (mm/rev)	
		ML	GF
Width of Cut CW (mm)	**1.5**	—	0.02-0.10
	2.0	0.03-0.12	0.03-0.12
	3.0	0.05-0.15	0.05-0.15

Traverse Cutting

Chipbreaker		ML	
		Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Width of Cut CW (mm)	**2.0**	0.03-0.12	0.2-0.8
	3.0	0.05-0.15	0.3-1.2

Precautions for Use F24

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDI type

Internal Coolant

Internal Grooving
Clamp-on



Fig 1

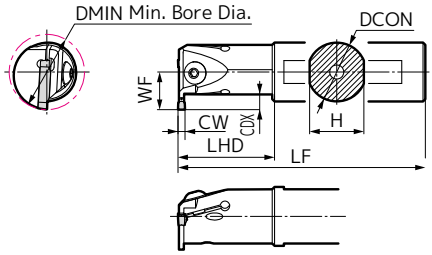


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Diameter DCON	Height H	Head LHD	Overall Length LF	Cutting Edge Distance WF	Min. Bore Dia. DMIN	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Bolt	N·m	Wrench
GNDI R/L2532-T206	★	★	25	23	40	200	16	32	**2.0**	**6**	GC□ N20○○-□□	1	BH0516	**5.0**	LH030
R/L3240-T210	★	★	32	30	50	250	26	40	**2.0**	**10**		1	BH0616	**6.0**	LH040
GNDI R/L2532-T306	★	★	25	23	40	200	16	32	**3.0**	**6**	GC□ N30○○-□□	1	BH0516	**5.0**	LH030
R/L3240-T310	★	★	32	30	50	250	26	40	**3.0**	**10**		1	BH0616	**6.0**	LH040
R/L4050-T311	★	★	40	38	60	300	31	50	**3.0**	**11**		1			
GNDI R/L2532-T406	★	★	25	23	40	200	19	32	**4.0**	**6**	GC□ N40○○-□□	1	BH0516	**5.0**	LH030
R/L3240-T410	★	★	32	30	50	250	26	40	**4.0**	**10**		1	BH0616	**6.0**	LH040
R/L4050-T411	★	★	40	38	60	300	31	50	**4.0**	**11**		1			
GNDI R/L2532-T506	★	★	25	23	40	200	19	32	**5.0**	**6**	GC□ N50○○-□□	1	BH0516	**5.0**	LH030
R/L3240-T510	★	★	32	30	50	250	26	40	**5.0**	**10**		1	BH0616	**6.0**	LH040
R/L4050-T511	★	★	40	38	60	300	31	50	**5.0**	**11**		1			
GNDI R/L4050-T611	★	★	40	38	60	300	31	50	**6.0**	**11**	GC□ N60○○-□□	1	BH0616	**6.0**	LH040

Select holders and inserts with matching width of cut (CW). Refer to page F57 for applicable inserts.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to page F21.

GNDI type

Inserts for GNDI type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

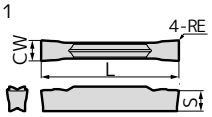
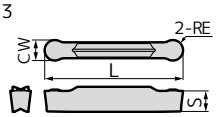


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★		—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	★	—	**4.0**	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	★	—	**4.0**	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★		—	**5.0**	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★		—	**5.0**	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★		—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★		—	**6.0**	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	**2.0**	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	★	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★		★	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	★	**4.0**	±0.03	0.4	26.4	4.0	5	1
N4008-ML	★	★		★	★	★		★	★	★	**4.0**	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★		—	**5.0**	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★		—	**5.0**	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★		—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★		—	**6.0**	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★		—	**2.0**	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★		—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	★	—	**4.0**	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★		—	**5.0**	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★		—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★		—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★		—	**6.0**	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	**2.0**	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	★	—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★		—	**4.0**	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★		—	**5.0**	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★		—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★		—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★		—	**6.0**	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	—	—	—	—	★	★		★		★	**2.0**	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	**2.0**	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★		★	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★		★	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★		★	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★		★	**4.0**	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★		—	**5.0**	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★		—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★		—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★		—	**6.0**	±0.03	0.4	26.4	4.5		1

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2010-RN	—	—	—	—	★	★	★	★		**2.0**	±0.03	1.0	21.7	3.6		2
N3015-RN	★	★	▲	★	★	★	★	★	★	**3.0**	±0.03	1.5	22.6	3.8		2
N4020-RN	★	★	▲	★	★	★	★	★	★	**4.0**	±0.03	2.0	28.2	4.0	5	2
N5025-RN	★	★	▲	★	★	★	★	★		**5.0**	±0.03	2.5	28.3	4.1		2
N6030-RN	★	★	▲	★	★	★	★	★		**6.0**	±0.03	3.0	28.3	4.5		2

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H1	DL1500	BN7500						CW		RE	L	S	Fig.
									Cutting Width	Toler-ance				
GCG N2002 GA	★	★							**2.0**	± 0.025	0.2	21.1	3.6	
N3002 GA	★	★							**3.0**	± 0.025	0.2	21.1	3.8	
N4004 GA	★	★							**4.0**	± 0.025	0.4	26.4	4.0	3
N5004 GA	★	★							**5.0**	± 0.025	0.4	26.4	4.1	
N6004 GA	★	★							**6.0**	± 0.025	0.4	26.4	4.5	
GCM N2010 P			★						**2.0**	± 0.025	1.0	21.7	3.6	
N3015 P			★						**3.0**	± 0.025	1.5	22.4	3.8	2
N4020 P			★						**4.0**	± 0.025	2.0	28.0	4.0	
GCM N3015 PLF									**3.0**	± 0.025	1.5	22.4	3.8	2
N4020 PLF									**4.0**	± 0.025	2.0	28.0	4.0	
GCM N30040 N			★						**3.0**	± 0.025	0.4	21.1	3.8	1
N40040 N									**4.0**	± 0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

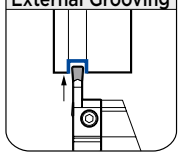
Type	Symbol	Application
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

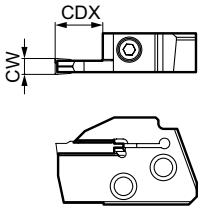
Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

GND Grooving System

GNDCM
External Grooving



External







General Features

New grades and chipbreakers have been added to the already established GND grooving system with polygon shank and a flexible and economical cassette system for inserts. An array of chipbreakers improves the efficiency in chip control in various applications such as grooving, turning, profiling and cut-off.

Advantages

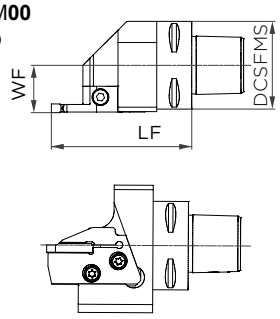
- GND inserts for soft grooving from 2,0 - 6,0 mm width
- Expanded grade selection with 9 different chipbreakers for a wide application range
- Provides excellent chip control
- Achieves stable long tool life

Cassette

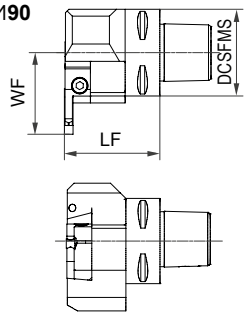
ISO Cat. No.	R	L	CW (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCM R/L 212	★	★	2	12	GCM □20OO-□□	BX0512	5,0	LH040
GNDCM R/L 312	★	★	3		GCM □30OO-□□			
GNDCM R/L 418	★	★	4	18	GCM □40OO-□□		6,0	
GNDCM R/L 518	★	★	5		GCM □50OO-□□			
GNDCM R/L 618	★	★	6		GCM □60OO-□□			

Holder

PSC__GM**00**
(straight)



PSC__GM**90**
(L-style)

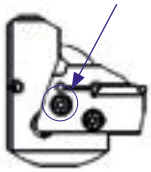


Note:
The **right** handed PSC40/50/63G-M90R holder needs a **left** cassette.
The **left** handed PSC40/50/63G-M90L holder needs a **right** cassette.

Handling

ATTENTION

To fix the cassette on the holder, please clamp the cassette at first with the inner torx screw.



Style	ISO Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner
Straight	PSC40GM00 R/L	★	★	40	22	**80***	BFTX0619N	7,5	LT25
	PSC50GM00 R/L	★	★	50	27				
	PSC63GM00 R/L	★	★	63	33				
L-Style	PSC40GM90 R/L	★	★	40	**42***	52,5			
	PSC50GM90 R/L	★	★	50	**47***	55,0			
	PSC63GM90 R/L	★	★	63	**54***	57,0			

* Dimension when using radial grooving cassettes.

Identification Details - Polygon-Toolholder

PSC	**40**	-	**G**	**M**	**00**	**R**
Polygonshank	Shank Diameter (DCSFMS)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left

Identification Details - Cassette

GND	**C**	**M**	**L**	**3**	**12**
Series Symbol GND	Cassette	Application External Multi-Purpose	Holder Design R = Right L = Left	Grooving Width	Max. Grooving Depth

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GND Grooving System

Inserts for GNDCM

Coated Carbide | Cermet | Carbide

Fig. 1

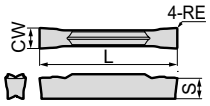


Fig. 2

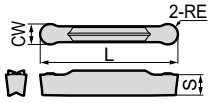


Fig. 3

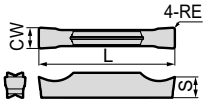


Fig. 4



Grooving / Traversing

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 MG	★	★		★	★	★		★		–	3,0	±0,03	0,2	21,1	3,8	1
N3004 MG	★	★	★	★	★	★	★	★	★	–		±0,03	0,4	21,1	3,8	
N4002 MG	★	★		★	★	★		★		–		±0,03	0,2	26,4	4,0	
N4004 MG	★	★		★	★	★		★	★	–	4,0	±0,03	0,4	26,4	4,0	
N4008 MG	★	★	★	★	★	★	★	★	★	–		±0,03	0,8	26,4	4,0	
N5004 MG	★	★		★	★	★		★		–	5,0	±0,03	0,4	26,4	4,1	
N5008 MG	★	★	★	★	★	★	★	★		–		±0,03	0,8	26,4	4,1	
N6004 MG	★	★		★	★	★		★		–	6,0	±0,03	0,4	26,4	4,5	
N6008 MG	★	★	★	★	★	★	★	★		–		±0,03	0,8	26,4	4,5	
GCM N2002 ML	–	–	–	–	★	★	★	★		–	2,0	±0,03	0,2	21,1	3,6	1
N3002 ML	★	★	★	★	★	★	★	★	★	★	3,0	±0,03	0,2	21,1	3,8	
N3004 ML	★	★		★	★	★		★	★	★		±0,03	0,4	21,1	3,8	
N4002 ML	★	★		★	★	★		★		★		±0,03	0,2	26,4	4,0	
N4004 ML	★	★	★	★	★	★	★	★	★	★	4,0	±0,03	0,4	26,4	4,0	
N4008 ML	★	★		★	★	★		★	★	★		±0,03	0,8	26,4	4,0	
N5004 ML	★	★	★	★	★	★	★	★		–	5,0	±0,03	0,4	26,4	4,1	
N5008 ML	★	★		★	★	★		★		–		±0,03	0,8	26,4	4,1	
N6004 ML	★	★	★	★	★	★	★	★		–	6,0	±0,03	0,4	26,4	4,5	
N6008 ML	★	★		★	★	★		★		–		±0,03	0,8	26,4	4,5	

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3015 RG	★	★	★	★	★	★	★	★	★	★	3,0	±0,03	1,5	21,1	3,8	2
N4020 RG	★	★	★	★	★	★	★	★	★	★	4,0	±0,03	2,0	26,4	4,0	
N5025 RG	★	★	★	★	★	★	★	★		–	5,0	±0,03	2,5	27,2	4,1	
N6030 RG	★	★	★	★	★	★	★	★		–	6,0	±0,03	3,0	27,5	4,5	

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N2010 RN	–	–	–	–	★	★	★	★	–	2,0	± 0,03	1,0	21,7	3,6	2
N3015 RN	★	★	★	★	★	★	★	★	–	3,0	± 0,03	1,5	22,6	3,8	
N4020 RN	★	★	★	★	★	★	★	★	–	4,0	± 0,03	2,0	28,2	4,0	
N5025 RN	★	★	★	★	★	★	★	★	–	5,0	± 0,03	2,5	28,3	4,1	
N6030 RN	★	★	★	★	★	★	★	★	–	6,0	± 0,03	3,0	28,3	4,5	

Non-Ferrous Metals

Dimensions (mm)

ISO Cat. No.	H1									CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCG N2002 GA	★									2,0	±0,025	0,2	21,1	3,6	3
N3002 GA	★									3,0	±0,025	0,2	21,1	3,8	
N4004 GA	★									4,0	±0,025	0,4	26,4	4,0	
N5004 GA	★									5,0	±0,025	0,4	26,4	4,1	
N6004 GA	★									6,0	±0,025	0,4	26,4	4,5	

Grooving / Cut-Off Machining

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A		CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N2002 GG	★	★	★	★	★	★		–		2,0	± 0,03	0,2	21,1	3,6	1
N3002 GG	★	★	★	★	★	★	★	–		3,0	± 0,03	0,2	21,1	3,8	
N3004 GG	★	★	★	★	★	★	★	–			± 0,03	0,4	21,1	3,8	
N4002 GG	★	★	★	★	★	★		–		4,0	± 0,03	0,2	26,4	4,0	
N4004 GG	★	★	★	★	★	★	★	–			± 0,03	0,4	26,4	4,0	
N5002 GG	★	★	★	★	★	★		–		5,0	± 0,03	0,2	26,4	4,1	
N5004 GG	★	★	★	★	★	★		–			± 0,03	0,4	26,4	4,1	
N6002 GG	★	★	★	★	★	★		–		6,0	± 0,03	0,2	26,4	4,5	
N6004 GG	★	★	★	★	★	★		–			± 0,03	0,4	26,4	4,5	
GCM N2002 GL	★	★	★	★	★	★		–		2,0	± 0,03	0,2	21,1	3,6	1
N2004 GL	★		★	★		★		–			± 0,03	0,4	21,1	3,6	
N3002 GL	★	★	★	★	★	★	★	–		3,0	± 0,03	0,2	21,1	3,8	
N3004 GL	★		★	★		★		–			± 0,03	0,4	21,1	3,8	
N4002 GL	★	★	★	★	★	★		–		4,0	± 0,03	0,2	26,4	4,0	
N4004 GL	★		★	★		★	★	–			± 0,03	0,4	26,4	4,0	
N5002 GL	★	★	★	★	★	★		–		5,0	± 0,03	0,2	26,4	4,1	
N5004 GL	★		★	★		★		–			± 0,03	0,4	26,4	4,1	
N6002 GL	★	★	★	★	★	★		–		6,0	± 0,03	0,2	26,4	4,5	
N6004 GL	★		★	★		★		–			± 0,03	0,4	26,4	4,5	
GCM N2002 GF	–	–	★	★		★	★	★		2,0	±0,03	0,2	21,1	3,6	1
N2004 GF	–	–	★	★		★		★			±0,03	0,4	21,1	3,6	
N3002 GF	★	★	★	★	★	★	★	★		3,0	±0,03	0,2	21,1	3,8	
N3004 GF	★		★	★		★		★			±0,03	0,4	21,1	3,8	
N4002 GF	★	★	★	★	★	★	★	★		4,0	±0,03	0,2	26,4	4,0	
N4004 GF	★		★	★		★		★			±0,03	0,4	26,4	4,0	
N5002 GF	★	★	★	★	★	★		–		5,0	±0,03	0,2	26,4	4,1	
N5004 GF	★		★	★		★		–			±0,03	0,4	26,4	4,1	
N6002 GF	★	★	★	★	★	★		–		6,0	±0,03	0,2	26,4	4,5	
N6004 GF	★		★	★		★		–			±0,03	0,4	26,4	4,5	

Cut-Off Machining (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U			CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM R2002 CG 05	★	★	★	★	★	★	–		5°	2,0	± 0,03	0,2	21,1	3,6	4
L2002 CG 05	★	★	★	★	★	★	–		5°	2,0	± 0,03	0,2	21,1	3,6	
GCM R3002 CG 05	★	★	★	★	★	★	–		5°	3,0	± 0,03	0,2	21,3	3,8	
L3002 CG 05	★	★	★	★	★	★	–		5°	3,0	± 0,03	0,2	21,3	3,8	
GCM R4002 CG 05	★	★	★	★	★	★	–		5°	4,0	± 0,04	0,2	26,7	4,0	
L4002 CG 05	★	★	★	★	★	★	–		5°	4,0	± 0,04	0,2	26,7	4,0	
GCM R20003 CF 10	–	–	★	★	–	–	★		10°	2,0	± 0,08	0,03	22,4	3,6	4
L20003 CF 10	–	–	★	★	–	–	★		10°	2,0	± 0,08	0,03	22,4	3,6	
GCM R30003 CF 10	–	–	★	★	–	–	★		10°	3,0	± 0,08	0,03	22,4	3,8	
L30003 CF 10	–	–	★	★	–	–	★		10°	3,0	± 0,08	0,03	22,4	3,8	
GCM R20003 CF 15	–	–	★	★	–	–	★		15°	2,0	± 0,08	0,03	22,4	3,6	
L20003 CF 15	–	–	★	★	–	–	★		15°	2,0	± 0,08	0,03	22,4	3,6	
GCM R30003 CF 15	–	–	★	★	–	–	★		15°	3,0	± 0,08	0,03	22,4	3,8	
L30003 CF 15	–	–	★	★	–	–	★		15°	3,0	± 0,08	0,03	22,4	3,8	

GCM R: Right hand GCM L: Left hand

Combine the insert with a holder such that the width of cut (CW) matches.

★ mark: Global stocked item

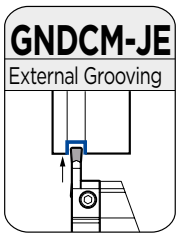
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

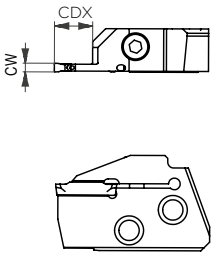
(N·m) Recommended Tightening Torque (N·m)

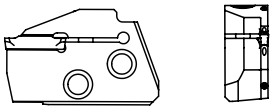
GND Grooving System



External

Internal Coolant









General Features

The already established GND grooving system with polygon shank and a flexible cassette system for grooving inserts. has been extended by a version with internal coolant supply. The direct cooling at the cutting edge ensures excellent chip breaking and improves chip control during external grooving.

Advantages

- External grooving cassettes with internal coolant supply
- PSC Polygon holders straight and 90° with internal coolant supply
- GND inserts for soft grooving from 2.0-6.0 mm grooving width
- Provides excellent chip control
- Depending on the coolant pressure. the tool life of the cutting edge will increase significantly.

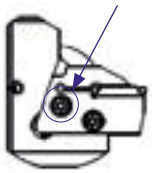
Cassette with Internal Coolant

ISO Cat. No.	R	L	CW (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCM R/L 212-JE	★	★	2	12	GCM □20OO-□□	BX0512	5.0	LH040
GNDCM R/L 312-JE	★	★	3		GCM □30OO-□□			
GNDCM R/L 418-JE	★	★	4	18	GCM □40OO-□□		6.0	
GNDCM R/L 518-JE	★	★	5		GCM □50OO-□□			
GNDCM R/L 618-JE	★	★	6		GCM □60OO-□□			

Handling

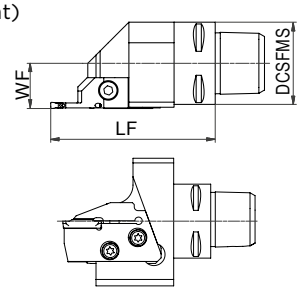
ATTENTION

To fix the cassette on the holder. please clamp the cassette at first with the inner torx screw.

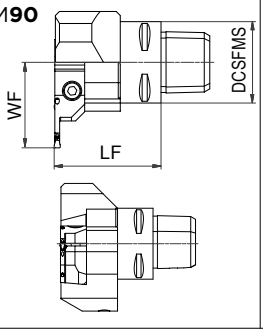


Holder

PSC__GM**00**
(straight)



PSC__GM**90**
(L-style)



Note:
The **right** handed PSC40/50/63G-M90R holder needs a **left** cassette.
The **left** handed PSC40/50/63G-M90L holder needs a **right** cassette.

Style	Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner	Sealing Set (4xOring)
Straight	PSC40GM00 R/L-JE	★		40	22	**80***	BFTX0619N	7.5	LT25	ARC SET
	PSC50GM00 R/L-JE			50	27					
	PSC63GM00 R/L-JE			63	33					
L-Style	PSC40GM90 R/L-JE	★		40	**42***	52.5				
	PSC50GM90 R/L-JE			50	**47***	55.0				
	PSC63GM90 R/L-JE		★	63	**54***	57.0				

* Dimension when using radial grooving cassettes.

Identification Details - Polygon-Toolholder

PSC — Polygonshank

40 — Shank Diameter (DCSFMS)

-

G — Series Symbol GND

M — Application External Multi-Purpose

00 — Style 00 = Straight 90 = L-Style

R — Holder Design R = Right L = Left

JE — Internal Coolant (European Design)

Identification Details - Cassette

GND — Series Symbol GND

C — Cassette

M — Application External Multi-Purpose

L — Holder Design R = Right L = Left

3 — Grooving Width

12 — Max. Grooving Depth

JE — Internal Coolant (European Design)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GND Grooving System

PSC

Inserts for GNDCM-JE

Coated Carbide | Cermet | Carbide

Fig. 1

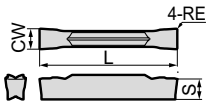


Fig. 2

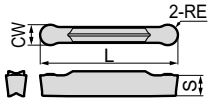


Fig. 3

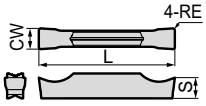
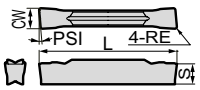


Fig. 4



Grooving / Traversing

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 MG	★	★		★	★	★		★		–	3.0	±0.03	0.2	21.1	3.8	1
N3004 MG	★	★	★	★	★	★	★	★	★	–		±0.03	0.4	21.1	3.8	
N4002 MG	★	★		★	★	★		★		–		±0.03	0.2	26.4	4.0	
N4004 MG	★	★		★	★	★		★	★	–	4.0	±0.03	0.4	26.4	4.0	
N4008 MG	★	★	★	★	★	★	★	★	★	–		±0.03	0.8	26.4	4.0	
N5004 MG	★	★		★	★	★		★		–	5.0	±0.03	0.4	26.4	4.1	
N5008 MG	★	★	★	★	★	★	★	★		–		±0.03	0.8	26.4	4.1	
N6004 MG	★	★		★	★	★		★		–	6.0	±0.03	0.4	26.4	4.5	
N6008 MG	★	★	★	★	★	★	★	★		–		±0.03	0.8	26.4	4.5	
GCM N2002 ML	–	–	–	–	★	★	★	★		–	2.0	±0.03	0.2	21.1	3.6	1
N3002 ML	★	★	★	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	
N3004 ML	★	★		★	★	★		★	★	★		±0.03	0.4	21.1	3.8	
N4002 ML	★	★		★	★	★		★		★		±0.03	0.2	26.4	4.0	
N4004 ML	★	★	★	★	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0	
N4008 ML	★	★		★	★	★		★	★	★		±0.03	0.8	26.4	4.0	
N5004 ML	★	★	★	★	★	★	★	★		–	5.0	±0.03	0.4	26.4	4.1	
N5008 ML	★	★		★	★	★		★		–		±0.03	0.8	26.4	4.1	
N6004 ML	★	★	★	★	★	★	★	★		–	6.0	±0.03	0.4	26.4	4.5	
N6008 ML	★	★		★	★	★		★		–		±0.03	0.8	26.4	4.5	

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3015 RG	★	★	★	★	★	★	★	★	★	★	3.0	±0.03	1.5	21.1	3.8	2
N4020 RG	★	★	★	★	★	★	★	★	★	★	4.0	±0.03	2.0	26.4	4.0	
N5025 RG	★	★	★	★	★	★	★	★		–	5.0	±0.03	2.5	27.2	4.1	
N6030 RG	★	★	★	★	★	★	★	★		–	6.0	±0.03	3.0	27.5	4.5	

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N2010 RN	–	–	–	–	★	★	★	★	–	2.0	±0.03	1.0	21.7	3.6	2
N3015 RN	★	★	★	★	★	★	★	★	–	3.0	±0.03	1.5	22.6	3.8	
N4020 RN	★	★	★	★	★	★	★	★	–	4.0	±0.03	2.0	28.2	4.0	
N5025 RN	★	★	★	★	★	★	★	★	–	5.0	±0.03	2.5	28.3	4.1	
N6030 RN	★	★	★	★	★	★	★	★	–	6.0	±0.03	3.0	28.3	4.5	

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H1	BN7500	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCG N2002 GA	★		2.0	±0.025	0.2	21.1	3.6	3
N3002 GA	★		3.0	±0.025	0.2	21.1	3.8	
N4004 GA	★		4.0	±0.025	0.4	26.4	4.0	
N5004 GA	★		5.0	±0.025	0.4	26.4	4.1	
N6004 GA	★		6.0	±0.025	0.4	26.4	4.5	
GCM N2010 P		★	2.0	±0.025	1.0	21.7	3.6	2
N3015 P		★	3.0	±0.025	1.5	22.4	3.8	
N4020 P		★	4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF			3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF			4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N		★	3.0	±0.025	0.4	21.1	3.8	1
N40040 N			4.0	±0.025	0.4	26.4	4.0	

Grooving / Cut-Off Machining

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N2002 GG	★	★	★	★	★	★		–	2.0	±0.03	0.2	21.1	3.6	1
N3002 GG	★	★	★	★	★	★	★	–	3.0	±0.03	0.2	21.1	3.8	
N3004 GG	★	★	★	★	★	★	★	–		±0.03	0.4	21.1	3.8	
N4002 GG	★	★	★	★	★	★		–	4.0	±0.03	0.2	26.4	4.0	
N4004 GG	★	★	★	★	★	★	★	–		±0.03	0.4	26.4	4.0	
N5002 GG	★	★	★	★	★	★		–	5.0	±0.03	0.2	26.4	4.1	
N5004 GG	★	★	★	★	★	★		–		±0.03	0.4	26.4	4.1	
N6002 GG	★	★	★	★	★	★		–	6.0	±0.03	0.2	26.4	4.5	
N6004 GG	★	★	★	★	★	★		–		±0.03	0.4	26.4	4.5	
GCM N2002 GL	★	★	★	★	★	★		–	2.0	±0.03	0.2	21.1	3.6	1
N2004 GL	★		★	★		★		–		±0.03	0.4	21.1	3.6	
N3002 GL	★	★	★	★	★	★	★	–	3.0	±0.03	0.2	21.1	3.8	
N3004 GL	★		★	★		★		–		±0.03	0.4	21.1	3.8	
N4002 GL	★	★	★	★	★	★		–	4.0	±0.03	0.2	26.4	4.0	
N4004 GL	★		★	★		★	★	–		±0.03	0.4	26.4	4.0	
N5002 GL	★	★	★	★	★	★		–	5.0	±0.03	0.2	26.4	4.1	
N5004 GL	★		★	★		★		–		±0.03	0.4	26.4	4.1	
N6002 GL	★	★	★	★	★	★		–	6.0	±0.03	0.2	26.4	4.5	
N6004 GL	★		★	★		★		–		±0.03	0.4	26.4	4.5	
GCM N2002 GF	–	–	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6	1
N2004 GF	–	–	★	★		★		★		±0.03	0.4	21.1	3.6	
N3002 GF	★	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	
N3004 GF	★		★	★		★		★		±0.03	0.4	21.1	3.8	
N4002 GF	★	★	★	★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0	
N4004 GF	★		★	★		★		★		±0.03	0.4	26.4	4.0	
N5002 GF	★	★	★	★	★	★		–	5.0	±0.03	0.2	26.4	4.1	
N5004 GF	★		★	★		★		–		±0.03	0.4	26.4	4.1	
N6002 GF	★	★	★	★	★	★		–	6.0	±0.03	0.2	26.4	4.5	
N6004 GF	★		★	★		★		–		±0.03	0.4	26.4	4.5	

Cut-Off Machining (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U		CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM R2002 CG 05	★	★	★	★	★	★	–	5°	2.0	±0.03	0.2	21.1	3.6	4
L2002 CG 05	★	★	★	★	★	★	–	5°	2.0	±0.03	0.2	21.1	3.6	
GCM R3002 CG 05	★	★	★	★	★	★	–	5°	3.0	±0.03	0.2	21.3	3.8	
L3002 CG 05	★	★	★	★	★	★	–	5°	3.0	±0.03	0.2	21.3	3.8	
GCM R4002 CG 05	★	★	★	★	★	★	–	5°	4.0	±0.04	0.2	26.7	4.0	
L4002 CG 05	★	★	★	★	★	★	–	5°	4.0	±0.04	0.2	26.7	4.0	
GCM R20003 CF 10	–	–	★	★	–	–	★	10°	2.0	±0.08	0.03	22.4	3.6	4
L20003 CF 10	–	–	★	★	–	–	★	10°	2.0	±0.08	0.03	22.4	3.6	
GCM R30003 CF 10	–	–	★	★	–	–	★	10°	3.0	±0.08	0.03	22.4	3.8	
L30003 CF 10	–	–	★	★	–	–	★	10°	3.0	±0.08	0.03	22.4	3.8	
GCM R20003 CF 15	–	–	★	★	–	–	★	15°	2.0	±0.08	0.03	22.4	3.6	
L20003 CF 15	–	–	★	★	–	–	★	15°	2.0	±0.08	0.03	22.4	3.6	
GCM R30003 CF 15	–	–	★	★	–	–	★	15°	3.0	±0.08	0.03	22.4	3.8	
L30003 CF 15	–	–	★	★	–	–	★	15°	3.0	±0.08	0.03	22.4	3.8	

GCM R: Right hand GCM L: Left hand

Combine the insert with a holder such that the width of cut (CW) matches.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

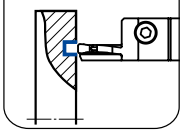
— mark: Not available

N·m Recommended Tightening Torque (N·m)

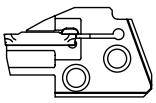
GND Grooving System

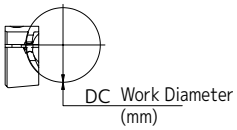
PSC

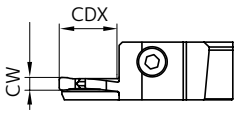
GNDCF
Face Grooving



Face

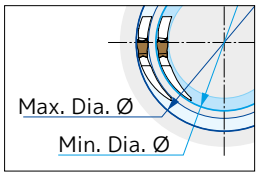






Above figures show right hand tools.





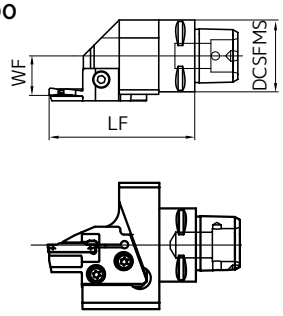
Work diameters in the stock indicate external diameters of face grooving.

Cassette

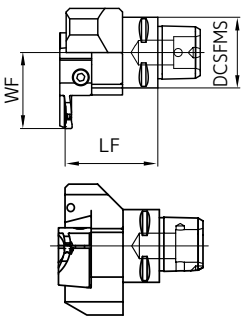
ISO Cat. No.	R	L	CW (mm)	Diameter Range (mm)	DC (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCF R/L 312-040	★	★	3	40–200	40–55	12	GC□ N300-□□	BX0512	5.0	LH040
GNDCF R/L 315-050	★	★			50–70	15				
GNDCF R/L 315-065	★	★			65–100	15				
GNDCF R/L 318-090	★	★			90–150	18				
GNDCF R/L 318-140	★	★			140–200	18				
GNDCF R/L 418-040	★	★	4	40–300	40–55	18	GC□ N400-□□		6.0	
GNDCF R/L 418-050	★	★			50–70	18				
GNDCF R/L 418-065	★	★			65–90	18				
GNDCF R/L 418-085	★	★			85–130	18				
GNDCF R/L 418-125	★	★			125–200	18				
GNDCF R/L 418-180	★	★			180–300	18				
GNDCF R/L 518-050	★	★	5	50–300	50–70	18	GC□ N500-□□			
GNDCF R/L 518-065	★	★			65–90	18				
GNDCF R/L 518-085	★	★			85–130	18				
GNDCF R/L 518-125	★	★			125–200	18				
GNDCF R/L 518-180	★	★			180–300	18				
GNDCF R/L 618-050	★	★	6	50–1000	50–75	18	GC□ N600-□□			
GNDCF R/L 618-070	★	★			70–110	18				
GNDCF R/L 618-100	★	★			100–200	18				
GNDCF R/L 618-180	★	★			180–300	18				
GNDCF R/L 618-280	★	★			280–1000	18				

Holder

PSC__GM**00**
(straight)



PSC__GM**90**
(L-style)



Note:
The **right** handed PSC40/50/63G-M90R holder needs a **left** cassette.
The **left** handed PSC40/50/63G-M90L holder needs a **right** cassette.

Style	ISO Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner
Straight	PSC40GM00 R/L	★	★	40	22	**80***	BFTX0619N	7.5	LT25
	PSC50GM00 R/L	★	★	50	27				
	PSC63GM00 R/L	★		63	33				
L-Style	PSC40GM90 R/L	★	★	40	**42***	52.5			
	PSC50GM90 R/L	★	★	50	**47***	55.0			
	PSC63GM90 R/L			63	**54***	57.0			

* Dimension when using face grooving cassettes.

Identification Details - Polygon-Toolholder

PSC	40	-	G	M	00	R
Polygonshank	Shank Diameter (DCSFMS)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left

Identification Details - Cassette

GND	C	F	L	3	12

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Inserts for GNDCF

Coated Carbide | Cermet | Carbide

Fig. 1

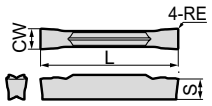


Fig. 2

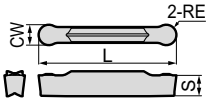
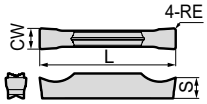


Fig. 3



Grooving / Traversing

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 MG	★	★		★	★	★		★		–	3.0	±0.03	0.2	21.1	3.8	1
N3004 MG	★	★	★	★	★	★	★	★	★	–		±0.03	0.4	21.1	3.8	
N4002 MG	★	★		★	★	★		★		–		±0.03	0.2	26.4	4.0	
N4004 MG	★	★		★	★	★		★	★	–	4.0	±0.03	0.4	26.4	4.0	
N4008 MG	★	★	★	★	★	★	★	★	★	–		±0.03	0.8	26.4	4.0	
N5004 MG	★	★		★	★	★		★		–		±0.03	0.4	26.4	4.1	
N5008 MG	★	★	★	★	★	★	★	★		–	5.0	±0.03	0.8	26.4	4.1	
N6004 MG	★	★		★	★	★		★		–		±0.03	0.4	26.4	4.5	
N6008 MG	★	★	★	★	★	★	★	★		–	6.0	±0.03	0.8	26.4	4.5	
GCM N3002 ML	★	★	★	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	1
N3004 ML	★	★		★	★	★		★	★	★		±0.03	0.4	21.1	3.8	
N4002 ML	★	★		★	★	★		★		★		±0.03	0.2	26.4	4.0	
N4004 ML	★	★	★	★	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0	
N4008 ML	★	★		★	★	★		★	★	★		±0.03	0.8	26.4	4.0	
N5004 ML	★	★	★	★	★	★	★	★		–		±0.03	0.4	26.4	4.1	
N5008 ML	★	★		★	★	★		★		–	5.0	±0.03	0.8	26.4	4.1	
N6004 ML	★	★	★	★	★	★	★	★		–		±0.03	0.4	26.4	4.5	
N6008 ML	★	★		★	★	★		★		–	6.0	±0.03	0.8	26.4	4.5	

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3015 RN	★	★	★	★	★	★	★	★	–	3.0	± 0.03	1.5	22.6	3.8	2
N4020 RN	★	★	★	★	★	★	★	★	–	4.0	± 0.03	2.0	28.2	4.0	
N5025 RN	★	★	★	★	★	★	★	★	–	5.0	± 0.03	2.5	28.3	4.1	
N6030 RN	★	★	★	★	★	★	★	★	–	6.0	± 0.03	3.0	28.3	4.5	

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H1	BN7500	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 GA	★		3.0	± 0.025	0.2	21.1	3.8	3
N4004 GA	★		4.0	± 0.025	0.4	26.4	4.0	
N5004 GA	★		5.0	± 0.025	0.4	26.4	4.1	
N6004 GA	★		6.0	± 0.025	0.4	26.4	4.5	
GCM N2010 P		★	2.0	± 0.025	1.0	21.7	3.6	2
N3015 P		★	3.0	± 0.025	1.5	22.4	3.8	
N4020 P		★	4.0	± 0.025	2.0	28.0	4.0	
GCM N3015 PLF			3.0	± 0.025	1.5	22.4	3.8	2
N4020 PLF			4.0	± 0.025	2.0	28.0	4.0	
GCM N30040 N		★	3.0	± 0.025	0.4	21.1	3.8	1
N40040 N			4.0	± 0.025	0.4	26.4	4.0	

Grooving / Cut-Off Machining

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 GG	★	★	★	★	★	★	★	–	3.0	± 0.03	0.2	21.1	3.8	1
N3004 GG	★	★	★	★	★	★	★	–		± 0.03	0.4	21.1	3.8	
N4002 GG	★	★	★	★	★	★		–	4.0	± 0.03	0.2	26.4	4.0	
N4004 GG	★	★	★	★	★	★	★	–		± 0.03	0.4	26.4	4.0	
N5002 GG	★	★	★	★	★			–	5.0	± 0.03	0.2	26.4	4.1	
N5004 GG	★	★	★	★	★			–		± 0.03	0.4	26.4	4.1	
N6002 GG	★	★	★	★	★			–	6.0	± 0.03	0.2	26.4	4.5	
N6004 GG	★	★	★	★	★			–		± 0.03	0.4	26.4	4.5	
GCM N3002 GL	★	★	★	★	★	★	★	–	3.0	± 0.03	0.2	21.1	3.8	1
N3004 GL	★		★	★		★		–		± 0.03	0.4	21.1	3.8	
N4002 GL	★	★	★	★	★	★		–	4.0	± 0.03	0.2	26.4	4.0	
N4004 GL	★		★	★		★	★	–		± 0.03	0.4	26.4	4.0	
N5002 GL	★	★	★	★	★	★		–	5.0	± 0.03	0.2	26.4	4.1	
N5004 GL	★		★	★		★		–		± 0.03	0.4	26.4	4.1	
N6002 GL	★	★	★	★	★	★		–	6.0	± 0.03	0.2	26.4	4.5	
N6004 GL	★		★	★		★		–		± 0.03	0.4	26.4	4.5	
GCM N3002 GF	★	★	★	★	★	★	★	★	3.0	± 0.03	0.2	21.1	3.8	1
N3004 GF	★		★	★		★		★		± 0.03	0.4	21.1	3.8	
N4002 GF	★	★	★	★	★	★	★	★	4.0	± 0.03	0.2	26.4	4.0	
N4004 GF	★		★	★		★		★		± 0.03	0.4	26.4	4.0	
N5002 GF	★	★	★	★	★	★		–	5.0	± 0.03	0.2	26.4	4.1	
N5004 GF	★		★	★		★		–		± 0.03	0.4	26.4	4.1	
N6002 GF	★	★	★	★	★	★		–	6.0	± 0.03	0.2	26.4	4.5	
N6004 GF	★		★	★		★		–		± 0.03	0.4	26.4	4.5	

Combine the insert with a holder such that the width of cut (CW) matches.

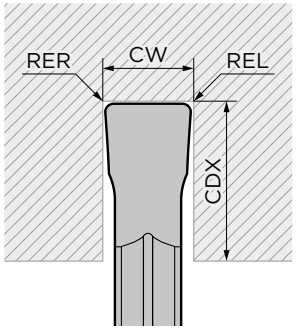
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Grooving Tool Holders GND series Special Grooving Insert Request Form

Applicable Tool Holders (Width of Cut 2 to 6mm)
External Grooving: GNDS type (→F32), GNDM type (→F28, F30, F34, F38), GNDMS type (→F34), GNDL type (→F30, F32, F42, F44), GNDLS type (→F40), GNDCM type (→F52) *GNDXL types cannot be used as the insert shape is different
Internal Grooving: GNDI type (→F56) *GNDIS types cannot be used as the insert shape is different
Face Grooving: GNDF type (→F50), GNDFS type (→F52)

Special inserts with ground chipbreaker (customised width of cut and insert corner radius) can be made-to-order. To order, fill out the form below (indicate your preference by circling the item or specify dimensions), and send it to a Sumitomo Electric Hardmetal dealer or distributor. (Make a copy of this form.)
For grooving inserts with shape, width of cut or grade other than those listed below, contact your nearest Sumitomo Electric Hardmetal sales office (refer to the back of this catalog).

Your Company / Contact Information (Phone / Fax / Address, etc.)

Shape	Item	Description
	**Width of Cut CW (2.00 to 6.59mm)**	**mm**
	Corner Radius RER	**mm**
	Corner Radius REL	**mm**
	Grade (Select from right)*1	**AC5015S / AC5025S / AC530U / AC520U /AC9125T EH520 / H10 / KH03 / CBN Grade / PCD Grade**
	Grooving Depth CDX *2	**mm**

*1: If H10 is selected as the grade, the cutting edge will have a sharp edge.
*2: Set the chipbreaker width based on CDX. The actual groove depth can only be less than or equal to the maximum groove depth configurable by each holder.

Form instructions

1. The applicable standard holder depends on the width of cut. Refer to the chart on the right for manufacturable widths of cut and corner radius range for facing. (If using a corner radius exceeding this for facing, modification is required to prevent the holder from interfering with the work material.)
2. The corner radius maximum value for external and internal grooving is 1/2 the width of cut.
3. Width of cut (CW) tolerance is ±0.025mm when manufactured.
4. WF dimensions for each holder are the CWS value for the applicable holder standard insert width of cut as follows.
   (Standard holder dimension WF) + (WF - CWS) / 2
5. For inch widths of cut, inserts can also be supplied partially unground. Contact your local sales office for details.

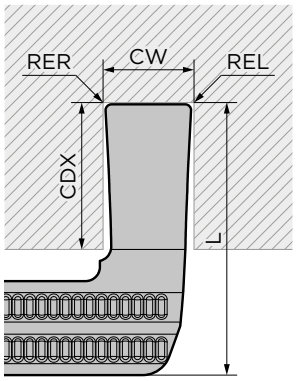
Width of Cut CW (Nominal Value)	Applicable Standard Holder	Corner radius (RER, REL) maximum value when used for facing (standard holder applicable)
2.00 to 2.59mm	2mm Width Holder	0.2mm
2.60 to 3.59mm	3mm Width Holder	0.4mm
3.60 to 4.59mm	4mm Width Holder	0.8mm
4.60 to 5.59mm	5mm Width Holder	
5.60 to 6.59mm	6mm Width Holder	

SEC-Grooving Tool Holders GND series 90° Insert Request Form

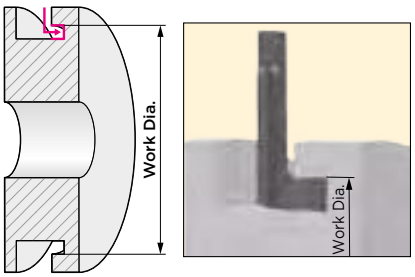
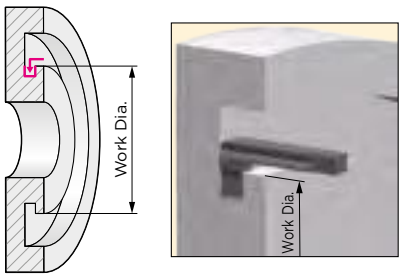
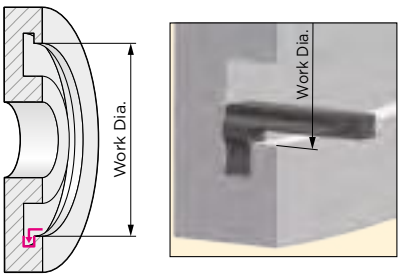
Applicable holders: Inquire along with inserts.

To order, fill out the form below (indicate your preference by circling the item or specify dimensions), and send it to a Sumitomo Electric Hardmetal dealer or distributor. (Make a copy of this form.)
For grooving inserts with shape, width of cut or grade other than those listed below, contact your nearest Sumitomo Electric Hardmetal sales office (refer to the back of this catalog).

Your Company / Contact Information (Phone / Fax / Address, etc.)

Shape	Item	Description
	Width of Cut **CW** (2.00 to 5.00mm)	mm
	Corner Radius **RER**	mm
	Corner Radius **REL**	mm
	Grade (Select from right)	EH510 / EH520 / AC5015S / AC5025S
	Grooving Depth **CDX**	mm
	Cutting Edge Position **L** (5.80mm up) (Enter the maximum allowable value)	mm
	Feed Direction	Right-handed / Left-handed
	Insert Thickness (Select from right)	Standard / High rigidity

Machined positions on workpiece and machining method
(Select one of the options below and enter the machining diameter)

Face Grooving	External Grooving	Internal Grooving
		
Work Dia.: mm	Work Dia.: mm	Work Dia.: mm

SGE series

External

External Shallow Grooves
Clamp-on

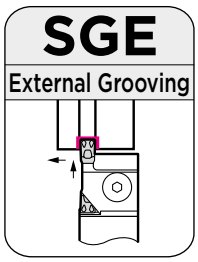
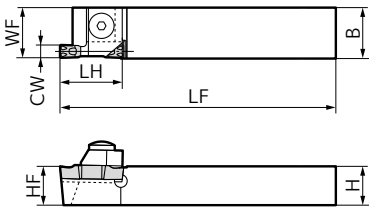


Fig 1



Effective Machining Depth

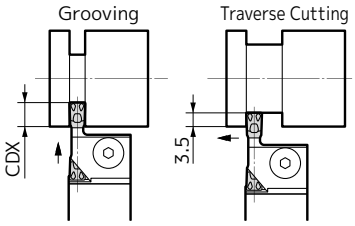


Figure shows right-handed (R) tool.

SumiSmall

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Maximum Groove Depth CDX	Applicable Insert	Fig	Clamp Plate	Bolt	Spring	Wrench
SGE R/L1016-3	★	★	10	16	120	15.7	10	19.5	**3.0**	**6.2**	GEN30○○	1	GCLR/L-3	FBH0516NT	GSP-5	LH025NT
R/L1216-3	★	★	12	16	120	15.7	12	19.5	**3.0**	**6.2**		1				
R/L1616-3	★	★	16	16	120	15.7	16	22.0	**3.0**	**8.0**		1		FBH0520NT		
R/L2020-3	★	★	20	20	120	19.7	20	22.0	**3.0**	**8.0**		1				
SGE R/L1016-45	★	★	10	16	120	15.7*	10	19.5		**6.2**	GEN40○○ GEN50○○	1	GCLR/L-4	FBH0516NT	GSP-5	LH025NT
R/L1216-45	★	★	12	16	120	15.7*	12	19.5	**4.0**	**6.2**		1				
R/L1616-45	★	★	16	16	120	15.7*	16	22.0	**5.0**	**8.0**		1		FBH0520NT		
R/L2020-45	★	★	20	20	120	19.7*	20	22.0		**8.0**		1				
SGE R/L1020-6	★	★	10	20	120	19.7	10	19.5	**6.0**	**6.2**	GEN60○○	1	GCLR/L-6	FBH0516NT	GSP-5	LH025NT
R/L1220-6	★	★	12	20	120	19.7	12	19.5	**6.0**	**6.2**		1				
R/L1620-6	★	★	16	20	120	19.7	16	22.0	**6.0**	**8.0**		1		FBH0520NT		
R/L2020-6	★	★	20	20	120	19.7	20	22.0	**6.0**	**8.0**		1				

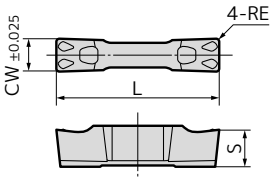
*Width of cut CW = 4mm when the insert is mounted. Width of cut CW is 0.5mm larger when a 5mm insert is mounted.

Insert (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	ACZ150	Width of Cut CW	Overall Length L	Thickness S	Corner Radius RE	Applicable Holder	Fig
GEN 3002	★	**3.0**	20	4.64	0.2	SGE R/L ○○○○-3	1
3004	★	**3.0**	20	4.64	0.4		1
GEN 4002	★	**4.0**	20	4.50	0.2	SGE R/L ○○○○-45	1
4004	★	**4.0**	20	4.50	0.4		1
GEN 5002	★	**5.0**	20	4.50	0.2	SGE R/L ○○○○-45	1
5004	★	**5.0**	20	4.50	0.4		1
GEN 6002	★	**6.0**	20	4.50	0.2	SGE R/L ○○○○-6	1
6004	★	**6.0**	20	4.50	0.4		1

Fig 1



Recommended Cutting Conditions A24

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

CKB series

Facing

Very Small Diameter Face Grooving
Clamp-on

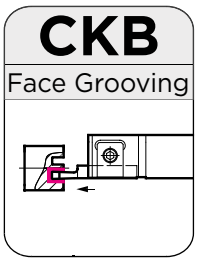
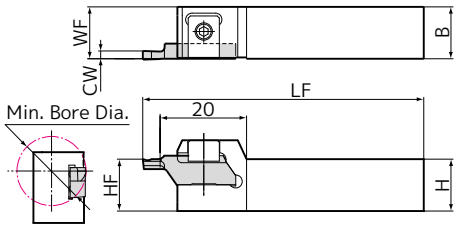


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp Plate	Double Screw	Wrench
CKBR 1010-16	★	10	10	111	10	10	1	CKBW16	WB4-8	LH020
1212-16	★	12	12	136	12	12	1			
1616-16	★	16	16	136	16	16	1			
2020-16	★	20	20	136	20	20	1			
2525-16		25	25	161	25	25	1			

*For round shank holders, refer to page E66.

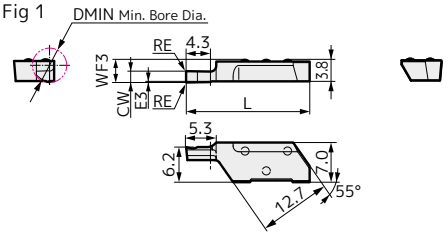
Round Shank Holders E68

Insert (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	ACZ150	Min. Bore Dia. DMIN	Cutting Edge Distance WF3	Cutting Edge Distance E3	Width of Cut CW	Corner Radius RE	Overall Length L	Maximum Groove Depth CDX	Fig
KBMF R0615-05	★	6.0	4.0	0.2	**1.5**	0.05	21.8	**4.0**	1
R0620-05	★	6.0	4.0	0.2	**2.0**	0.05	21.8	**4.0**	1
R0630-05	★	6.0	4.0	0.2	**3.0**	0.05	21.8	**4.0**	1

Fig 1



Recommended Cutting Conditions A24

★ mark: Global stocked item
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Blank: Made-to-order item
— mark: Not available

CKB series

Internal

Internal Narrow Grooving
Clamp-on

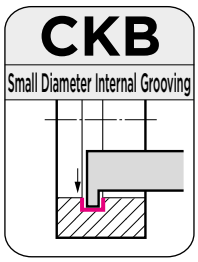
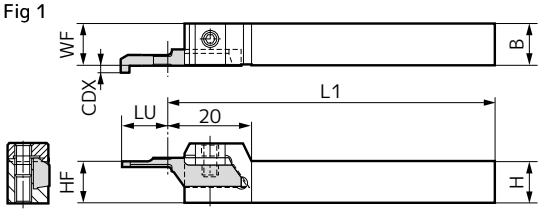


Fig 1



Refer to the insert table for CDX and LU values.

SumiSmall

Holder

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length L1	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Parts: Clamp Plate	Parts: Double Screw	Parts: Wrench
CKB R1010-16	★	10	10	100	10	10	1	CKBW16	WB4-8	LH020
R1212-16	★	12	12	125	12	12	1			
R1616-16	★	16	16	125	16	16	1			
R2020-16	★	20	20	125	20	20	1			
R2525-16		25	25	150	25	25	1			

Refer to the insert table for CDX and LU values.

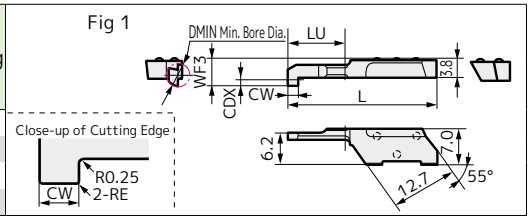
Round Shank Holders E68

Insert (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U	Min. Bore Dia. DMIN	Width of Cut CW	Cutting Edge Distance WF3	Corner Radius RE	Overall Length L	Maximum Groove Depth CDX	Machinable Length LU	Fig
KBMG R0411-05	★	4.0	**1.00**	4.90	0.05	28.5	0.8	**11**	1
R0411-10	★	4.0	**2.00**	4.90	0.10	28.5	0.8	**11**	1
R0511-05	★	5.0	**1.00**	5.10	0.05	28.5	1.0	**11**	1
R0511-10	★	5.0	**2.00**	5.10	0.10	28.5	1.0	**11**	1

Fig 1



Recommended Cutting Conditions A24

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SGIT series

Internal

Internal Narrow Grooving
Screw-on

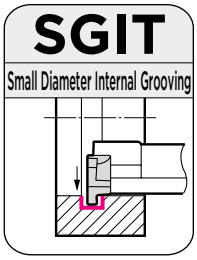
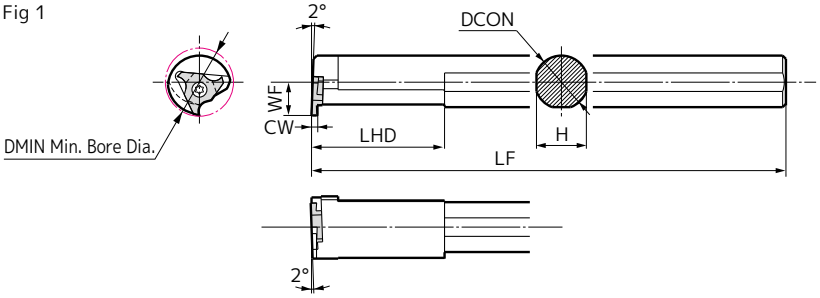


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Min. Bore Dia. DMIN	Width of Cut CW	Maximum Groove Depth	Applicable Insert	Fig	Flat Head Screw	Wrench
													RT08 / RT10
SGIT R08	★	8	7.0	125	5.0	20	10.0	**0.50 to 2.00**	**0.8***	GITL3○○○	1	BFTX02506NS	RT08
R10	★	10	9.0	150	6.0	25	12.0	**0.50 to 2.00**	**0.8***		1		
SGIT R12	★	12	11.0	180	7.0	30	14.0	**1.00 to 2.00**	**1.8**	GITL5○○○	1	BFTX0307NS	RT10
R14	★	14	13.0	180	8.0	35	16.0	**1.00 to 2.00**	**1.8**		1		
SGIT R16	★	16	15.0	200	10.0	40	20.0	**1.50 to 2.00**	**2.8**	GITL6○○○	1	BFTX0307NS	RT10
R20	★	20	19.0	200	12.0	40	25.0	**1.50 to 2.00**	**2.8**		1		

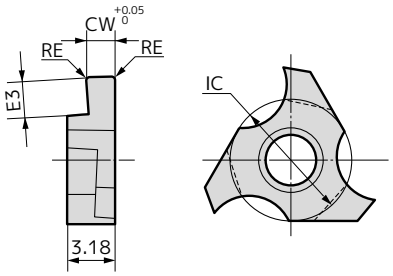
*The maximum groove depth is 0.5mm when GITL3050 is set (width of cut CW = 0.5mm).

Insert (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	ACZ150	Width of Cut CW	Offset E3	Corner Radius RE	Inscribed Circle IC	Applicable Holder	Fig
GIT L3050	★	**0.50**	1.2	0.05	5.56	SGIT R08 SGIT R10	1
L3065	★	**0.65**	1.2	0.05	5.56		1
L3075	★	**0.75**	1.2	0.05	5.56		1
L3100	★	**1.00**	1.2	0.05	5.56		1
L3125	★	**1.25**	1.2	0.20	5.56		1
L3145	★	**1.45**	1.2	0.20	5.56		1
L3150	★	**1.50**	1.2	0.05	5.56		1
L3200	★	**2.00**	1.2	0.10	5.56		1
GIT L5100	★	**1.00**	2.2	0.05	7.94	SGIT R12 SGIT R14	1
L5145	★	**1.45**	2.2	0.20	7.94		1
L5150	★	**1.50**	2.2	0.05	7.94		1
L5175	★	**1.75**	2.2	0.20	7.94		1
L5200	★	**2.00**	2.2	0.10	7.94		1
GIT L6150	★	**1.50**	3.2	0.20	9.525	SGIT R16 SGIT R20	1
L6175	★	**1.75**	3.2	0.20	9.525		1
L6200	★	**2.00**	3.2	0.20	9.525		1

Fig 1



Recommended Cutting Conditions A24

★mark: Global stocked item
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Blank: Made-to-order item
— mark: Not available

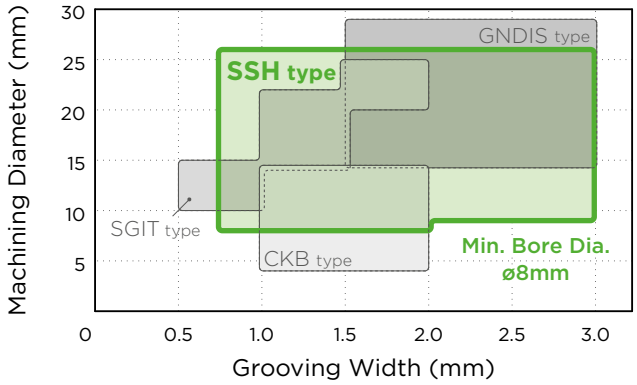
SSH series



■ Features

- Internal coolant supply for outstanding chip evacuation
- Tough carbide body for stable machining even with small diameters, suppressing chatter
- Adopts AC1030U for excellent machined surface quality
- Min. bore diameter from ø8mm
- Wide range of grooving widths
  In addition to grooving applications, the lineup includes inserts for threading and circlip groove machining
- Inserts and holders supporting internal face grooving are now available as a series

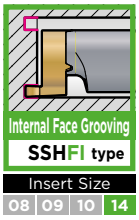
■ Application Range (Grooving)



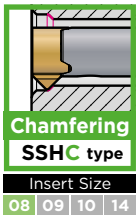
■ Insert Lineup

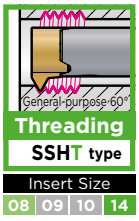






Use a dedicated SSHF holder





08: Pitch 0.50 to 1.75mm
14: Pitch 0.50 to 2.00mm

■ Product Range (Grooving)

Grooving/Radius Shape | Grooving/C-Chamfering | Radius Grooving/Profiling | Chamfering

Application	Insert Type	Insert Size	Min. Bore Dia. (mm)	Max. Grooving Depth (mm)	Width of Cut / Cutting Edge Corner Shape (mm)														Applicable Holder
					0.74	0.80	0.84	0.94	1.00	1.19	1.20	1.39	1.50	1.69	1.80	2.00	2.20	2.50	3.00	Chamfering	
Grooving	SSHG	08	8	1.0	C0.05		C0.05	C0.05	C0.05 R0.1	C0.05		C0.05	C0.05 R0.1	C0.05		C0.05 R0.1 R0.2					EOOㅁ-SSHMNOOO-08
		09	9	2.0					R0.1				R0.1			R0.1 R0.2		R0.1 R0.2	R0.1 R0.2		
		10	10	3.0					R0.1				R0.1			R0.1 R0.2		R0.1 R0.2	R0.1 R0.2		
		14	14	1.2	C0.05																EOOㅁ-SSHMNOOO-14
				1.3			C0.05														
				1.5				C0.05													
				1.6					C0.05 R0.1												
				4.0						C0.05		C0.05	C0.05 R0.1	C0.05		C0.05 R0.1 R0.2		C0.05 R0.1 R0.2	C0.05 R0.1 R0.2		
Radius Grooving/ Profiling	SSHR	08	8	1.0		R0.4			R0.5		R0.6		R0.75		R0.9	R1.0					EOOㅁ-SSHMNOOO-08
		14	14	1.6					R0.5												EOOㅁ-SSHMNOOO-14
				4.0							R0.6		R0.75		R0.9	R1.0	R1.1	R1.25	R1.5		
Internal Face Grooving	SSHFI	14	14	1.5					C0.05												EOOㅁ-SSHFROOO-14*
				2.5									R0.2								
				3.0												R0.2		R0.2	R0.2		
Chamfering	SSHC	08	8	1.4																C	EOOㅁ-SSHMNOOO-08

SSHG type 09/10 sized inserts and SSHFI type inserts are available as right-handed only. * The applicable holder for SSHFI type inserts is SSHF type.

■ Product Range (Threading)

Application	Insert Type	Insert Size	Min. Bore Dia. (mm)	Thread Type	Pitch (mm)									Applicable Holder
					0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	
Threading	SSHT	08	8	General-purpose 60°										EOOㅁ-SSHMNOOO-08
		14	14	General-purpose 60°										EOOㅁ-SSHMNOOO-14

SSHT type inserts are available as right-handed only.

SSH series

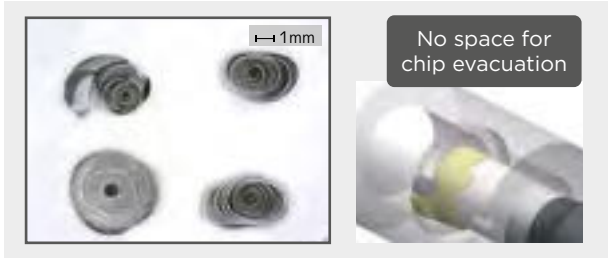
■ Chip Evacuation

Stable and smooth evacuation of curled chips even in small bore diameters



SSH series

Evacuation is poor, may cause sudden tool fracture

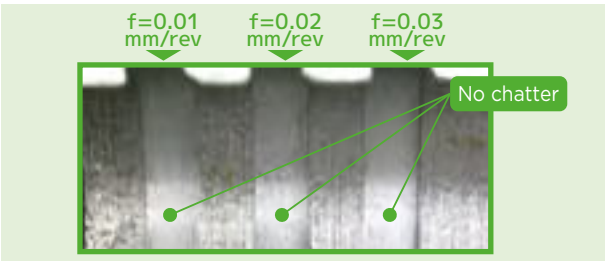


Competitor's Product A

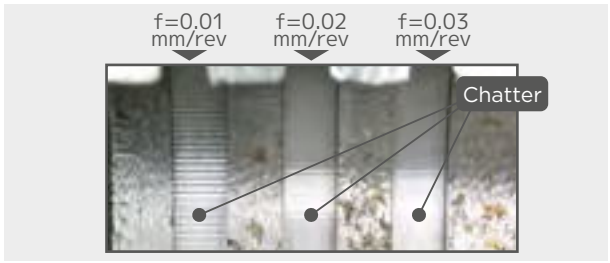
Work Material: C45 Machining Diameter: ø13mm Insert: SSHGR0820000 Cutting Conditions: vc = 50m/min f = 0.02mm/rev ap = 1.0mm Wet (Oil-based)

■ Chatter Resistance

Outstanding sharpness and carbide shank suppress chatter



SSH series

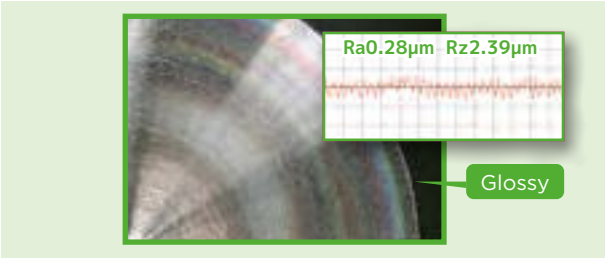


Competitor's Product B

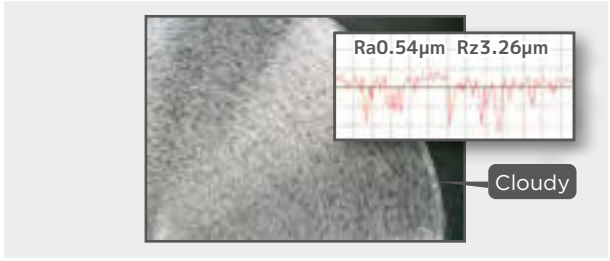
Work Material: C45 Machining Diameter: ø13mm Insert: SSHGR0820000 Cutting Conditions: vc = 100m/min f = 0.01, 0.02, 0.03mm/rev ap = 0.2mm Wet (Oil-based)

■ Machined Surface Quality

Glossy, beautiful surface finish



SSH series

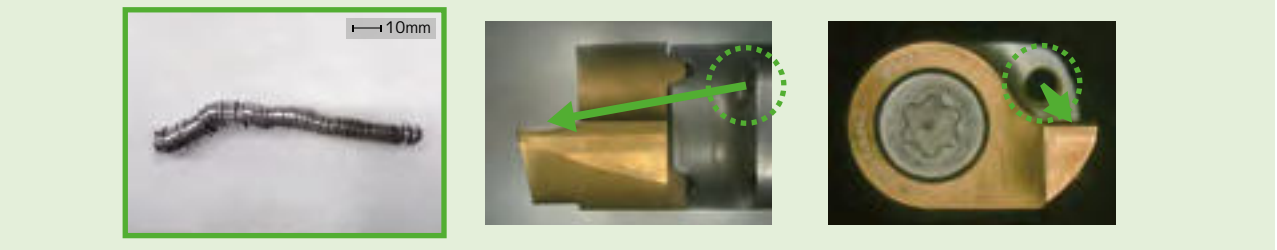


Competitor's Product C

Work Material: 42CrMo4 Machining Diameter: ø30mm Insert: SSHGR0820000 Cutting Conditions: vc = 180m/min f = 0.02mm/rev ap = 0.2mm Wet (Oil-based)

■ Chip Evacuation (Holders for Internal Face Grooving)

Stable chip control is possible with a coolant ejection port dedicated for internal face grooving



SSH series

Reliable coolant supply near the cutting edge

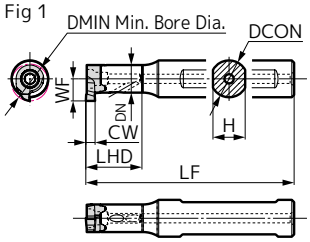
Work Material: S235JR Machining Diameter: ø16mm (Periphery) Insert: SSHFIR1430020 Cutting Conditions: vc = 100m/min f = 0.02mm/rev ap = 3.0mm Wet (Oil-based)

SSH series

Internal



Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Shank Diameter DCON	Neck Dia. DN	Width H	Overall Length LF	Head Length LHD	Min. Bore Dia. DMIN	Width of Cut CW	Applicable Inserts	Fig	Flat Head Screw		Wrench
													
E08D-SSHM N125-08	★	8	6	7	60(60.4)	12.5(12.9)	8 ~	**0.74 to 3.00**	SSH☐ R/L **08**···	1	BFTX02608IPS	**1.2**	TRX08IP
E08E-SSHM N210-08	★	8	6	7	70(70.4)	21.0(21.4)	8 ~	**0.74 to 3.00**		1			
E12E-SSHM N125-08	★	12	6	11	70(70.4)	12.5(12.9)	8 ~	**0.74 to 3.00**	SSH☐ R **09**···	1	BFTX02608IPS	**1.2**	TRX08IP
E12F-SSHM N210-08	★	12	6	11	80(80.4)	21.0(21.4)	8 ~	**0.74 to 3.00**		1			
E12G-SSHM N300-08	★	12	6	11	90(90.4)	30.0(30.4)	8 ~	**0.74 to 3.00**	SSH☐ R **10**···	1			
E12H-SSHM N420-08	★	12	6	11	100(100.4)	42.0(42.4)	8 ~	**0.74 to 3.00**		1			

Overall Length LF and Head Length LHD are dimensions with SSHG type / SSHR type inserts mounted. Parentheses show dimensions with SSHG R09··· type (09 size) / SSHG R10··· type (10 size) mounted. Min. Bore Dia. DMIN above is the dimension when 08 sized inserts are mounted; it is 9mm with 09 sized inserts and 10mm with 10 sized inserts.
Refer to the Insert Stock Table on page F73 for cutting edge distance WF dimensions.

Identification Code

E 08 D - SSHM N 125 - 08

E	08	D	SSHM	N	125	08
Shank Material Code	Shank Dia. (mm)	Shank Length Code	Series Code	Feed Direction	Head Length Reference (mm) × 10	Min. Bore Dia. (mm) *With sized 08 insert mounted

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSH series

Insert (For E08□-SSHMN○○○-08 / E12□-SSHMN○○○-08) (Coated Carbide)

Dimensions (mm)

Application	Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Maximum Groove Depth CDX	Corner Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Offset E2	Applicable Holder	Fig
Grooving (08 size)	**SSHG R/L 0807400**	★	★	**0.74**	**1.0**	—	3.2	4.80	3.6	0.4	E08□-SSHMN○○○-**08** E12□-SSHMN○○○-**08**	1
	R/L 0808400	★	★	**0.84**	**1.0**	—	3.2	4.80	3.6	0.4		1
	R/L 0809400	★	★	**0.94**	**1.0**	—	3.2	4.80	3.6	0.4		1
	R/L 0810000	★	★	**1.00**	**1.0**	—	3.2	4.80	3.1	—		1
	R/L 0810010	★	★	**1.00**	**1.0**	0.10	3.2	4.80	3.1	—		2
	R/L 0811900	★	★	**1.19**	**1.0**	—	3.2	4.80	3.1	—		1
	R/L 0813900	★	★	**1.39**	**1.0**	—	3.2	4.80	3.0	—		1
	R/L 0815000	★	★	**1.50**	**1.0**	—	3.2	4.80	3.0	—		1
	R/L 0815010	★	★	**1.50**	**1.0**	0.10	3.2	4.80	3.0	—		2
	R/L 0816900	★	★	**1.69**	**1.0**	—	3.2	4.80	3.0	—		1
	R/L 0820000	★	★	**2.00**	**1.0**	—	3.2	4.80	3.0	—		1
	R/L 0820010	★	★	**2.00**	**1.0**	0.10	3.2	4.80	3.0	—		2
	R/L 0820020	★	★	**2.00**	**1.0**	0.20	3.2	4.80	3.0	—		2
Grooving (09 size)	**SSHG R 0910010**	★	—	**1.00**	**2.0**	0.10	3.6	5.50	3.5	—		2
	R 0915010	★	—	**1.50**	**2.0**	0.10	3.6	5.50	3.4	—		2
	R 0920010	★	—	**2.00**	**2.0**	0.10	3.6	5.50	3.4	—		2
	R 0920020	★	—	**2.00**	**2.0**	0.20	3.6	5.50	3.4	—		2
	R 0925010	★	—	**2.50**	**2.0**	0.10	3.6	5.50	3.4	—		2
	R 0925020	★	—	**2.50**	**2.0**	0.20	3.6	5.50	3.4	—		2
	R 0930010	★	—	**3.00**	**2.0**	0.10	3.6	5.50	3.4	—		2
	R 0930020	★	—	**3.00**	**2.0**	0.20	3.6	5.50	3.4	—		2
Grooving (10 size)	**SSHG R 1010010**	★	—	**1.00**	**3.0**	0.10	3.6	6.50	3.5	—		2
	R 1015010	★	—	**1.50**	**3.0**	0.10	3.6	6.50	3.4	—		2
	R 1020010	★	—	**2.00**	**3.0**	0.10	3.6	6.50	3.4	—		2
	R 1020020	★	—	**2.00**	**3.0**	0.20	3.6	6.50	3.4	—		2
	R 1025010	★	—	**2.50**	**3.0**	0.10	3.6	6.50	3.4	—		2
	R 1025020	★	—	**2.50**	**3.0**	0.20	3.6	6.50	3.4	—		2
	R 1030010	★	—	**3.00**	**3.0**	0.10	3.6	6.50	3.4	—		2
	R 1030020	★	—	**3.00**	**3.0**	0.20	3.6	6.50	3.4	—		2
Radius Grooving/ Profiling	**SSHR R/L 08080**	★	★	**0.80**	**1.0**	0.40	3.2	4.80	3.1	—		3
	R/L 08100	★	★	**1.00**	**1.0**	0.50	3.2	4.80	3.1	—		3
	R/L 08120	★	★	**1.20**	**1.0**	0.60	3.2	4.80	3.1	—		3
	R/L 08150	★	★	**1.50**	**1.0**	0.75	3.2	4.80	3.0	—		3
	R/L 08180	★	★	**1.80**	**1.0**	0.90	3.2	4.80	3.0	—		3
	R/L 08200	★	★	**2.00**	**1.0**	1.00	3.2	4.80	3.0	—		3
Chamfering	**SSHC R/L 08454502**	★	★	—	**1.4**	0.20	1.8	4.65	3.6	—		4

Fig 1 (Grooving)

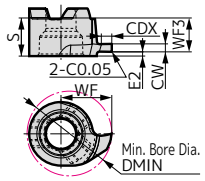


Fig 2 (Grooving)

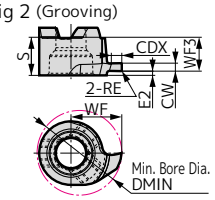


Fig 3 (Radius Grooving/Profiling)

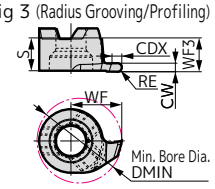


Fig 4 (Chamfering)

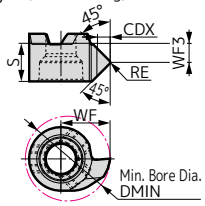


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN Dimension for 08 size: 8mm, 09 size: 9mm, 10 size: 10mm.

Inserts for Threading (For E08□-SSHMN○○○-08 / E12□-SSHMN○○○-08) (Coated Carbide)

Dimensions (mm)

Application	Cat. No.	AC1030U R	AC1030U L	Pitch (mm)	Flat CF	Cutting Edge Distance WF3	Cutting Edge Distance WF	Included Angle PNA	Thickness S	Applicable Holder	Fig
Threading (08 size)	**SSHT R 086005**	★	—	0.50 - 0.75	0.04	2.8	4.8	60	3.6	E08□-SSHMN○○○-**08** E12□-SSHMN○○○-**08**	1
	SSHT R 086010	★	—	1.00 - 1.25	0.09	2.8	4.8	60	3.6		1
	SSHT R 086015	★	—	1.50 - 1.75	0.14	2.6	4.8	60	3.6		1

Fig 1 (Threading 08 size)

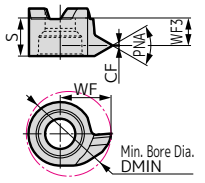


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 08 size: 8mm.

Recommended Cutting Conditions

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSH series

Internal

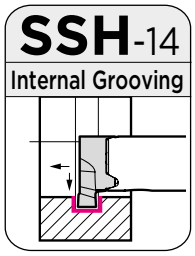
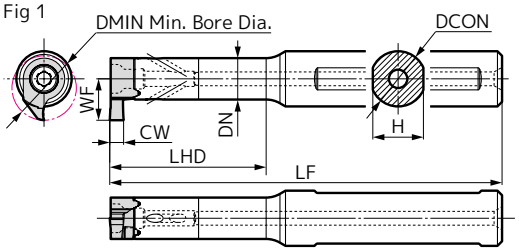


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Neck Dia. DN	Height H	Overall Length LF	Head LHD	Min. Bore Dia. DMIN	Width of Cut CW	Applicable Insert	Fig	Flat Head Screw		Wrench
												N·m	
E12X-SSHM N195-14	★	12	9	11	75	19.5	14	**0.74 to 3.00**	SSH□ R/L **14**···	1	BFTX0412IPS	**5.0**	LT15IP
E12H-SSHM N340-14	★	12	9	11	100	34.0	14	**0.74 to 3.00**		1			
E12J-SSHM N450-14	★	12	9	11	110	45.0	14	**0.74 to 3.00**		1			
E12X-SSHM N640-14	★	12	9	11	130	64.0	14	**0.74 to 3.00**		1			
E16F-SSHM N195-14	★	16	9	14	80	19.5	14	**0.74 to 3.00**		1	BFTX0412IPS	**5.0**	LT15IP
E16H-SSHM N340-14	★	16	9	14	100	34.0	14	**0.74 to 3.00**		1			
E16J-SSHM N450-14	★	16	9	14	110	45.0	14	**0.74 to 3.00**		1			
E16X-SSHM N640-14	★	16	9	14	130	64.0	14	**0.74 to 3.00**		1			

Refer to the Insert Stock Table on page F75 for cutting edge distance WF dimensions.

Identification Code

E 12 X - SSHM N 195 - 14

E	12	X	SSHM	N	195	14
Shank Material Code	Shank Dia. (mm)	Shank Length Code	Series Code	Feed Direction	Head Length Reference (mm)× 10	Min. Bore Dia. (mm)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSH series

Insert (For E12□-SSHMN○○○-14 / E16□-SSHMN○○○-14) (Coated Carbide)

Dimensions (mm)

Application	ISO Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Maximum Groove Depth CDX	Corner Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Offset E2	Applicable Holder	Fig
Grooving (14 size)	**SSHG R/L 1407400**	★	★	**0.74**	**1.2**	—	5.3	9.0	5.5	0.2	E12□-SSHMN○○○-14 E16□-SSHMN○○○-14	1
	R/L 1408400	★	★	**0.84**	**1.3**	—	5.3	9.0	5.5	0.2		1
	R/L 1409400	★	★	**0.94**	**1.5**	—	5.3	9.0	5.5	0.2		1
	R/L 1410000	★	★	**1.00**	**1.6**	—	5.3	9.0	5.5	0.2		1
	R/L 1410010	★	★	**1.00**	**1.6**	0.10	5.3	9.0	5.5	0.2		2
	R/L 1411900	★	★	**1.19**	**4.0**	—	5.3	9.0	5.2	—		1
	R/L 1413900	★	★	**1.39**	**4.0**	—	5.3	9.0	5.1	—		1
	R/L 1415000	★	★	**1.50**	**4.0**	—	5.3	9.0	5.1	—		1
	R/L 1415010	★	★	**1.50**	**4.0**	0.10	5.3	9.0	5.1	—		2
	R/L 1416900	★	★	**1.69**	**4.0**	—	5.3	9.0	5.1	—		1
	R/L 1420000	★	★	**2.00**	**4.0**	—	5.3	9.0	5.1	—		1
	R/L 1420010	★	★	**2.00**	**4.0**	0.10	5.3	9.0	5.1	—		2
	R/L 1420020	★	★	**2.00**	**4.0**	0.20	5.3	9.0	5.1	—		2
	R/L 1425000	★	★	**2.50**	**4.0**	—	5.3	9.0	5.1	—		1
	R/L 1425010	★	★	**2.50**	**4.0**	0.10	5.3	9.0	5.1	—		2
	R/L 1425020	★	★	**2.50**	**4.0**	0.20	5.3	9.0	5.1	—		2
	R/L 1430000	★	★	**3.00**	**4.0**	—	5.3	9.0	5.1	—		1
	R/L 1430010	★	★	**3.00**	**4.0**	0.10	5.3	9.0	5.1	—		2
	R/L 1430020	★	★	**3.00**	**4.0**	0.20	5.3	9.0	5.1	—		2
Radius Grooving/ Profiling	**SSHR R/L 14100**	★	★	**1.00**	**1.6**	0.50	5.3	9.0	5.2	—		3
	R/L 14120	★	★	**1.20**	**4.0**	0.60	5.3	9.0	5.2	—		3
	R/L 14150	★	★	**1.50**	**4.0**	0.75	5.3	9.0	5.1	—		3
	R/L 14180	★	★	**1.80**	**4.0**	0.90	5.3	9.0	5.1	—		3
	R/L 14200	★	★	**2.00**	**4.0**	1.00	5.3	9.0	5.1	—		3
	R/L 14220	★	★	**2.20**	**4.0**	1.10	5.3	9.0	5.1	—		3
	R/L 14250	★	★	**2.50**	**4.0**	1.25	5.3	9.0	5.1	—		3
	R/L 14300	★	★	**3.00**	**4.0**	1.50	5.3	9.0	5.1	—		3

Fig 1 (Grooving)

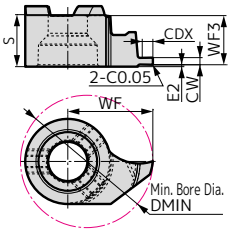


Fig 2 (Grooving)

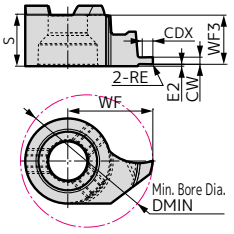


Fig 3 (Radius Grooving/Profiling)

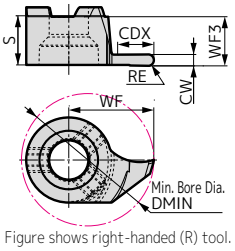


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 14 size: 14mm.

Inserts for Threading (For E12□-SSHMN○○○-14 / E16□-SSHMN○○○-14) (Coated Carbide)

Dimensions (mm)

Application	ISO Cat. No.	AC1030U R	AC1030U L	Pitch (mm)	Flat CF	Cutting Edge Distance WF3	Cutting Edge Distance WF	Included Angle PNA	Thickness S	Applicable Holder	Fig
Threading (14 size)	**SSHT R 146005**	★	—	0.50 - 0.75	0.04	4.8	9.0	60	5.5	E12□-SSHMN○○○-14 E16□-SSHMN○○○-14	1
	SSHT R 146010	★	—	1.00 - 1.25	0.09	4.7	9.0	60	5.5		1
	SSHT R 146015	★	—	1.50 - 1.75	0.14	4.5	9.0	60	5.5		1
	SSHT R 146020	★	—	2.00	0.20	4.2	9.0	60	5.5		1
	SSHT R 146025	★	—	2.50	0.25	4.2	9.0	60	5.5		1

Fig 1 (Threading 14 size)

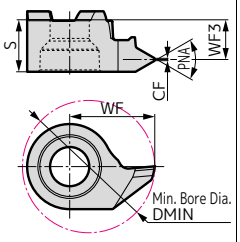


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 14 size: 14mm. Not usable with SSHF type holders.

Recommended Cutting Conditions

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

Facing

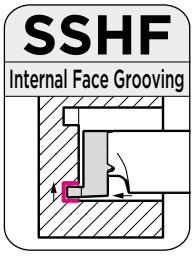
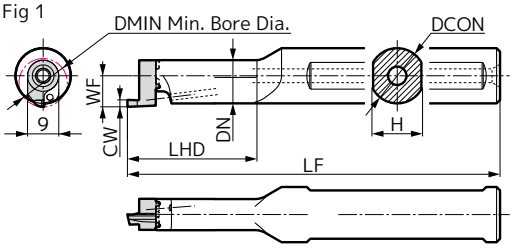


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Neck Dia. DN	Height H	Overall Length LF	Head LHD	Min. Bore Dia. DMIN	Width of Cut CW	Applicable Insert	Fig	Flat Head Screw	N·m	Wrench
E16H-SSHF R370-14	★	16	9	14	108	37	14	**1.0 to 3.0**	SSHFI R/L 14···	1	BFTX0412IPS	**5.0**	LT15IP
E16J-SSHF R480-14	★	16	9	14	118	48	14	**1.0 to 3.0**		1			

Refer to the Insert Stock Table for cutting edge distance WF dimensions.

Identification Code

E 16 H - SSHF R 370 - 14

Shank Material Code	Shank Dia. (mm)	Shank Length Code	Series Code	Feed Direction	Head Length Reference (mm)× 10	Min. Bore Dia. (mm)
E	16	H	SSHF	R	370	14

Inserts for Face Grooving (For E16□-SSHFROOO-14) (Coated Carbide)

Dimensions (mm)

Application	ISO Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Maximum Groove Depth CDX	Corner Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Applicable Holder	Fig
Facing (14 size)	**SSHFI R1410000**	★	—	**1.0**	**1.5**	(C0.05)	8.3	9.0	5.5	E16□-SSHFROOO-**14**	1
	SSHFI R1415020	★	—	**1.5**	**2.5**	0.20	8.3	9.0	5.5		1
	SSHFI R1420020	★	—	**2.0**	**3.0**	0.20	8.3	9.0	4.9		1
	SSHFI R1425020	★	—	**2.5**	**3.0**	0.20	8.3	9.0	4.9		1
	SSHFI R1430020	★	—	**3.0**	**3.0**	0.20	8.3	9.0	4.9		1

Fig 1 (Face Grooving 14 size)

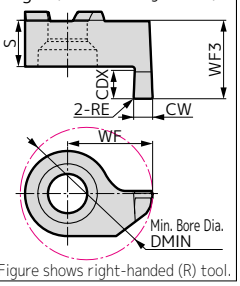


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 14 size: 14mm. We recommend use with SSHF holders for facing.

Recommended Cutting Conditions

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GWB series



■ Features

- ★ Tangentially-mounted insert enhances tool rigidity.
- ★ Double clamping holder design improves stability during continuous and interrupted grooving. Can also be used for traverse cutting.
- ★ Long tool life for interrupted cutting applications with the new Coated SUMIBORON BNC30G grade for grooving (BN2000 recommended for continuous cutting).
- ★ Suited for grooving various types of hardened steel. Variety of widths of cut available from 1.5mm to 6.0mm.

External | CBN

Hardened Steel, Shallow Grooves
Double Clamp

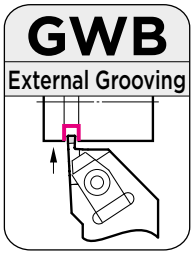


Fig 1

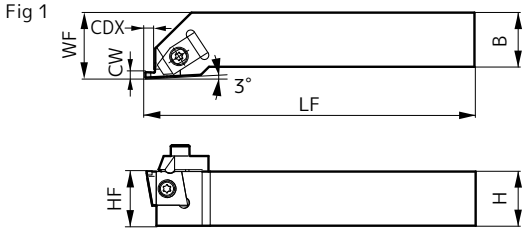


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Maximum Groove Depth CDX	Group No.	Fig	Clamp Plate	Cap Screw	N·m	Flat Head Screw	Spring	Wrench
GWB R/L 2525-45	★	★	25	25	151 (150)	30	25	1.5 ≤ CW ≤ 4.5	3.5 to 5.0	1	1	TF72/TF73	BX0520T	**5.0**	BFTX0511N	GSP06	TRX20
R/L 2525-60	★	★	25	25	151	30	25	4.5 < CW ≤ 6.0	**5.0**	2	1						

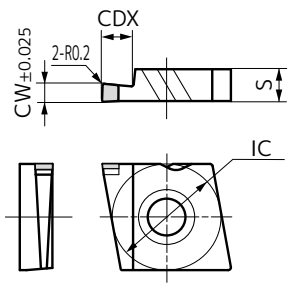
Dimensions in ( ) are for width of cut (CW) of 3.0 or less. Right-handed (R) tool holders are applicable with right-handed (R) inserts and clamp plates (TF72).

Insert (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Width of Cut CW	Groove Depth CDX	Inscribed Circle IC	Thickness S	Group No.	Applicable Holder	Fig
CGA R/L 1504150	★	★	★	★	**1.5**	3.5	15.875	4.76	1	GWB R/L 2525-45	1
R/L 1504200	★	★	★	★	**2.0**	3.5	15.875	4.76			1
R/L 1504250	★	★	★	★	**2.5**	4.0	15.875	4.76			1
R/L 1504300	★	★	★	★	**3.0**	4.0	15.875	4.76			1
R/L 1504350	★	★	★	★	**3.5**	5.0	15.875	4.76			1
R/L 1504400	★	★	★	★	**4.0**	5.0	15.875	4.76			1
R/L 1504450	★	★	★	★	**4.5**	5.0	15.875	4.76			1
CGA R/L 1506500	★	★	★	★	**5.0**	5.0	15.875	6.35	2	GWB R/L 2525-60	1
R/L 1506550	★	★	★	★	**5.5**	5.0	15.875	6.35			1
R/L 1506600	★	★	★	★	**6.0**	5.0	15.875	6.35			1

Fig 1



*It is also possible to manufacture widths of cut other than those listed above (CW = 1.5 to 6.0mm).

Grade Features

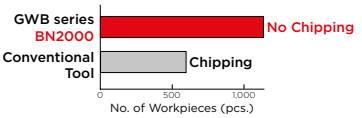
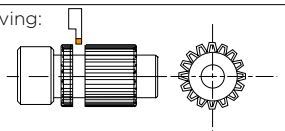
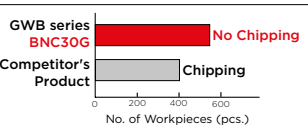
Grade	Application Range	Features	HV(GPa)	TRS(GPa)
BN2000	Continuous Grooving	General-purpose grade with superior wear resistance	31 to 34	1.0 to 1.1
BNC30G	Interrupted Grooving	Grade suited to interrupted grooving. Features tough substrate with special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2

Recommended Cutting Conditions

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80-120
Feed Rate f (mm/rev)	0.04-0.08

* In order to avoid thermal cracking of the SUMIBORON cutting edge during interrupted cutting, ensure that the work material is thoroughly dry before cutting.

Application Examples

Tooling	Work Material	Tool Cat. No.	Cutting Conditions	Tool Life Comparison
Shaft Grooving: Continuous  Required Surface Roughness for Groove Sides: Ra 0.4µm	Carburised steel 58 to 62 HRC	CGAR1504200 BN2000	vc : 120m/min f : 0.05mm/rev Groove Depth: 2mm Dry	
Spline Grooving: Interrupted 	Carburised steel 58 to 62 HRC	CGAR1504200 BNC30G	vc : 100m/min f : 0.05mm/rev Groove Depth: 1.6mm Dry	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BNGG series



■ Features

★ **Improved rigidity for longer tool life**
Strong clamping reduces insert fracture and holder chatter

★ **Enhanced tooling for 2mm fine grooves or threading**
Grooving and threading can be done by changing the support

External CBN

Hardened Steel, Shallow Grooves
Clamp-on

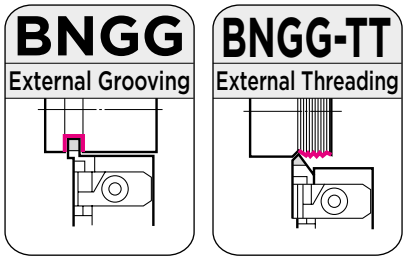


Fig 1 (Grooving)

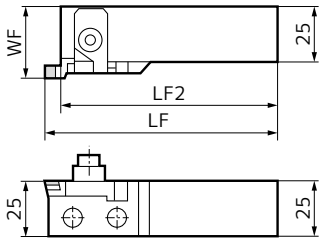


Fig 2 (Threading)

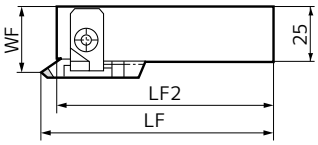


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Cutting Edge Distance WF	Overall Length LF	Overall Length 2 LF2	Applicable Insert	Fig
Grooving	**BNGG R/L2525-200**	★		30.5	150	145	BNGNT0200 R/L	1
	R/L2525-250	★		30.5	150	145	BNGNT0250 R/L	1
	R/L2525-300	★		30.5	150	145	BNGNT0300 R/L	1
	R/L2525-400	★		30.5	151	145	BNGNT0400 R/L	1
	R/L2525-500	★		30.5	151	145	BNGNT0500 R/L	1
	R/L2525-600	★		30.5	152	145	BNGNT0600 R/L	1
Threading	**BNGG R/L2525-TT**	★		28.5	150	145	BNTT1020 R/L, BNTT1530 R/L	2

Inserts are not included with the tool holders.
*Holder body is universal. The holder can be configured for different groove widths or threading by changing the support.

Insert (SUMIBORON)

Dimensions (mm)

	ISO Cat. No.	BN2000 R	BN2000 L	BNX20 R	BNX20 L	BN350 R	BN350 L	Width of Cut CW	Groove Depth CDX	Corner Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
Grooving	**BNGNT0200 R/L**	★				★		**2.0**	4.0	0.2	25	6.0	BNGG R/L 2525-200	1
	BNGNT0250 R/L	★				★		**2.5**	4.0	0.2	25	6.0	BNGG R/L 2525-250	1
	BNGNT0300 R/L	★				★		**3.0**	5.0	0.4	25	6.0	BNGG R/L 2525-300	1
	BNGNT0400 R/L	★				★		**4.0**	6.0	0.4	26	6.0	BNGG R/L 2525-400	1
	BNGNT0500 R/L	★				★		**5.0**	6.0	0.4	26	6.0	BNGG R/L 2525-500	1
	BNGNT0600 R/L	★				★		**6.0**	7.0	0.4	27	6.0	BNGG R/L 2525-600	1
Threading	**BNTT1020 R/L**	★						Pitch 1.0 to 2.0		0.14	25	4.0	BNGG R/L 2525-TT	2
	BNTT1530 R/L	★						Pitch 1.5 to 3.0		0.2	25	4.0		2

Fig 1 (Grooving)

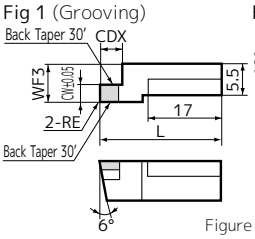


Fig 2 (Threading)

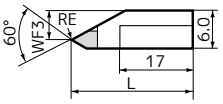


Figure shows right-handed (R) tool.

Parts

Applicable Holder	Support	Clamp Plate	Adjustment Screw	Spring	Cap Screw	Wrench	
BNGG R/L2525-200	BNGSR/L200	BNGCR/L	FMJ	GSP06	BX0615 (For Clamp Plate) BX0414 (For Support)	LH050 (For Clamp Plate) LH030 (For Support)	1.8×45
BNGG R/L2525-250	BNGSR/L250						
BNGG R/L2525-300	BNGSR/L300						
BNGG R/L2525-400	BNGSR/L400						
BNGG R/L2525-500	BNGSR/L500						
BNGG R/L2525-600	BNGSR/L600						
BNGG R/L2525-TT	BNGSR/LTT						

Recommended Cutting Conditions

★ Grooving

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80-120
Feed Rate f (mm/rev)	0.03-0.07

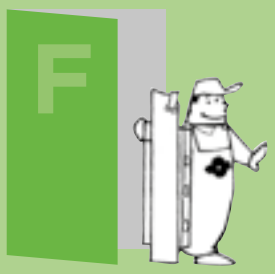
★ Threading

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80-120
Feed Rate f (mm)	Maximum Pitch 3.0

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Cut-off Tools F

F79 to F116



Cut-off Tools	SEC-Cut-off Tool Holders	SEC-Cut-off Tool Holders series Selection Guide	F80
		Introduction to the GLC series	F82
		GLC-S(J) type	F84
		GLC-C type	F86
	SEC-Cut-off Tool Holders	SumiGrip Introduction	F89
		SumiGrip Jr. STFH type	F90
		SumiGrip Jr. STFS type	F92
		SumiGrip WCFH type	F94
		SumiGrip WCFS type	F96
	SEC-Small Diameter Cut-off Tool Holders	SCT type	F98
	SEC-Cut-off Tool Holders	GNDM type / GNDL type (For Small Lathes)	F100
		GNDM-J type / GNDL-J type (Internal Coolant Supply for Small Lathes)	F102
		GNDS type	F104
		GNDM type	F106
		GNDM-J/JE type (Internal Coolant Supply)	F108
		GNDL type	F112
		GNDL-J/JE type (Internal Coolant Supply)	F114
		GNDXL type	F118

Stock Markings and Symbols

★ mark: Global stocked item

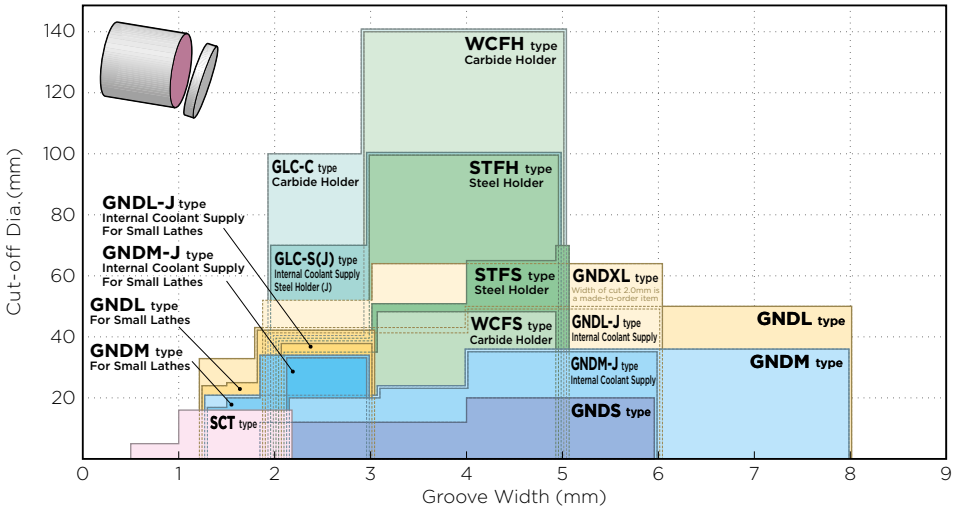
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

Selection Guide

Cut-off



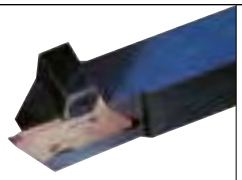
■ Range of Applications (For Solid Workpieces)

Application	Series	Shape	Insert Shape ( ) indicates no. of cutting edges	Cut-off Dia. / Groove Width	Features
For Small Lathes	**SCT type**	→ F98	(2) Right-handed Left-handed Neutral	16.0 / 2.0 / 0.5	· Ground insert with good sharpness · Can clamp even from behind · 2-cornered type inserts
For Small to Medium Diameters	**GND series** For Small Lathes GNDM/GNDM-J GNDL/GNDL-J	→ F100 ~	(2)	32.0 / 1.25 / 3.0	· High-rigidity design and outstanding chip control · Unground 2-cornered type inserts, available with widths starting at 1.25mm
	GND series GNDS GNDM/GNDM-J/JE GNDL/GNDL-J/JE GNDXL	→ F104 ~	Right-handed Left-handed Neutral	50.0 / *2.0 / 8.0	· High-rigidity body, rigid clamping · Outstanding chip control · Unground 2-cornered type inserts
For Medium to Large Diameters	**GLC-S type** **GLC-SJ type** Steel Shank (Suffix J indicates internal coolant supply)	→ F84	(1) Right-handed Left-handed Neutral	100.0 / 2.0 / 5.0	· Can be used for large diameter cut-off up to ø100mm · Insert life extended with internal coolant supply · 1-cornered self-restrained type inserts
	GLSC-C type Carbide Shank	→ F86	(1) Right-handed Left-handed Neutral	140.0 / 2.0 / 5.0	· Can be used for large diameter cut-off up to ø140mm · Extraordinary stability with carbide body · 1-cornered self-restrained type inserts
	STFH type **STFS type** Steel Shank (SumiGrip Jr.)	→ F90	(1) Right-handed Left-handed Neutral	100.0 / 2.0 / 5.0	· Can be used for large diameter cut-off up to ø100mm · Economical steel shank · 1-cornered self-restrained type inserts
	WCFH type **WCFS type** Carbide Shank (SumiGrip)	→ F94	(1) Right-handed Left-handed Neutral	140.0 / 2.0 / 5.0	· Can be used for large diameter cut-off up to ø140mm · High-rigidity carbide shank · 1-cornered self-restrained type inserts

*Width of cut 2.0mm is a made-to-order item.

Selection Guide

■ Cut-off Tool series

SEC-Small Diameter Cut-off Tool Holders **SCT type**		· Our first recommendation for small lathes · Excellent sharpness suppresses cutting resistance and central pips.	
SEC-Cut-off Tool Holders **GND series** GNDS type GNDM / GNDM-J/JE type GNDL type / GNDL-J/JE type GNDXL type		· Our first recommendation for small to medium diameters · High-rigidity body and strong clamping enable stable cut-off	
SEC-Cut-off Tool Holders **GLC-S type** **GLC-SJ type** (Internal Coolant Supply) Steel Shank		· Our first recommendation for medium to large diameters · Achieves high machining accuracy and durability with optimised blade shape · Lineup also includes internal coolant supply (Steel Shank)	
SEC-Cut-off Tool Holders **GLC-C type** Carbide Shank			
SEC-Cut-off Tool Holders **STFH type / STFS type** Steel Shank (SumiGrip Jr.) **WCFH type / WCFS type** Carbide Shank (SumiGrip)		· For medium to large-diameter cut-off machining · Blade type is also available for cut-off up to ø140mm	

GLC series



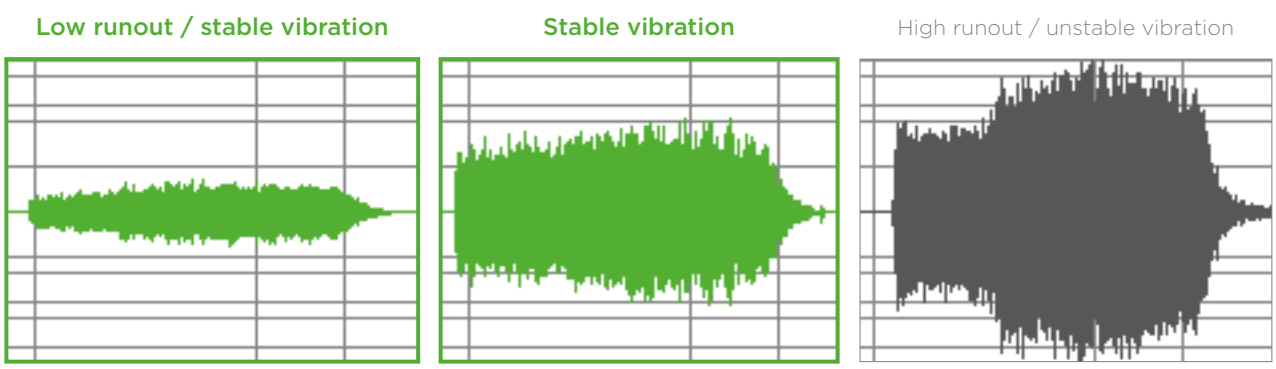
■ Features

- Achieves high machining accuracy and durability with optimised blade shape
- Insert can be mounted and removed with just a wrench
- Internal coolant supply extends insert life
- Lineup includes steel holders, steel holders with internal coolant supply (max. cut-off dia. ø100mm), and carbide holders (max. cut-off dia. ø140mm)
- Combine with general-purpose chipbreaker GG type and low cutting force chipbreakers GF type (neutral) or CF type (handed) to support a wide range of applications

■ Cutting Performance

● Low vibration

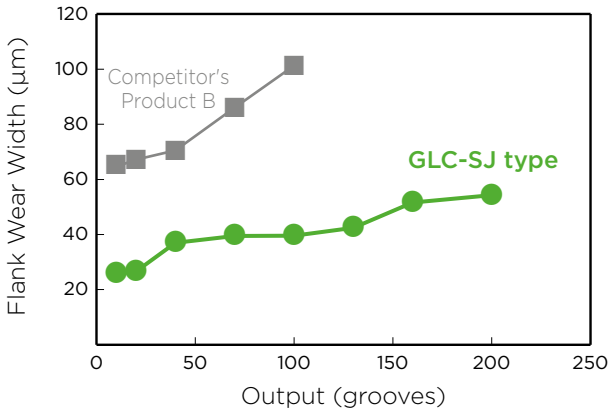
Achieves stable machining with a high-rigidity holder and strong clamping



Work Material: X5CrNiMo17-12-2 (ø40) Insert: WCFN3-GF (AC1030U) Holder: GLCBN32-3C (Carbide) / GLCBN32-3S (Steel)
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, Wet (External Coolant Supply)

● Tool life

Achieves longer tool life with optimised coolant supply outlets and a wide lineup of grades



Work Material: SUS316
Holder: GLCBN32-3SJ (Steel) Insert: WCFN3-GF (AC1030U)
Cutting Conditions: vc = 200m/min, f = 0.1mm/rev, Wet (Internal Coolant Supply)

● Chip control

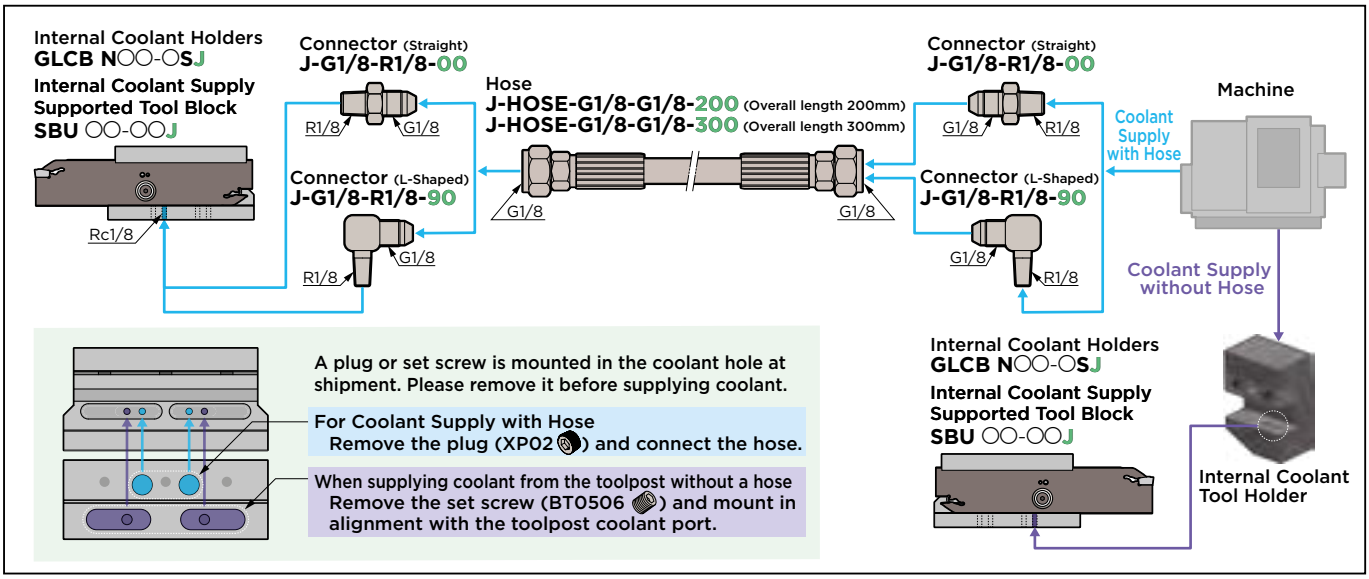
Outstanding chip control even in cut-off machining of stainless steel



Work Material: X5CrNiMo17-12-2
Holder: GLCBN32-3S (Steel) Insert: WCFN3-GF (AC1030U)
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, Wet (External Coolant Supply)

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

■ Piping Method for Hoses and Connectors



■ Hoses and Connectors

Fig 1

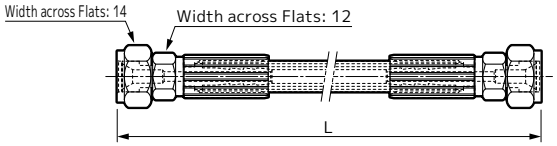


Fig 1

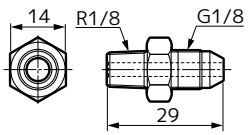
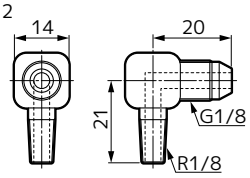


Fig 2



Parts (Hose)

Dimensions (mm)

ISO Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Parts (Connector)

Dimensions (mm)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

Connectors are sold separately.

Fig. 1

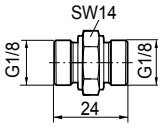


Fig. 2

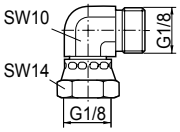
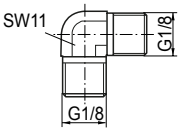


Fig. 3



Parts (Connector)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig.
J-G1/8-G1/8-00-E	★	G1/8	G1/8	1
J-G1/8-G1/8F-90-E	★	G1/8	G1/8	2
J-G1/8-G1/8-90-E	★	G1/8	G1/8	3

Connectors are sold separately.

Precautions for Coolant Supply without Hose

■ Internal Coolant Supply Supported Tool Block SBU-J type

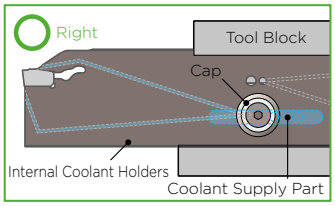
· Mount the O-ring correctly.

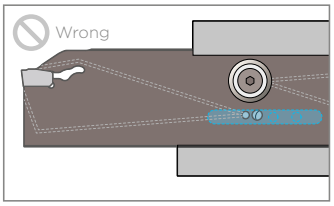


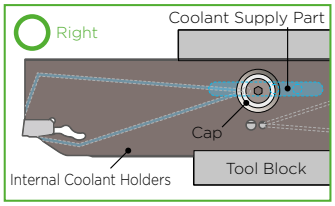


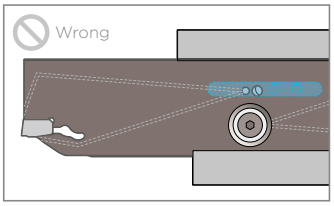
■ Internal Coolant Holder GLC-J type

· To prevent coolant leakage, mount the cap in the correct position.









★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

GLC-S(J) type

New Cut-off Steel

Cut-off
(Steel Holder/Tool Block type)

GLC-S

Cut-off

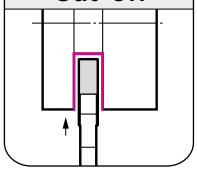


Fig 1

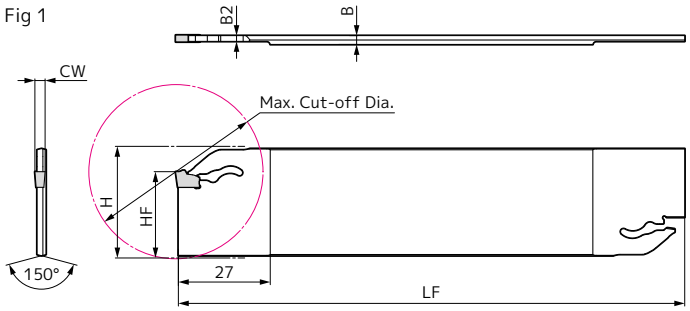
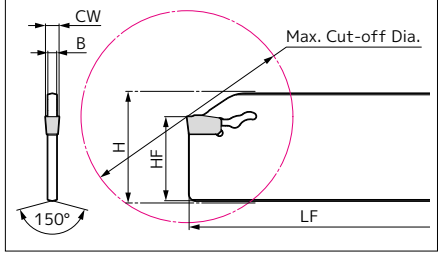


Fig 2



Holder (Steel)

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Width B2	Overall Length LF	Cutting Edge Height HF	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Applicable Tool Blocks	Fig	Wrench
GLCB N26-2S	★	26	2.6	1.7	120.0	21.4	**2**	**50**	WCF□2-□□	SB□20-26	1	SL-5(*)
N26-3S	★	26	2.6	—	120.0	21.4	**3**	**70**	WCF□3-□□		2	
N26-4S	★	26	3.6	—	120.0	21.4	**4**	**70**	WCF□4-□□		2	
N26-5S	★	26	4.6	—	120.0	21.4	**5**	**70**	WCF□5-□□		2	
GLCB N32-2S	★	32	2.6	1.7	148.8	25.0	**2**	**50**	WCF□2-□□	SB□20-32 SB□25-32	1	SL-5(*)
N32-3S	★	32	2.6	—	148.8	25.0	**3**	**100**	WCF□3-□□		2	
N32-4S	★	32	3.6	—	148.8	25.0	**4**	**100**	WCF□4-□□		2	
N32-5S	★	32	4.6	—	148.8	25.0	**5**	**100**	WCF□5-□□		2	

*Wrench is sold separately from the main body.
Refer to page F85 for applicable inserts.

Tool Blocks F88

New Cut-off Steel Internal Coolant

Cut-off with Internal Coolant Supply
(Steel Holder/Tool Block type)

GLC-SJ

Cut-off

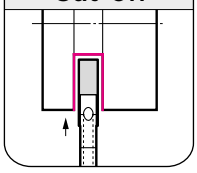


Fig 1

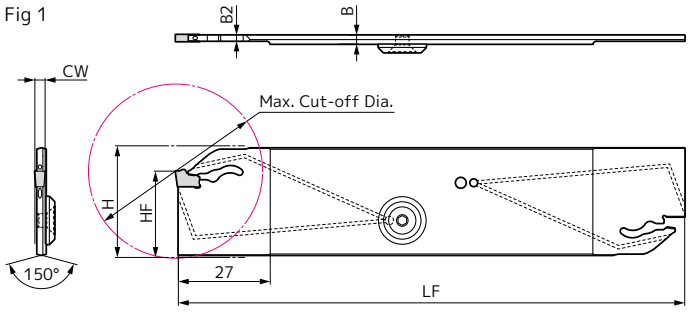
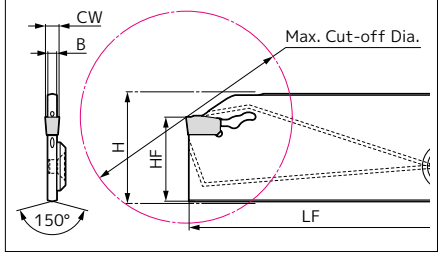


Fig 2



Holder (Steel, Internal Coolant Supply)

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Width B2	Overall Length LF	Cutting Edge Height HF	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Applicable Tool Blocks	Fig	Wrench	Cap	Flat Head Screw
GLCB N26-2SJ	★	26	2.6	1.7	120.0	21.4	**2**	**50**	WCF□2-□□	SBU20-26J (SB□20-26)	1	SL5(*)	RW14M4	BFT0405T15ZN
N26-3SJ	★	26	2.6	—	120.0	21.4	**3**	**70**	WCF□3-□□		2			
N26-4SJ	★	26	3.6	—	120.0	21.4	**4**	**70**	WCF□4-□□		2			
N26-5SJ	★	26	4.6	—	120.0	21.4	**5**	**70**	WCF□5-□□		2			
GLCB N32-2SJ	★	32	2.6	1.7	148.8	25.0	**2**	**50**	WCF□2-□□	SBU20-32J SBU25-32J (SB□20-32) (SB□25-32)	1	SL5(*)	RW14M4	BFT0405T15ZN
N32-3SJ	★	32	2.6	—	148.8	25.0	**3**	**100**	WCF□3-□□		2			
N32-4SJ	★	32	3.6	—	148.8	25.0	**4**	**100**	WCF□4-□□		2			
N32-5SJ	★	32	4.6	—	148.8	25.0	**5**	**100**	WCF□5-□□		2			

*Wrench is sold separately from the main body.
Refer to page F85 for applicable inserts. The parentheses for applicable tool blocks are for use without internal coolant supply.

Tool Blocks F88
Piping Method and Precautions F83

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

GLC-S(J) type

(Coated Carbide)

Fig 1 (Neutral (N))

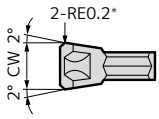


Fig 2 (Right Hand (R))

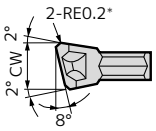
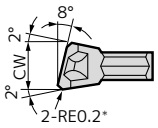


Fig 3 (Left Hand (L))



Insert for GLC type (Common)

Dimensions (mm)

ISO Cat. No.	AC830P	AC1030U	AC5015S	AC5025S	Width of Cut CW	Applicable Holder	Fig
WCF N2-GG	★	★	★	★	**2.0**	GLCBNOO-2...	1
WCF N3-GG	★	★	★	★	**3.0**	GLCBNOO-3...	1
WCF N4-GG	★	★	★	★	**4.0**	GLCBNOO-4...	1
WCF N5-GG	★	★	★	★	**5.0**	GLCBNOO-5...	1
WCF N2-GF		★	★	★	**2.0**	GLCBNOO-2...	1
WCF N3-GF		★	★	★	**3.0**	GLCBNOO-3...	1
WCF N4-GF		★	★	★	**4.0**	GLCBNOO-4...	1
WCF N5-GF		★	★	★	**5.0**	GLCBNOO-5...	1
WCF R3-CF		★	★	★	**3.0**	GLCBNOO-3...	2
WCF L3-CF		★	★	★	**3.0**		3
WCF R4-CF		★	★	★	**4.0**	GLCBNOO-4...	2
WCF L4-CF		★	★	★	**4.0**		3

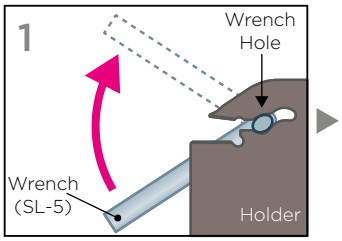
Recommended Cutting Conditions

Work Material	Cutting Speed vc (m/min)			
	AC830P	AC1030U	AC5015S	AC5025S
P Carbon Steel / Alloy Steel	80-200	50-200	80-200	50-200
M Stainless Steel	70-150	50-150	70-150	50-150
K Cast Iron	—	50-200	60-200	50-200
S Exotic Alloy	—	20- 60	20- 80	20- 60
N Non-Ferrous Metal	—	150-300	—	—

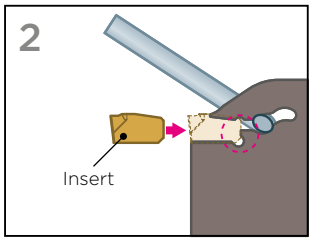
Chipbreaker		Feed Rate f (mm/rev)		
		Neutral		Handed
		GG	GF	CF
		General-purpose	Exotic Alloy/Low Cutting Force type	Low Cutting Force
Width of Cut CW (mm)	**2.0**	0.05-0.15	0.03-0.12	—
	3.0	0.08-0.25	0.05-0.15	0.05-0.10
	4.0	0.10-0.30	0.05-0.18	0.05-0.10
	5.0	0.10-0.30	0.05-0.20	—

Insert Mounting Method and Precautions (Steel Holder)

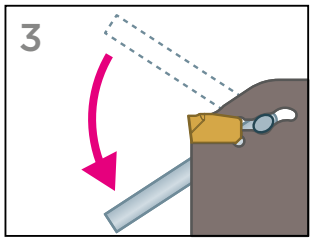
Insert Mounting



Insert the wrench into the wrench hole above and rotate it in the direction of the arrow

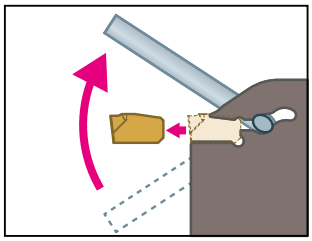


Push in the insert until its back touches the backstop of the holder



Rotate the wrench in the direction of the arrow to complete mounting

Insert Removal



Perform step 1 on the left to remove the insert

■ Insert Mounting Precautions

- Remove any chips or other foreign matter on the insert and holder seats.
- To prevent breakage, do not insert the wrench anywhere else but the wrench hole.
- To prevent breakage, do not use anything but the dedicated wrench (sold separately).
- To extend tool life, lubricate the wrench and the wrench hole with oil, etc.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

GLC-C type

New Cut-off Carbide

For Cut-off
(Carbide Holder/Tool Block type)

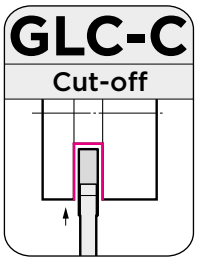


Fig 1

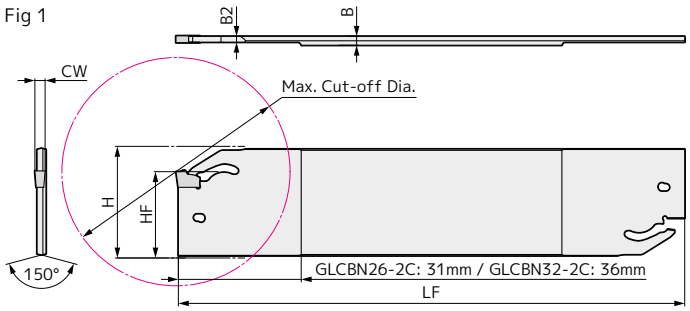
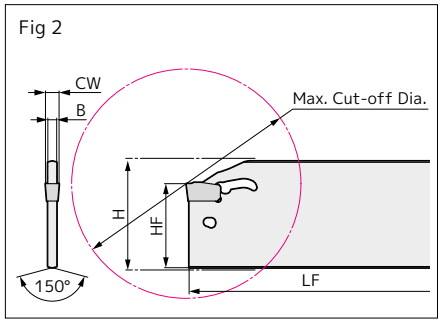


Fig 2



Holder

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Width B2	Overall Length LF	Cutting Edge Height HF	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Applicable Tool Blocks	Fig	Wrench
GLCB N26-2C	★	26	2.6	1.7	120.0	21.4	**2**	**60**	WCF□2-□□	SB□20-26	1	SL2(*)
N26-3C	★	26	2.6	—	120.0	21.4	**3**	**80**	WCF□3-□□		2	SL6(*)
N26-4C	★	26	3.6	—	120.0	21.4	**4**	**80**	WCF□4-□□		2	
N26-5C	★	26	4.6	—	120.0	21.4	**5**	**80**	WCF□5-□□		2	
GLCB N32-2C	★	32	2.6	1.7	148.8	25.0	**2**	**68**	WCF□2-□□	SB□20-32 SB□25-32	1	SL2(*)
N32-3C	★	32	2.6	—	148.8	25.0	**3**	**140**	WCF□3-□□		2	SL6(*)
N32-4C	★	32	3.6	—	148.8	25.0	**4**	**140**	WCF□4-□□		2	
N32-5C	★	32	4.6	—	148.8	25.0	**5**	**140**	WCF□5-□□		2	

*Wrench is sold separately from the main body.
Refer to page F87 for applicable inserts.

Tool Blocks F88

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

GLC-C type

(Coated Carbide)

Fig 1 (Neutral (N))

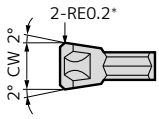


Fig 2 (Right Hand (R))

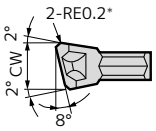
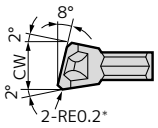


Fig 3 (Left Hand (L))



Insert for GLC type (Common)

Dimensions (mm)

ISO Cat. No.	AC830P	AC1030U	AC5015S	AC5025S	Width of Cut CW	Applicable Holder	Fig
WCF N2-GG	★	★	★	★	**2.0**	GLCBN○○-2...	1
WCF N3-GG	★	★	★	★	**3.0**	GLCBN○○-3...	1
WCF N4-GG	★	★	★	★	**4.0**	GLCBN○○-4...	1
WCF N5-GG	★	★	★	★	**5.0**	GLCBN○○-5...	1
WCF N2-GF		★	★	★	**2.0**	GLCBN○○-2...	1
WCF N3-GF		★	★	★	**3.0**	GLCBN○○-3...	1
WCF N4-GF		★	★	★	**4.0**	GLCBN○○-4...	1
WCF N5-GF		★	★	★	**5.0**	GLCBN○○-5...	1
WCF R3-CF		★	★	★	**3.0**	GLCBN○○-3...	2
WCF L3-CF		★	★	★	**3.0**		3
WCF R4-CF		★	★	★	**4.0**	GLCBN○○-4...	2
WCF L4-CF		★	★	★	**4.0**		3

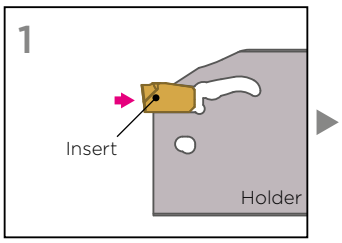
Recommended Cutting Conditions

Work Material	Cutting Speed vc (m/min)			
	AC830P	AC1030U	AC5015S	AC5025S
P Carbon Steel / Alloy Steel	80-200	50-200	80-200	50-200
M Stainless Steel	70-150	50-150	70-150	50-150
K Cast Iron	—	50-200	60-200	50-200
S Exotic Alloy	—	20- 60	20- 80	20- 60
N Non-Ferrous Metal	—	150-300	—	—

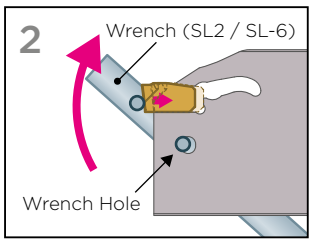
Chipbreaker		Feed Rate f (mm/rev)		
		Neutral		Handed
		GG	GF	CF
		General-purpose	Exotic Alloy/Low Cutting Force type	Low Cutting Force
Width of Cut CW (mm)	**2.0**	0.05-0.15	0.03-0.12	—
	3.0	0.08-0.25	0.05-0.15	0.05-0.10
	4.0	0.10-0.30	0.05-0.18	0.05-0.10
	5.0	0.10-0.30	0.05-0.20	—

Insert Mounting Method and Precautions (Carbide Holder)

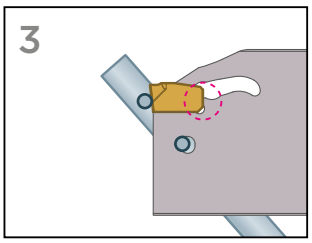
Insert Mounting



Gently put the insert into the holder

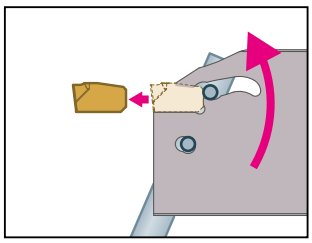


Insert the wrench into the wrench hole as shown and push in the insert from the front while rotating it in the direction of the arrow



Push in the insert until its back touches the backstop of the holder to complete mounting

Insert Removal

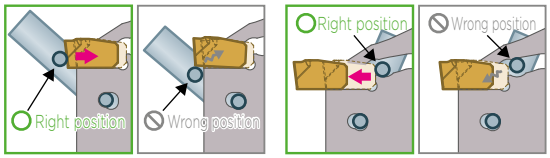


Insert the wrench into the wrench hole as shown and push out the insert from the back while rotating it in the direction of the arrow

■ Insert Mounting Precautions

- Remove any chips or other foreign matter on the insert and holder seats.
- To prevent holder breakage, check that the wrench is in the correct position.
- To prevent breakage, do not use anything but the dedicated wrench (sold separately).
- When removing the insert, the wrench will contact the clamp portion of the holder; do not apply excessive force to the holder after contact is made.

Check that the wrench is in the correct position



When mounting insert

When removing insert

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

GLC series

Fig 1

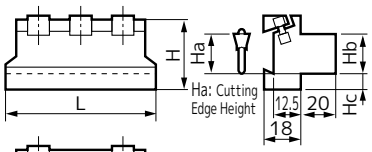


Fig 2

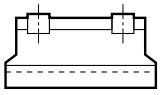


Fig 1

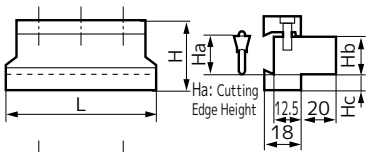
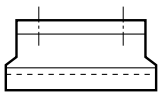


Fig 2



Tool Block SBN type (Integrated) Parts

Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Overall Length L	Fig	Clamp Plate	Double Screw	Wrench
SBN 20-26	★	20	20	10.0	45	80	2	BWS30	WB8-20	LH040
20-32	★	20	20	13.5	50	100	1			
25-32	★	25	25	8.5	50	110	1			

Tool Block SBU type (Split type) Parts

Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Overall Length L	Fig	Clamp Wedge (BCS15 / BCS20 / BCS25)	Cap Screw	Wrench
SBU 20-26	★	20	20	10.0	45	80	2	BCS15	BX0622	LH050
20-32	★	20	20	13.5	50	100	1	BCS20		
25-32	★	25	25	8.5	50	110	1	BCS25		

Fig 1

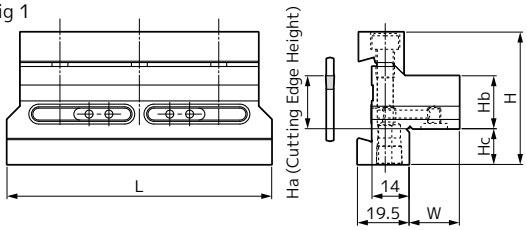
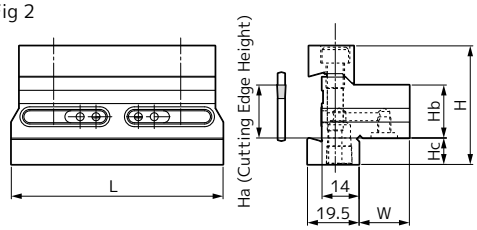


Fig 2



Tool Block for Internal Coolant Supply SBU-J type (Split type) Parts

Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Width W	Overall Length L	Fig	Clamp Wedge (BCS15 / BCS20 / BCS25)	O-ring	Cap Screw	Set Screw	Wrench	Plug
SBU 20-26J New	★	20	20	10	45	19	80	2	BCS15	ID210W1	BX0622	BT0506	LH050	XP02
20-32J New	★	20	20	13.5	50	19	100	1	BCS20	ID255W1				
25-32J New	★	25	25	8.5	50	23	110	1	BCS25	ID280W1				

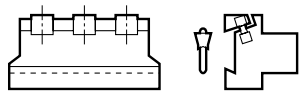
For Internal Coolant Supply Supported Holder GLC-SJ type.

Piping Method and Precautions F73

Tool Block type Selection Guide

Integrated type

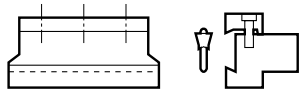
SBN type Example: SBN20-32



· Applicable to toolpost shown on the right **A**.

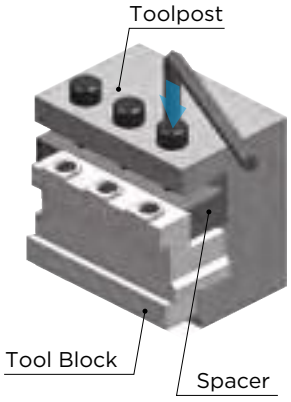
Split type

SBU type Example: SBU20-32



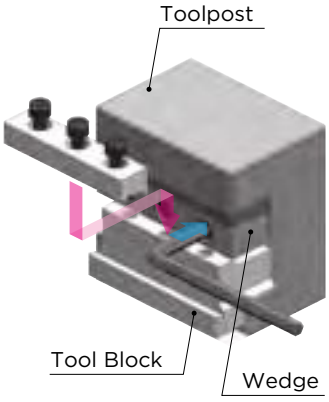
· Applicable to toolpost shown on the right **A** **B**.
· Large clamp plate ensures a wide clamp area that enables long holder overhang.

A General-purpose Lathe, etc.
SBN type **SBU type**



(Clamp from above)

B Turret type Toolpost, etc.
SBU type



(Clamp from the side)

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SumiGrip



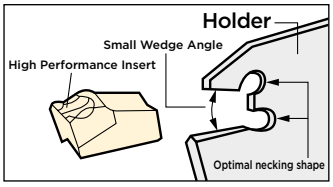
■ Features

- Available in carbide holder (SumiGrip) and steel holder (SumiGrip Jr.)
- Capable of interrupted cutting
- Can be used for cut-off, grooving, chamfering, etc.

■ Types

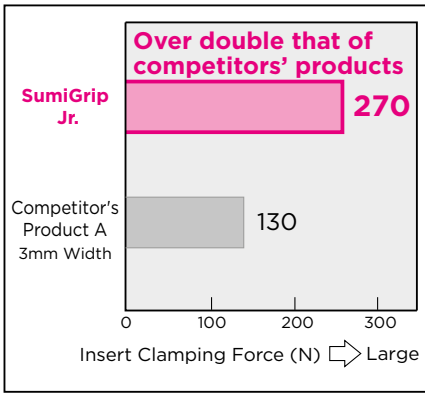
(1) Tool Block type
STFH type (Steel)/
WCFH type (Carbide)

(2) Shank type
STFS type (Steel)/
WCFS type (Carbide)

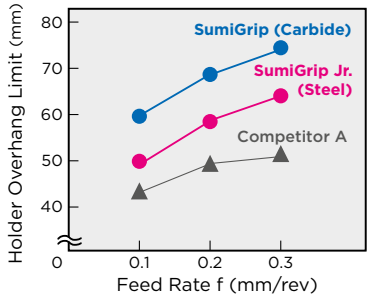


■ Cutting Performance (Holder)

● Insert Clamping Force

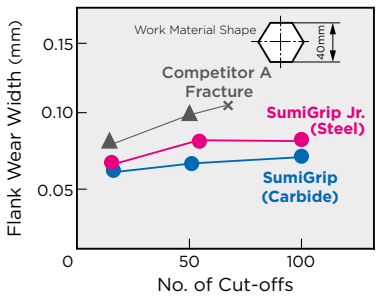


● Holder Overhang



Work Material: C45 (ø50mm, 250HB)
Cutting Conditions: vc = 80m/min Dry

● Wear Resistance



Work Material: C45 (Hex), Insert: 3mm Width Coated
Cutting Conditions: vc = 150m/min, f = 0.15mm/rev
Wet (Water Soluble)

■ GG type / GF type / CF type Chipbreaker + AC1030U

- The grooving tool holder GND series offers several chipbreakers for excellent chip control.
- Low cutting force chipbreaker GF type (neutral) or CF type (handed) inserts, coupled with a carbide holder, enable stable machining and prevent chattering even when machining stainless steel.
- Achieving long and stable tool life with the AC1030U grade.



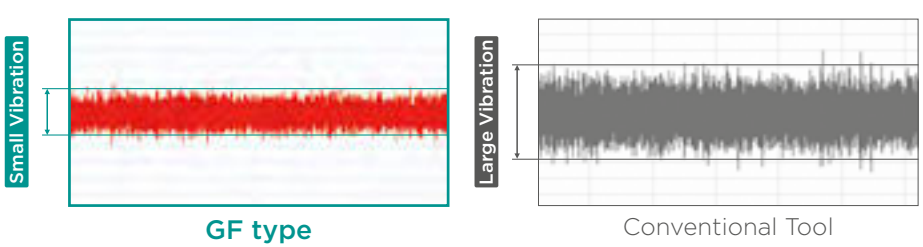
■ Cutting Performance (Chipbreaker)

● Chip Control (Performance)



Work Material: S45C (ø40mm)
3.0mm Width Cut-off
Cutting Conditions: vc = 100m/min
f = 0.1mm/rev
Wet

● Anti-Vibration Performance



Work Material: SUS316 (ø40mm)
3.0mm Width Cut-off
Cutting Conditions: vc = 100m/min
f = 0.1mm/rev
Wet

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

STFH type

Cut-off
(Steel Holder/Tool Block type)

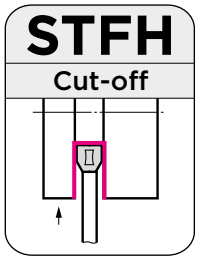
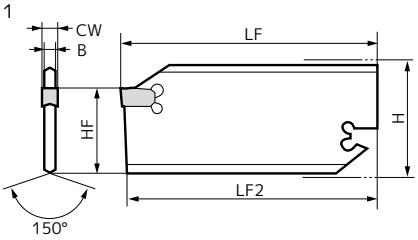
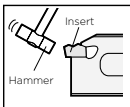


Fig 1



● Insert Mounting Method



Mount the insert by lightly knocking it in with a wooden or plastic hammer.
(Check that the insert cannot be pulled out by hand.)
⚠ Note that driving in the insert too far may cause damage to the insert or holder.

Holder

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Reference Length LF2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Applicable Tool Blocks	Fig	Wrench
STFH 26-2	▲	26	1.6	109	21.4	108	**2.0**	**40**	WCFO2□		1	
26-3	▲	26	2.4	109	21.4	108	**3.0**	**70**	WCFO3□	SBN 20-26 SBU 20-26	1	SL4
26-4	▲	26	3.4	109	21.4	108	**4.0**	**70**	WCFO4□		1	
26-5	▲	26	4.3	109	21.4	108	**5.0**	**70**	WCFO5□		1	
STFH 32-2	▲	32	1.6	149	25.0	148	**2.0**	**40**	WCFO2□	SBN 20-32	1	
32-3	▲	32	2.4	149	25.0	148	**3.0**	**100**	WCFO3□	SBN 25-32	1	SL4
32-4	▲	32	3.4	149	25.0	148	**4.0**	**100**	WCFO4□	SBU 20-32	1	
32-5	▲	32	4.3	149	25.0	148	**5.0**	**100**	WCFO5□	SBU 25-32	1	

*The shape of STFH32-2 is slightly different from the above figure. Refer to page F91 for applicable inserts.

Fig 1

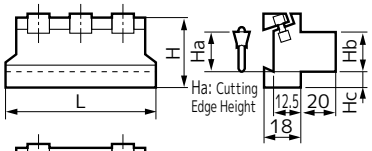


Fig 2

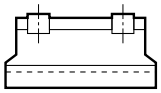


Fig 1

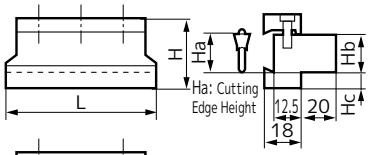
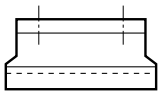


Fig 2



Tool Block SBN type (Integrated) Parts

Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Overall Length L	Fig	Clamp Plate	Double Screw	Wrench
SBN 20-26	★	20	20	10.0	45	80	2			
20-32	★	20	20	13.5	50	100	1	BWS30	WB8-20	LH040
25-32	★	25	25	8.5	50	110	1			

Tool Block SBU type (Split type) Parts

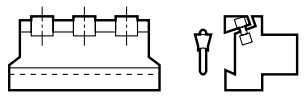
Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Overall Length L	Fig	Clamp Wedge (BCS15 / BCS20 / BCS25)	Cap Screw	Wrench
SBU 20-26	★	20	20	10.0	45	80	2	BCS15		
20-32	★	20	20	13.5	50	100	1	BCS20	BX0622	LH050
25-32	★	25	25	8.5	50	110	1	BCS25		

Tool Block type Selection Guide

Integrated type

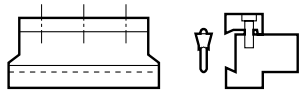
SBN type Example: SBN20-32



· Applicable to toolpost shown on the right **A**.

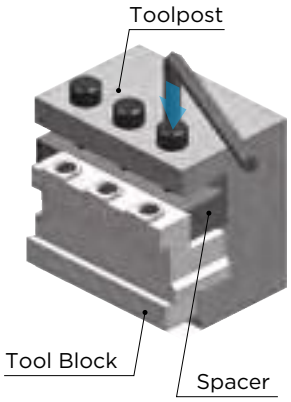
Split type

SBU type Example: SBU20-32



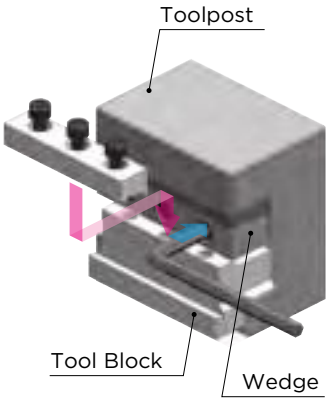
· Applicable to toolpost shown on the right **A** **B**.
· Large clamp plate ensures a wide clamp area that enables long holder overhang.

A General-purpose Lathe, etc.
SBN type | SBU type



(Clamp from above)

B Turret type Toolpost, etc.
SBU type



(Clamp from the side)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

STFH type

Fig 1 (Neutral (N))

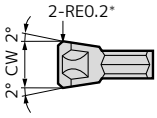


Fig 2 (Right Hand (R))

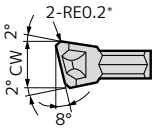
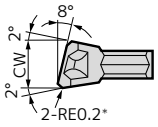


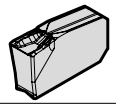
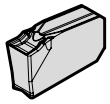
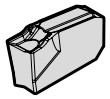
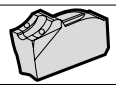
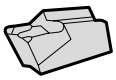
Fig 3 (Left Hand (L))



*WCF□ 2T: 2-RE0.15

Inserts for STFH (SumiGrip / SumiGrip Jr. common) (Coated Carbide / Cermet / Cemented Carbide)

Dimensions (mm)

Appearance	ISO Cat. No.	AC830P	AC225	AC5015S	AC5025S	AC1030U	T1500A	A30	G10E	Width of Cut CW	Applicable Holder	Fig
WCF NO-GG General-purpose 	**WCF N2-GG**	★	—	★	★	★	—	—	—	**2.0**	STFH OO-2	1
	WCF N3-GG	★	—	★	★	★	—	—	—	**3.0**	STFH OO-3	1
	WCF N4-GG	★	—	★	★	★	—	—	—	**4.0**	STFH OO-4	1
	WCF N5-GG	★	—	★	★	★	—	—	—	**5.0**	STFH OO-5	1
WCF NO-GF Exotic Alloy Low Feed 	**WCF N2-GF**		—	★	★	★	—	—	—	**2.0**	STFH OO-2	1
	WCF N3-GF		—	★	★	★	—	—	—	**3.0**	STFH OO-3	1
	WCF N4-GF		—	★	★	★	—	—	—	**4.0**	STFH OO-4	1
	WCF N5-GF		—	★	★	★	—	—	—	**5.0**	STFH OO-5	1
WCF □O-CF Exotic Alloy Low Feed (Handed) 	**WCF R3-CF**		—	★	★	★	—	—	—	**3.0**	STFH OO-3	2
	WCF L3-CF		—	★	★	★	—	—	—	**3.0**		3
	WCF R4-CF		—	★	★	★	—	—	—	**4.0**	STFH OO-4	2
	WCF L4-CF		—	★	★	★	—	—	—	**4.0**		3
WCF □2T Small Diameter Low Cutting Force 	**WCF N2T**	★	—	—	—	—	—	—	—	**2.0**	STFH OO-2	1
	WCF R2T	★	—	—	—	—	—	—	—	**2.0**		2
	WCF L2T	★	—	—	—	—	—	—	—	**2.0**		3
WCF □O No Chipbreaker For General Steel 	**WCF N3**	★	—	—	—	—	—	—	—	**3.0**	STFH OO-3	1
	WCF R3	★	—	—	—	—	—	—	—	**3.0**		2
	WCF L3	★	—	—	—	—	—	—	—	**3.0**		3
	WCF N4	★	—	—	—	—	—	—	—	**4.0**	STFH OO-4	1
	WCF R4	★	—	—	—	—	—	—	—	**4.0**		2
	WCF L4	★	—	—	—	—	—	—	—	**4.0**		3
	WCF N5	★	—	—	—	—	—	—	—	**5.0**	STFH OO-5	1
	WCF R5	★	—	—	—	—	—	—	—	**5.0**		2
	WCF L5	★	—	—	—	—	—	—	—	**5.0**		3
WCF □OA Exotic Alloy Low Feed 	**WCF N2A**		★	—	—	—	—			**2.0**	STFH OO-2	1
	WCF N3A		★	—	—	—	★	★	★	**3.0**	STFH OO-3	1
	WCF R3A		★	—	—	—		★		**3.0**		2
	WCF L3A		★	—	—	—	—			**3.0**		3
	WCF N4A		★	—	—	—	★			**4.0**	STFH OO-4	1
	WCF R4A		★	—	—	—	—			**4.0**		2
	WCF L4A		★	—	—	—	—			**4.0**		3
	WCF N5A		★	—	—	—	—			**5.0**	STFH OO-5	1
	WCF R5A		—	—	—	—	—			**5.0**		2
	WCF L5A		—	—	—	—	—			**5.0**		3
WCF □OB Cast Iron Light Alloys 	**WCF N3B**		—	—	—	—	—	—	★	**3.0**	STFH OO-3	1
	WCF R3B		—	—	—	—	—	—	★	**3.0**		2
	WCF L3B		—	—	—	—	—	—	★	**3.0**		3
	WCF N4B		—	—	—	—	—	—	★	**4.0**	STFH OO-4	1
	WCF R4B		—	—	—	—	—	—	★	**4.0**		2
	WCF L4B		—	—	—	—	—	—		**4.0**		3
	WCF N5B		—	—	—	—	—	—	★	**5.0**	STFH OO-5	1
	WCF R5B		—	—	—	—	—	—		**5.0**		2
	WCF L5B		—	—	—	—	—	—	★	**5.0**		3

*Same chipbreaker shape as the type for general steel (WCF□O), but with smaller cutting edge treatment.

Recommended Cutting Conditions

Work Material	Cutting Speed vc (m/min)							
	Coated Carbide					Cermet	Cemented Carbide	
	AC830P	AC5015S	AC5025S	AC225	AC1030U	T1500A	A30	G10E
P Carbon Steel / Alloy Steel	80-200	80-200	50-200	80-200	50-200	80-200	50-120	—
M Stainless Steel	70-150	70-150	50-150	60-150	50-150	—	70-130	—
K Cast Iron	—	60-200	50-200	—	50-200	—	—	50-120
N Non-Ferrous Metal	—	—	—	—	200-500	—	—	200-500

Chipbreaker		Feed Rate f (mm/rev)										
		Neutral						Handed				
		GG	GF	No Chipbreaker	T	A	B	No Chipbreaker	CF	T	A	B
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of Cut CW (mm)	**2.0**	0.05-0.20	0.03-0.12	—	0.03-0.10	0.03-0.12	—	—	—	0.03-0.10	—	—
	3.0	0.08-0.25	0.04-0.15	0.08-0.25	—	0.04-0.15	0.05-0.15	0.08-0.25	0.05-0.12	—	0.04-0.15	0.05-0.15
	4.0	0.10-0.30	0.05-0.18	0.10-0.30	—	0.05-0.18	0.05-0.18	0.10-0.30	0.05-0.12	—	0.05-0.18	0.05-0.18
	5.0	0.10-0.35	0.05-0.20	0.10-0.30	—	0.05-0.20	0.06-0.20	0.10-0.30	—	—	—	0.06-0.20

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

STFS type

Cut-off

For Cut-off
(Steel Holder/Shank type)

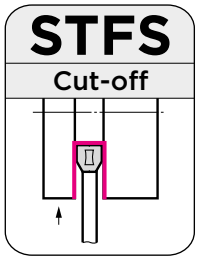


Fig 1

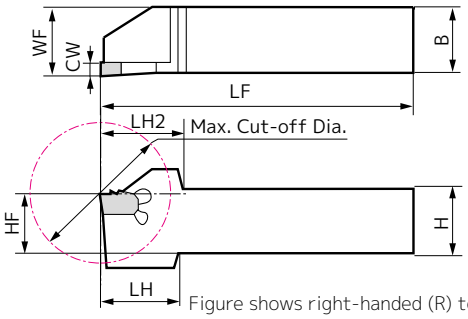
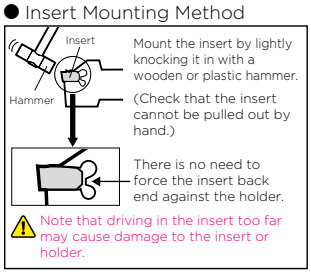


Figure shows right-handed (R) tool.

● Insert Mounting Method



Holder

Parts Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Head LH2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Wrench
STFS R/L1010-2	★	★	10	10	86	10	10	17	17	**2.0**	**28**	WCFO2□	1	SL4
R/L1212-2	★	★	12	12	110	12	12	18	18	**2.0**	**30**		1	
R/L1616-2	★	★	16	16	110	16	16	—	19	**2.0**	**32**		1	
R/L2020-2	★	★	20	20	125	20	20	—	24	**2.0**	**40**		1	
STFS R/L1616-3	★	★	16	16	110	16	16	20	22	**3.0**	**35**	WCFO3□	1	SL4
R/L2012-3	★	★	20	12	110	12	20	—	24	**3.0**	**40**		1	
R/L2020-3	★	★	20	20	125	20	20	—	30	**3.0**	**50**		1	
R/L2525-3	★	★	25	25	150	25	25	—	30	**3.0**	**50**		1	
STFS R/L2020-4	★	★	20	20	125	20	20	—	33	**4.0**	**55**	WCFO4□	1	SL4
R/L2525-4	★	★	25	25	150	25	25	—	38	**4.0**	**65**		1	
STFS R/L2020-5	★	★	20	20	125	20	20	—	35	**5.0**	**60**	WCFO5□	1	SL4
R/L2525-5	★	★	25	25	150	25	25	—	40	**5.0**	**70**		1	

Refer to page F93 for applicable inserts

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

STFS type

Fig 1 (Neutral (N))

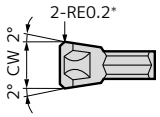


Fig 2 (Right Hand (R))

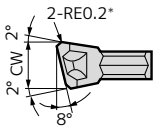
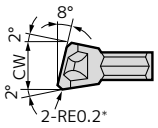


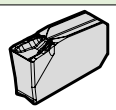
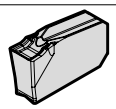
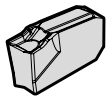
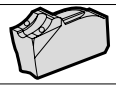
Fig 3 (Left Hand (L))



*WCF□ 2T: 2-RE0.15

Inserts for STFS (SumiGrip / SumiGrip Jr. common) (Coated Carbide / Cermet / Cemented Carbide)

Dimensions (mm)

Appearance	ISO Cat. No.	AC830P	AC225	AC5015S	AC5025S	AC1030U	T1500A	A30	G10E	Width of Cut CW	Applicable Holder	Fig
WCF NO-GG General-purpose 	**WCF N2-GG**	★	—	★	★	★	—	—	—	**2.0**	STFS R/LOOOO-2	1
	WCF N3-GG	★	—	★	★	★	—	—	—	**3.0**	STFS R/LOOOO-3	1
	WCF N4-GG	★	—	★	★	★	—	—	—	**4.0**	STFS R/LOOOO-4	1
	WCF N5-GG	★	—	★	★	★	—	—	—	**5.0**	STFS R/LOOOO-5	1
WCF NO-GF Exotic Alloy Low Feed 	**WCF N2-GF**		—	★	★	★	—	—	—	**2.0**	STFS R/LOOOO-2	1
	WCF N3-GF		—	★	★	★	—	—	—	**3.0**	STFS R/LOOOO-3	1
	WCF N4-GF		—	★	★	★	—	—	—	**4.0**	STFS R/LOOOO-4	1
	WCF N5-GF		—	★	★	★	—	—	—	**5.0**	STFS R/LOOOO-5	1
WCF □O-CF Exotic Alloy Low Feed (Handed) 	**WCF R3-CF**		—	★	★	★	—	—	—	**3.0**	STFS R/LOOOO-3	2
	WCF L3-CF		—	★	★	★	—	—	—	**3.0**		3
	WCF R4-CF		—	★	★	★	—	—	—	**4.0**	STFS R/LOOOO-4	2
	WCF L4-CF		—	★	★	★	—	—	—	**4.0**		3
WCF □2T Small Diameter Low Cutting Force 	**WCF N2T**	★	—	—	—	—	—	—	—	**2.0**	STFS R/LOOOO-2	1
	WCF R2T	★	—	—	—	—	—	—	—	**2.0**		2
	WCF L2T	★	—	—	—	—	—	—	—	**2.0**		3
WCF □O No Chipbreaker For General Steel 	**WCF N3**	★	—	—	—	—	—	—	—	**3.0**	STFS R/LOOOO-3	1
	WCF R3	★	—	—	—	—	—	—	—	**3.0**		2
	WCF L3	★	—	—	—	—	—	—	—	**3.0**		3
	WCF N4	★	—	—	—	—	—	—	—	**4.0**	STFS R/LOOOO-4	1
	WCF R4	★	—	—	—	—	—	—	—	**4.0**		2
	WCF L4	★	—	—	—	—	—	—	—	**4.0**		3
	WCF N5	★	—	—	—	—	—	—	—	**5.0**	STFS R/LOOOO-5	1
	WCF R5	★	—	—	—	—	—	—	—	**5.0**		2
	WCF L5	★	—	—	—	—	—	—	—	**5.0**		3
WCF □OA Exotic Alloy Low Feed 	**WCF N2A**		★	—	—	—	—			**2.0**	STFS R/LOOOO-2	1
	WCF N3A		★	—	—	—	★	★	★	**3.0**	STFS R/LOOOO-3	1
	WCF R3A		★	—	—	—		★		**3.0**		2
	WCF L3A		★	—	—	—	—			**3.0**		3
	WCF N4A		★	—	—	—	★			**4.0**	STFS R/LOOOO-4	1
	WCF R4A		★	—	—	—	—			**4.0**		2
	WCF L4A		★	—	—	—	—			**4.0**		3
	WCF N5A		★	—	—	—	—			**5.0**	STFS R/LOOOO-5	1
	WCF R5A		—	—	—	—	—			**5.0**		2
	WCF L5A		—	—	—	—	—			**5.0**		3
WCF □OB Cast Iron Light Alloys 	**WCF N3B**		—	—	—	—	—	—	★	**3.0**	STFS R/LOOOO-3	1
	WCF R3B		—	—	—	—	—	—	★	**3.0**		2
	WCF L3B		—	—	—	—	—	—	★	**3.0**		3
	WCF N4B		—	—	—	—	—	—	★	**4.0**	STFS R/LOOOO-4	1
	WCF R4B		—	—	—	—	—	—	★	**4.0**		2
	WCF L4B		—	—	—	—	—	—		**4.0**		3
	WCF N5B		—	—	—	—	—	—	★	**5.0**	STFS R/LOOOO-5	1
	WCF R5B		—	—	—	—	—	—		**5.0**		2
	WCF L5B		—	—	—	—	—	—	★	**5.0**		3

*Same chipbreaker shape as the type for general steel (WCF□O), but with smaller cutting edge treatment.

Recommended Cutting Conditions

Work Material	Cutting Speed vc (m/min)							
	Coated Carbide					Cermet	Cemented Carbide	
	AC830P	AC5015S	AC5025S	AC225	AC1030U	T1500A	A30	G10E
P Carbon Steel / Alloy Steel	80-200	80-200	50-200	80-200	50-200	80-200	50-120	—
M Stainless Steel	70-150	70-150	50-150	60-150	50-150	—	70-130	—
K Cast Iron	—	60-200	50-200	—	50-200	—	—	50-120
N Non-Ferrous Metal	—	—	—	—	200-500	—	—	200-500

Chipbreaker		Feed Rate f (mm/rev)										
		Neutral						Handed				
		GG	GF	No Chipbreaker	T	A	B	No Chipbreaker	CF	T	A	B
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of Cut CW (mm)	**2.0**	0.05-0.20	0.03-0.12	—	0.03-0.10	0.03-0.12	—	—	—	0.03-0.10	—	—
	3.0	0.08-0.25	0.04-0.15	0.08-0.25	—	0.04-0.15	0.05-0.15	0.08-0.25	0.05-0.12	—	0.04-0.15	0.05-0.15
	4.0	0.10-0.30	0.05-0.18	0.10-0.30	—	0.05-0.18	0.05-0.18	0.10-0.30	0.05-0.12	—	0.05-0.18	0.05-0.18
	5.0	0.10-0.35	0.05-0.20	0.10-0.30	—	0.05-0.20	0.06-0.20	0.10-0.30	—	—	—	0.06-0.20

★mark: Global stocked item

Blank: Made-to-order item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

WCFH type

Cut-off

For Cut-off
(Carbide Holder/Tool Block type)

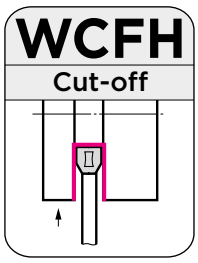
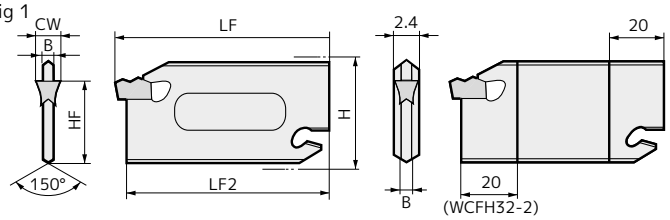
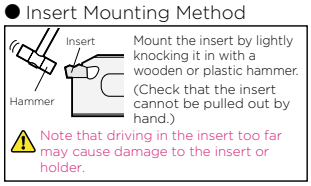


Fig 1



● Insert Mounting Method



Holder

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Reference Length LF2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Applicable Tool Blocks	Fig	Wrench
WCFH 26-2	▲	26	1.7	110	21.4	109.0	**2.0**	**40**	WCF□2○		1	S2
26-3	▲	26	2.4	110	21.4	108.5	**3.0**	**80**	WCF□3○	SBN 20-26	1	
26-4	▲	26	3.4	110	21.4	108.5	**4.0**	**80**	WCF□4○	SBU 20-26	1	SL1
26-5	▲	26	4.3	110	21.4	108.5	**5.0**	**80**	WCF□5○		1	
WCFH 32-2	▲	32	1.7	150	25.0	149.0	**2.0**	**40**	WCF□2○	SBN 20-32	1	SL2
32-3	▲	32	2.4	150	25.0	148.5	**3.0**	**140**	WCF□3○	SBN 25-32	1	
32-4	▲	32	3.4	150	25.0	148.5	**4.0**	**140**	WCF□4○	SBU 20-32	1	SL1
32-5	▲	32	4.3	150	25.0	148.5	**5.0**	**140**	WCF□5○	SBU 25-32	1	

Refer to page F95 for applicable inserts.

Fig 1

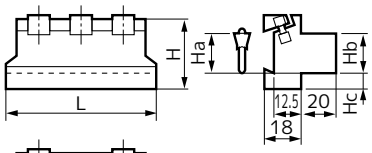


Fig 2

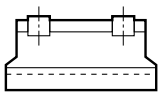


Fig 1

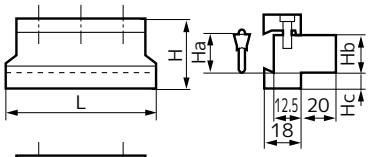
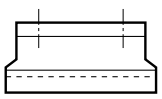


Fig 2



Tool Block SBN type (Integrated)

Parts Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Overall Length L	Fig	Clamp Plate	Double Screw	Wrench
SBN 20-26	★	20	20	10.0	45	80	2			
20-32	★	20	20	13.5	50	100	1	BWS30	WB8-20	LH040
25-32	★	25	25	8.5	50	110	1			

Tool Block SBU type (Split type)

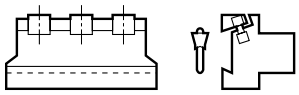
Parts Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting Position Hc	Height H	Overall Length L	Fig	Clamp Wedge	Cap Screw	Wrench
SBU 20-26	★	20	20	10.0	45	80	2	BCS15		
20-32	★	20	20	13.5	50	100	1	BCS20	BX0622	LH050
25-32	★	25	25	8.5	50	110	1	BCS25		

Tool Block type Selection Guide

Integrated type

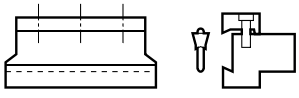
SBN type Example: SBN20-32



· Applicable to toolpost shown on the right **A**.

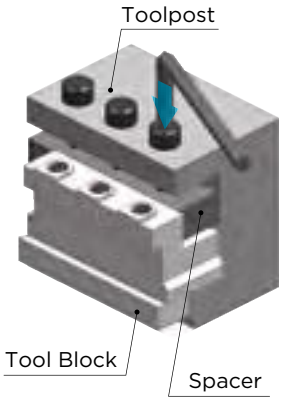
Split type

SBU type Example: SBU20-32



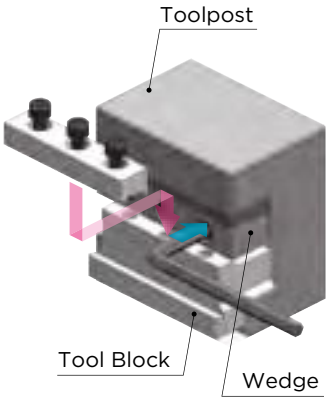
· Applicable to toolpost shown on the right **A** **B**.
· Large clamp plate ensures a wide clamp area that enables long holder overhang.

A General-purpose Lathe, etc.
SBN type **SBU type**



(Clamp from above)

B Turret type Toolpost, etc.
SBU type



(Clamp from the side)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

WCFH type

Fig 1 (Neutral (N))

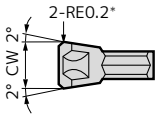


Fig 2 (Right Hand (R))

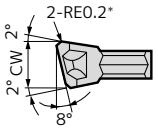
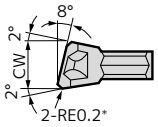


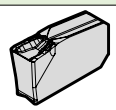
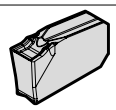
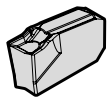
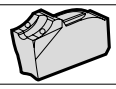
Fig 3 (Left Hand (L))



*WCF□ 2T: 2-RE0.15

Inserts for WCFH (SumiGrip / SumiGrip Jr. common) (Coated Carbide / Cermet / Cemented Carbide)

Dimensions (mm)

Appearance	ISO Cat. No.	AC830P	AC225	AC5015S	AC5025S	AC1030U	T1500A	A30	G10E	Width of Cut CW	Applicable Holder	Fig
WCF NO-GG General-purpose 	**WCF N2-GG**	★	—	★	★	★	—	—	—	**2.0**	WCFH OO-2	1
	WCF N3-GG	★	—	★	★	★	—	—	—	**3.0**	WCFH OO-3	1
	WCF N4-GG	★	—	★	★	★	—	—	—	**4.0**	WCFH OO-4	1
	WCF N5-GG	★	—	★	★	★	—	—	—	**5.0**	WCFH OO-5	1
WCF NO-GF Exotic Alloy Low Feed 	**WCF N2-GF**		—	★	★	★	—	—	—	**2.0**	WCFH OO-2	1
	WCF N3-GF		—	★	★	★	—	—	—	**3.0**	WCFH OO-3	1
	WCF N4-GF		—	★	★	★	—	—	—	**4.0**	WCFH OO-4	1
	WCF N5-GF		—	★	★	★	—	—	—	**5.0**	WCFH OO-5	1
WCF □O-CF Exotic Alloy Low Feed (Handed) 	**WCF R3-CF**		—	★	★	★	—	—	—	**3.0**	WCFH OO-3	2
	WCF L3-CF		—	★	★	★	—	—	—	**3.0**		3
	WCF R4-CF		—	★	★	★	—	—	—	**4.0**	WCFH OO-4	2
	WCF L4-CF		—	★	★	★	—	—	—	**4.0**		3
WCF □2T Small Diameter Low Cutting Force 	**WCF N2T**	★	—	—	—	—	—	—	—	**2.0**	WCFH OO-2	1
	WCF R2T	★	—	—	—	—	—	—	—	**2.0**		2
	WCF L2T	★	—	—	—	—	—	—	—	**2.0**		3
WCF □O No Chipbreaker For General Steel 	**WCF N3**	★	—	—	—	—	—	—	—	**3.0**	WCFH OO-3	1
	WCF R3	★	—	—	—	—	—	—	—	**3.0**		2
	WCF L3	★	—	—	—	—	—	—	—	**3.0**		3
	WCF N4	★	—	—	—	—	—	—	—	**4.0**	WCFH OO-4	1
	WCF R4	★	—	—	—	—	—	—	—	**4.0**		2
	WCF L4	★	—	—	—	—	—	—	—	**4.0**		3
	WCF N5	★	—	—	—	—	—	—	—	**5.0**	WCFH OO-5	1
	WCF R5	★	—	—	—	—	—	—	—	**5.0**		2
	WCF L5	★	—	—	—	—	—	—	—	**5.0**		3
WCF □OA Exotic Alloy Low Feed 	**WCF N2A**		★	—	—	—	—			**2.0**	WCFH OO-2	1
	WCF N3A		★	—	—	—	★	★	★	**3.0**	WCFH OO-3	1
	WCF R3A		★	—	—	—		★		**3.0**		2
	WCF L3A		★	—	—	—	—			**3.0**		3
	WCF N4A		★	—	—	—	★			**4.0**	WCFH OO-4	1
	WCF R4A		★	—	—	—	—			**4.0**		2
	WCF L4A		★	—	—	—	—			**4.0**		3
	WCF N5A		★	—	—	—	—			**5.0**	WCFH OO-5	1
	WCF R5A		—	—	—	—	—			**5.0**		2
	WCF L5A		—	—	—	—	—			**5.0**		3
WCF □OB Cast Iron Light Alloys 	**WCF N3B**		—	—	—	—	—	—	★	**3.0**	WCFH OO-3	1
	WCF R3B		—	—	—	—	—	—	★	**3.0**		2
	WCF L3B		—	—	—	—	—	—	★	**3.0**		3
	WCF N4B		—	—	—	—	—	—	★	**4.0**	WCFH OO-4	1
	WCF R4B		—	—	—	—	—	—	★	**4.0**		2
	WCF L4B		—	—	—	—	—	—		**4.0**		3
*Same chipbreaker shape as the type for general steel (WCF□O), but with smaller cutting edge treatment.	**WCF N5B**		—	—	—	—	—	—	★	**5.0**	WCFH OO-5	1
	WCF R5B		—	—	—	—	—	—		**5.0**		2
	WCF L5B		—	—	—	—	—	—	★	**5.0**		3

Recommended Cutting Conditions

Work Material	Cutting Speed vc (m/min)							
	Coated Carbide					Cermet	Cemented Carbide	
	AC830P	AC5015S	AC5025S	AC225	AC1030U	T1500A	A30	G10E
P Carbon Steel / Alloy Steel	80-200	80-200	50-200	80-200	50-200	80-200	50-120	—
M Stainless Steel	70-150	70-150	50-150	60-150	50-150	—	70-130	—
K Cast Iron	—	60-200	50-200	—	50-200	—	—	50-120
N Non-Ferrous Metal	—	—	—	—	200-500	—	—	200-500

Chipbreaker		Feed Rate f (mm/rev)										
		Neutral						Handed				
		GG	GF	No Chipbreaker	T	A	B	No Chipbreaker	CF	T	A	B
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of Cut CW (mm)	**2.0**	0.05-0.20	0.03-0.12	—	0.03-0.10	0.03-0.12	—	—	—	0.03-0.10	—	—
	3.0	0.08-0.25	0.04-0.15	0.08-0.25	—	0.04-0.15	0.05-0.15	0.08-0.25	0.05-0.12	—	0.04-0.15	0.05-0.15
	4.0	0.10-0.30	0.05-0.18	0.10-0.30	—	0.05-0.18	0.05-0.18	0.10-0.30	0.05-0.12	—	0.05-0.18	0.05-0.18
	5.0	0.10-0.35	0.05-0.20	0.10-0.30	—	0.05-0.20	0.06-0.20	0.10-0.30	—	—	—	0.06-0.20

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

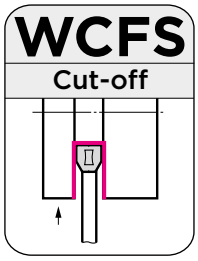
Blank: Made-to-order item

— mark: Not available

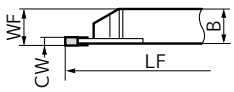
WCFS type

Cut-off

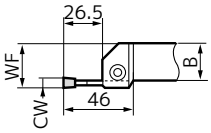
For Cut-off
(Carbide Holder/Shank type)



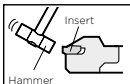
Brazed Blade type



Blade Clamp type



● Insert Mounting Method



Mount the insert by lightly knocking it in with a wooden or plastic hammer.
(Check that the insert cannot be pulled out by hand.)
⚠ Note that driving in the insert too far may cause damage to the insert or holder.

Fig 1

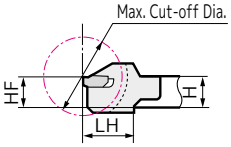


Fig 2

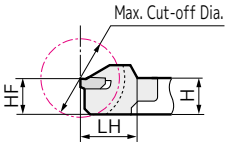


Fig 3

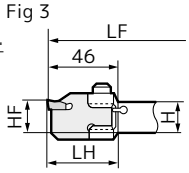


Fig 4

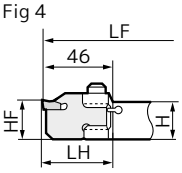


Figure shows right-handed (R) tool.

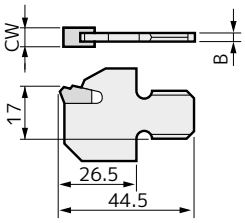
Holder

Parts Dimensions (mm)

Type	ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Blades	Applicable Insert	Fig	Wrench
Brazed type	**WCFS R/L1010-2**	★	★	10	10	86	10	10	**2.0**	**28**	—	WCF□2○	1	
	R/L1212-2	★	★	12	12	110	12	18	**2.0**	**30**	—	WCF□2○	1	SL2
	R/L1616-2	★	★	16	16	100	16	25	**2.0**	**35**	—	WCF□2○	2	
	R/L1616-3	★	★	16	16	100	16	25	**3.0**	**35**	—	WCF□3○	2	SL1
Clamp type	**WCFS R/L20-3**	★	★	20	20	125	20	46	**3.0**	**50**	WCFH17-3	WCF□3○	3	
	R/L20-4	★	★	20	20	125	20	46	**4.0**	**50**	WCFH17-4	WCF□4○	3	SL1
	R/L20-5	★		20	20	125	20	46	**5.0**	**50**	WCFH17-5	WCF□5○	3	
	WCFS R/L25-3	★	★	25	25	150	25	46	**3.0**	**50**	WCFH17-3	WCF□3○	4	
	R/L25-4	★	★	25	25	150	25	46	**4.0**	**50**	WCFH17-4	WCF□4○	4	SL1
	R/L25-5	★		25	25	150	25	46	**5.0**	**50**	WCFH17-5	WCF□5○	4	

Refer to page F97 for applicable inserts. Blade is included with the holder.

Fig 1



Blade

Dimensions (mm)

ISO Cat. No.	Stock	Width of Cut CW	Width B	Applicable Holder
WCFH 17-3	★	**3**	2.4	WCFS R/L20-3,25-3
WCFH 17-4	★	**4**	3.4	WCFS R/L20-4,25-4
WCFH 17-5	★	**5**	4.3	WCFS R/L20-5,25-5

Parts

Applicable Holder	Cap Screw	Wrench
WCFS R/L20-○, WCFS R/L25-○	BX0622	LH050

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

WCFS type

Fig 1 (Neutral (N))

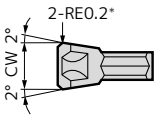


Fig 2 (Right Hand (R))

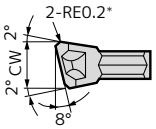
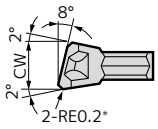


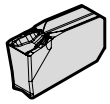
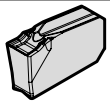
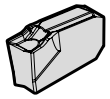
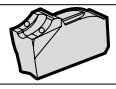
Fig 3 (Left Hand (L))



*WCF□ 2T: 2-RE0.15

Inserts for WCFS (SumiGrip / SumiGrip Jr. common) (Coated Carbide / Cermet / Cemented Carbide)

Dimensions (mm)

Appearance	ISO Cat. No.	AC830P	AC225	AC5015S	AC5025S	AC1030U	T1500A	A30	G10E	Width of Cut CW	Applicable Holder	Fig
WCF NO-GG General-purpose 	**WCF N2-GG**	★	—	★	★	★	—	—	—	**2.0**	WCFS R/LOOOO-2	1
	WCF N3-GG	★	—	★	★	★	—	—	—	**3.0**	WCFS R/LOOOO-3,WCFS R/LOO-3	1
	WCF N4-GG	★	—	★	★	★	—	—	—	**4.0**	WCFS R/LOO-4	1
	WCF N5-GG	★	—	★	★	★	—	—	—	**5.0**	WCFS R/LOO-5	1
WCF NO-GF Exotic Alloy Low Feed 	**WCF N2-GF**		—	★	★	★	—	—	—	**2.0**	WCFS R/LOOOO-2	1
	WCF N3-GF		—	★	★	★	—	—	—	**3.0**	WCFS R/LOOOO-3,WCFS R/LOO-3	1
	WCF N4-GF		—	★	★	★	—	—	—	**4.0**	WCFS R/LOO-4	1
	WCF N5-GF		—	★	★	★	—	—	—	**5.0**	WCFS R/LOO-5	1
WCF □O-CF Exotic Alloy Low Feed (Handed) 	**WCF R3-CF**		—	★	★	★	—	—	—	**3.0**	WCFS R/LOOOO-3	2
	WCF L3-CF		—	★	★	★	—	—	—	**3.0**	WCFS R/LOO-3	3
	WCF R4-CF		—	★	★	★	—	—	—	**4.0**	WCFS R/LOO-4	2
	WCF L4-CF		—	★	★	★	—	—	—	**4.0**		3
WCF □2T Small Diameter Low Cutting Force 	**WCF N2T**	★	—	—	—	—	—	—	—	**2.0**	WCFS R/LOOOO-2	1
	WCF R2T	★	—	—	—	—	—	—	—	**2.0**		2
	WCF L2T	★	—	—	—	—	—	—	—	**2.0**		3
WCF □O No Chipbreaker For General Steel 	**WCF N3**	★	—	—	—	—	—	—	—	**3.0**	WCFS R/LOOOO-3 WCFS R/LOO-3	1
	WCF R3	★	—	—	—	—	—	—	—	**3.0**		2
	WCF L3	★	—	—	—	—	—	—	—	**3.0**		3
	WCF N4	★	—	—	—	—	—	—	—	**4.0**	WCFS R/LOO-4	1
	WCF R4	★	—	—	—	—	—	—	—	**4.0**		2
	WCF L4	★	—	—	—	—	—	—	—	**4.0**		3
	WCF N5	★	—	—	—	—	—	—	—	**5.0**	WCFS R/LOO-5	1
	WCF R5	★	—	—	—	—	—	—	—	**5.0**		2
	WCF L5	★	—	—	—	—	—	—	—	**5.0**		3
WCF □OA Exotic Alloy Low Feed 	**WCF N2A**		★	—	—	—	—			**2.0**	WCFS R/LOOOO-2	1
	WCF N3A		★	—	—	—	★	★	★	**3.0**	WCFS R/LOOOO-3 WCFS R/LOO-3	1
	WCF R3A		★	—	—	—		★		**3.0**		2
	WCF L3A		★	—	—	—	—			**3.0**		3
	WCF N4A		★	—	—	—	★			**4.0**	WCFS R/LOO-4	1
	WCF R4A		★	—	—	—	—			**4.0**		2
	WCF L4A		★	—	—	—	—			**4.0**		3
	WCF N5A		★	—	—	—	—			**5.0**	WCFS R/LOO-5	1
	WCF R5A		—	—	—	—	—			**5.0**		2
	WCF L5A		—	—	—	—	—			**5.0**		3
WCF □OB Cast Iron Light Alloys 	**WCF N3B**		—	—	—	—	—	—	★	**3.0**	WCFS R/LOOOO-3 WCFS R/LOO-3	1
	WCF R3B		—	—	—	—	—	—	★	**3.0**		2
	WCF L3B		—	—	—	—	—	—	★	**3.0**		3
	WCF N4B		—	—	—	—	—	—	★	**4.0**	WCFS R/LOO-4	1
	WCF R4B		—	—	—	—	—	—	★	**4.0**		2
	WCF L4B		—	—	—	—	—	—		**4.0**		3
	WCF N5B		—	—	—	—	—	—	★	**5.0**	WCFS R/LOO-5	1
	WCF R5B		—	—	—	—	—	—		**5.0**		2
	WCF L5B		—	—	—	—	—	—	★	**5.0**		3

*Same chipbreaker shape as the type for general steel (WCF□O), but with smaller cutting edge treatment.

Recommended Cutting Conditions

Work Material	Cutting Speed vc (m/min)							
	Coated Carbide					Cermet	Cemented Carbide	
	AC830P	AC5015S	AC5025S	AC225	AC1030U	T1500A	A30	G10E
P Carbon Steel / Alloy Steel	80-200	80-200	50-200	80-200	50-200	80-200	50-120	—
M Stainless Steel	70-150	70-150	50-150	60-150	50-150	—	70-130	—
K Cast Iron	—	60-200	50-200	—	50-200	—	—	50-120
N Non-Ferrous Metal	—	—	—	—	200-500	—	—	200-500

Chipbreaker		Feed Rate f (mm/rev)										
		Neutral						Handed				
		GG	GF	No Chipbreaker	T	A	B	No Chipbreaker	CF	T	A	B
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of Cut CW (mm)	**2.0**	0.05-0.20	0.03-0.12	—	0.03-0.10	0.03-0.12	—	—	—	0.03-0.10	—	—
	3.0	0.08-0.25	0.04-0.15	0.08-0.25	—	0.04-0.15	0.05-0.15	0.08-0.25	0.05-0.12	—	0.04-0.15	0.05-0.15
	4.0	0.10-0.30	0.05-0.18	0.10-0.30	—	0.05-0.18	0.05-0.18	0.10-0.30	0.05-0.12	—	0.05-0.18	0.05-0.18
	5.0	0.10-0.35	0.05-0.20	0.10-0.30	—	0.05-0.20	0.06-0.20	0.10-0.30	—	—	—	0.06-0.20

★ mark: Global stocked item

Blank: Made-to-order item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

SCT type

Cut-off

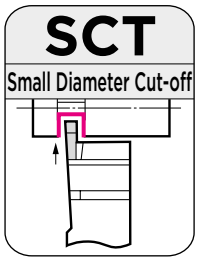


Fig 1

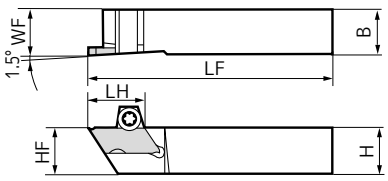


Fig 2

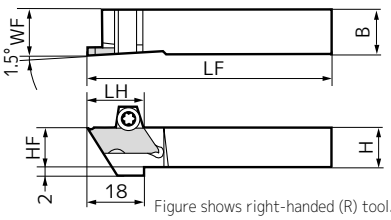


Figure shows right-handed (R) tool.

SumiSmall

Holder (Right-Hand)

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Flat Head Screw	Wrench
SCT R1010	★	10	10	120	10	10	15	CT R05OOOO(-NB) CT R12OOOO(-NB)	1	BFTX0410T8L	TRX08
R1212	★	12	12	120	12	12	15		1		
R1616	★	16	16	120	16	16	15		1		
SCT R1010-16	★	10	10	120	10	10	18	CT R16OOOO(-NB)	2	BFTX0410T8L	TRX08
R1212-16	★	12	12	120	12	12	18		1		
R1616-16	★	16	16	120	16	16	18		1		

Holder (Left-Hand)

Parts Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Flat Head Screw	Wrench
SCT L1010	★	10	10	120	10	10	15	CT L05OOOO(-NB) CT L12OOOO(-NB)	1	BFTX0410T8R	TRX08
L1212	★	12	12	120	12	12	15		1		
L1616	★	16	16	120	16	16	15		1		
SCT L1010-16	★	10	10	120	10	10	18	CT L16OOOO(-NB)	2	BFTX0410T8R	TRX08
L1212-16	★	12	12	120	12	12	18		1		
L1616-16	★	16	16	120	16	16	18		1		

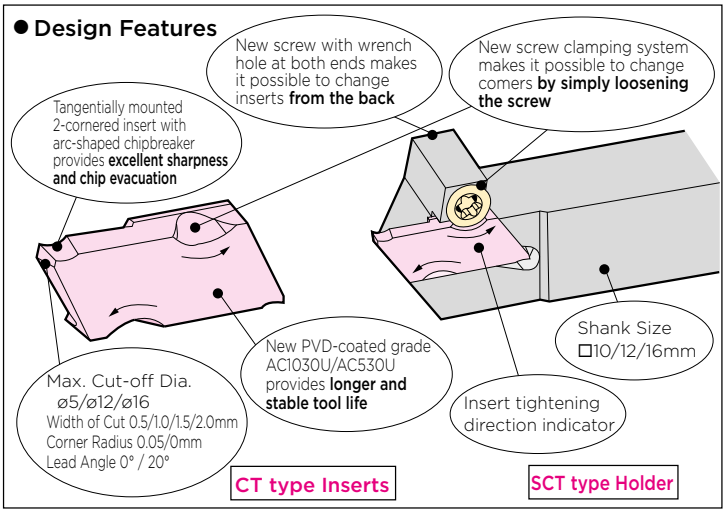
Features

★ **Simple Indexable Inserts**
New clamping system makes it possible to change corners simply by loosening the screw from the back

★ **High Quality Surface Finish**
Excellent chip removal, leaves only a small pip at centre of the work face.

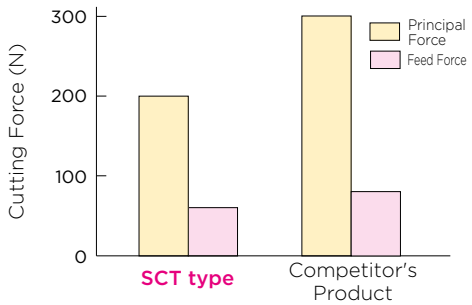
★ **Long, Stable Tool Life**
PVD Coating
Long, stable tool life with AC1030U/AC530U

● **Design Features**



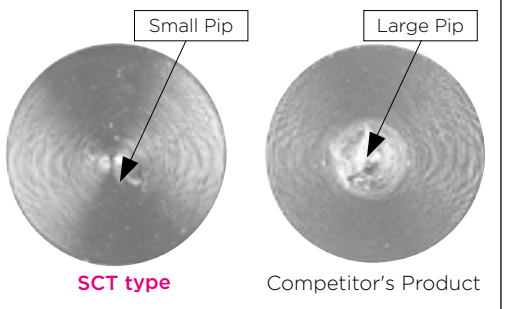
Cutting Performance

● **Cutting Force**



Work Material: C45 (ø10mm) Width of Cut: 1.5mm
vc = 60m/min, f = 0.06mm/rev Wet

● **Surface Finish**



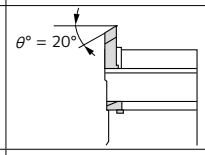
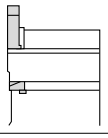
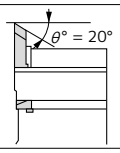
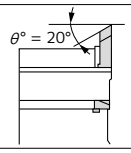
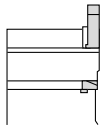
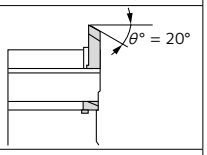
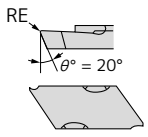
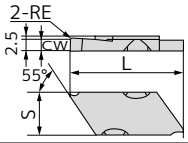
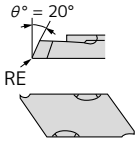
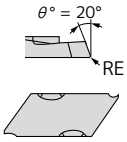
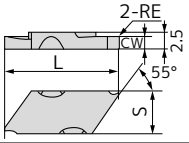
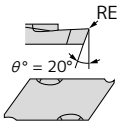
Work Material: X6Cr17 (ø8mm) Width of Cut: 1.0mm (Handed)
vc = 45m/min, f = 0.02mm/rev Wet

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SCT type

Insert Mounting Status and Dimensions (Figure shows insert with chipbreaker)

Holder Feed Direction	For Right-handed Holder (SCTR)			For Left-handed Holder (SCTL)		
Insert Cat. No.	CTR○○R	CTR○○N	CTR○○L	CTL○○R	CTL○○N	CTL○○L
Holder Mounting Status						
Insert Shape and Dimensions						

Insert (For Right-handed Holders) (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U			AC530U			Max. Cut-off Dia.	Width of Cut	Corner Radius	Overall Length	Thickness	Chipbreaker	Applicable Holder
	R	N	L	R	N	L		CW	RE	L	S		
CTR 050505 R/N/L	★	★	★	★	★	★	**5**	**0.5**	0.05	19	7	Yes	SCT R1010 SCT R1212 SCT R1616
050500 R/N/L	★	★		★	★		**5**	**0.5**	0	19	7	Yes	
CTR 121005 R/N/L	★	★	★	★	★	★	**12**	**1.0**	0.05	19	7	Yes	
121505 R/N/L	★	★	★	★	★	★	**12**	**1.5**	0.05	19	7	Yes	
122005 R/N/L	★	★		★	★		**12**	**2.0**	0.05	19	7	Yes	
121000 R/N/L	★	★		★	★		**12**	**1.0**	0	19	7	Yes	
121500 R/N/L	★	★		★	★		**12**	**1.5**	0	19	7	Yes	
122000 R/N/L	★	★		★	★		**12**	**2.0**	0	19	7	Yes	
CTR 161005 R/N/L							**16**	**1.0**	0.05	23.1	8.3	Yes	SCT R1010-16 SCT R1212-16 SCT R1616-16
161505 R/N/L	★	★		★	★		**16**	**1.5**	0.05	23.1	8.3	Yes	
162005 R/N/L	★	★	★	★	★	★	**16**	**2.0**	0.05	23.1	8.3	Yes	
161000 R/N/L							**16**	**1.0**	0	23.1	8.3	Yes	
161500 R/N/L	★	★		★	★		**16**	**1.5**	0	23.1	8.3	Yes	
162000 R/N/L	★	★	★	★	★	★	**16**	**2.0**	0	23.1	8.3	Yes	
CTR 050500 R/N/L-NB							**5**	**0.5**	0	19	7	No	SCT R1010 SCT R1212 SCT R1616
CTR 121000 R/N/L-NB	★			★			**12**	**1.0**	0	19	7	No	
121500 R/N/L-NB	★			★			**12**	**1.5**	0	19	7	No	
122000 R/N/L-NB	★			★			**12**	**2.0**	0	19	7	No	
CTR 161000 R/N/L-NB							**16**	**1.0**	0	23.1	8.3	No	SCT R1010-16 SCT R1212-16 SCT R1616-16
161500 R/N/L-NB							**16**	**1.5**	0	23.1	8.3	No	
162000 R/N/L-NB	★			★			**16**	**2.0**	0	23.1	8.3	No	

Insert (For Left-handed Holders) (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U			AC530U			Max. Cut-off Dia.	Width of Cut	Corner Radius	Overall Length	Thickness	Chipbreaker	Applicable Holder
	R	N	L	R	N	L		CW	RE	L	S		
CTL 050505 R/N/L	★	★		★	★		**5**	**0.5**	0.05	19	7	Yes	SCT L1010 SCT L1212 SCT L1616
050500 R/N/L	★	★		★	★		**5**	**0.5**	0	19	7	Yes	
CTL 121005 R/N/L	★	★	★	★	★	★	**12**	**1.0**	0.05	19	7	Yes	
121505 R/N/L	★	★	★	★	★	★	**12**	**1.5**	0.05	19	7	Yes	
122005 R/N/L	★	★		★	★		**12**	**2.0**	0.05	19	7	Yes	
121000 R/N/L	★	★		★	★		**12**	**1.0**	0	19	7	Yes	
121500 R/N/L	★	★		★	★		**12**	**1.5**	0	19	7	Yes	
122000 R/N/L	★	★		★	★		**12**	**2.0**	0	19	7	Yes	
CTL 161005 R/N/L							**16**	**1.0**	0.05	23.1	8.3	Yes	SCT L1010-16 SCT L1212-16 SCT L1616-16
161505 R/N/L	★	★		★	★		**16**	**1.5**	0.05	23.1	8.3	Yes	
162005 R/N/L	★	★	★	★	★	★	**16**	**2.0**	0.05	23.1	8.3	Yes	
161000 R/N/L							**16**	**1.0**	0	23.1	8.3	Yes	
161500 R/N/L	★	★		★	★		**16**	**1.5**	0	23.1	8.3	Yes	
162000 R/N/L	★	★		★	★		**16**	**2.0**	0	23.1	8.3	Yes	
CTL 050500 R/N/L-NB							**5**	**0.5**	0	19	7	No	SCT L1010 SCT L1212 SCT L1616
CTL 121000 R/N/L-NB							**12**	**1.0**	0	19	7	No	
121500 R/N/L-NB							**12**	**1.5**	0	19	7	No	
122000 R/N/L-NB							**12**	**2.0**	0	19	7	No	
CTL 161000 R/N/L-NB							**16**	**1.0**	0	23.1	8.3	No	SCT L1010-16 SCT L1212-16 SCT L1616-16
161500 R/N/L-NB							**16**	**1.5**	0	23.1	8.3	No	
162000 R/N/L-NB							**16**	**2.0**	0	23.1	8.3	No	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

GNDM type / GNDL type

Cut-off | Zero Offset

SumiSmall

GNDM

Cut-off (For Small Lathes)

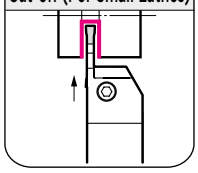


Fig 1

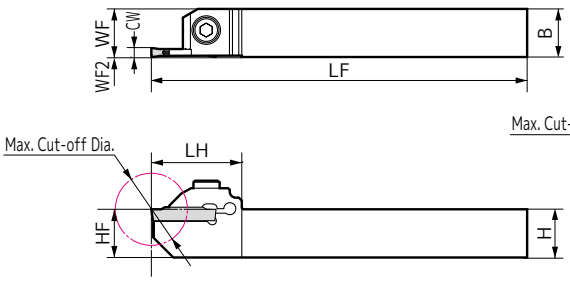


Fig 2

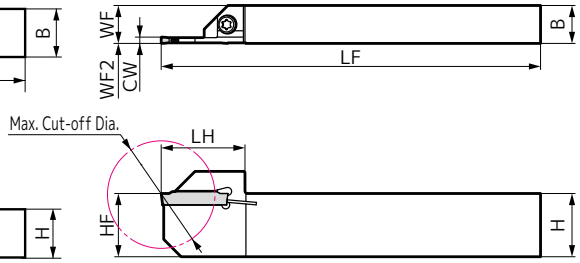


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Offset WF2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw (BX0515 / BFTX0414)	N·m	Wrench (LT15-10 / LH040)
GNDM R/L1616JX-1.2508	★	★	16	16	120	(16)	16	26	0	**1.25**	**16**	GCM N125005-GF	1			
R/L1616JX-1.510	★	★	16	16	120	(16)	16	26	0	**1.50**	**20**	GCM N150005-GF	1			
R/L1616JX-212	★	★	16	16	120	(16)	16	30	0	**2.00**	**24**	GC□ □20○○-□□	1	BX0515	**4.0**	LH040
R/L1616JX-312	★	★	16	16	120	(16)	16	30	0	**3.00**	**24**	GC□ □30○○-□□	1			
GNDM R/L2012JX-217	★	★	20	12	120	(12)	20	26.5	0	**2.00**	**34**	GC□ □20○○-□□	2			
R/L2012JX-317	★	★	20	12	120	(12)	20	26.5	0	**3.00**	**34**	GC□ □30○○-□□	2	BFTX0414	**3.0**	LT15-10

Select holders and inserts with matching width of cut (CW).
Refer to page F101 for applicable inserts.

Cut-off | Zero Offset

SumiSmall

GNDL

Cut-off (For Small Lathes)

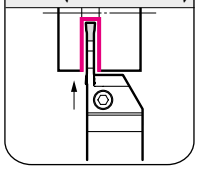


Fig 1

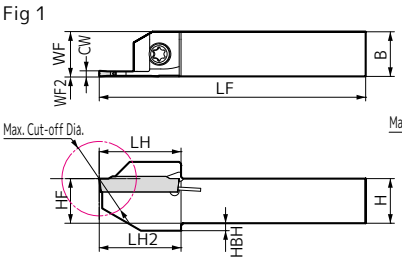


Fig 2

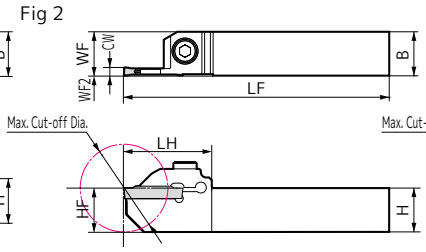


Fig 3

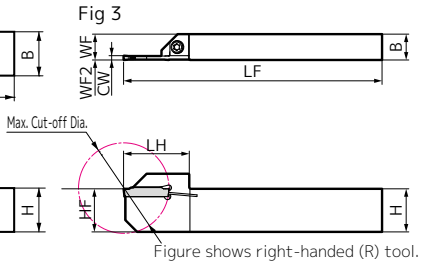


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Head LH	Head LH2	Offset WF2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw / Cap Screw (BFTX0412N BFTX0414 / BX0515)	N·m	Wrench (LT15-10 / LH040)
GNDL R/L1010JX-1.2510	★	★	10	10	120	(10)	10	2.0	18	18.3	0	**1.25**	**20**	GCM N125005-GF	1			
R/L1010JX-1.510	★	★	10	10	120	(10)	10	2.0	18	18.3	0	**1.50**	**20**	GCM N150005-GF	1			
R/L1010JX-210	★	★	10	10	120	(10)	10	2.0	22	22.3	0	**2.00**	**20**	GC□ □20○○-□□	1	BFTX0412N	**3.0**	LT15-10
R/L1010JX-310	★	★	10	10	120	(10)	10	2.0	22	22.3	0	**3.00**	**20**	GC□ □30○○-□□	1			
GNDL R/L1212JX-1.2512	★	★	12	12	120	(12)	12	2.0	19	19.3	0	**1.25**	**24**	GCM N125005-GF	1			
R/L1212JX-1.512	★	★	12	12	120	(12)	12	2.0	19	19.3	0	**1.50**	**24**	GCM N150005-GF	1			
R/L1212JX-212.5	★	★	12	12	120	(12)	12	2.0	22	22.3	0	**2.00**	**25**	GC□ □20○○-□□	1	BFTX0412N	**3.0**	LT15-10
R/L1212JX-312.5	★	★	12	12	120	(12)	12	2.0	22	22.3	0	**3.00**	**25**	GC□ □30○○-□□	1			
GNDL R/L1616JX-1.2512.5	★	★	16	16	120	(16)	16	—	28	—	0	**1.25**	**20**	GCM N125005-GF	2			
R/L1616JX-1.512.5	★	★	16	16	120	(16)	16	—	28	—	0	**1.50**	**25**	GCM N150005-GF	2			
R/L1616JX-216	★	★	16	16	120	(16)	16	—	32	—	0	**2.00**	**32**	GC□ □20○○-□□	2	BX0515	**4.0**	LH040
R/L1616JX-316	★	★	16	16	120	(16)	16	—	32	—	0	**3.00**	**32**	GC□ □30○○-□□	2			
GNDL R/L2012JX-221	★	★	20	12	120	(12)	20	—	30.5	—	0	**2.00**	**42**	GC□ □20○○-□□	3			
R/L2012JX-321	★	★	20	12	120	(12)	20	—	30.5	—	0	**3.00**	**42**	GC□ □30○○-□□	3	BFTX0414	**3.0**	LT15-10

Select holders and inserts with matching width of cut (CW).
Refer to page F101 for applicable inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM type / GNDL type

Inserts for GNDM type (For Small Lathes)/GNDL type (For Small Lathes)

(Coated Carbide/ Cermet / Cemented Carbide / DLC)

Fig 1

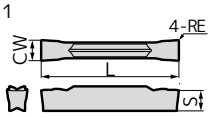
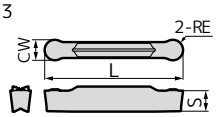


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★		—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG	★	★	▲	★	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-ML	—	—	—	—	★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML	★	★		★	★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	AC9125T	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
											Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★			—	2.0	±0.03	0.2	21.1	3.6	5	1
GCM N3002-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL		★	▲		★	★	★	★		—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★		—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★		—	3.0	±0.03	0.4	21.1	3.8		1
GCM N125005-GF	—	—	—	—	—	—	—	★		—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★		—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★		★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	★	3.0	±0.03	0.4	21.1	3.8		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6	5	2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500						CW		RE	L	S	Fig
									Cutting Width	Tolerance				
GCG N2002 GA	★	★							2.0	±0.025	0.2	21.1	3.6	3
N3002 GA	★	★							3.0	±0.025	0.2	21.1	3.8	
GCM N2010 P			★						2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★						3.0	±0.025	1.5	22.4	3.8	
N4020 P			★						4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF									3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF									4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★						3.0	±0.025	0.4	21.1	3.8	1
N40040 N									4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

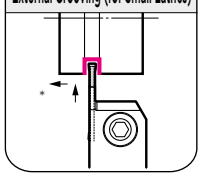
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(N·m) Recommended Tightening Torque (N·m)

GNDM-J type / GNDL-J type

GNDM-J

External Grooving (for Small Lathes)



External
Zero Offset
Internal Coolant

Fig 1

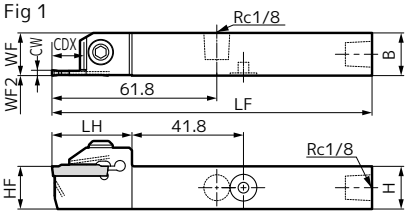
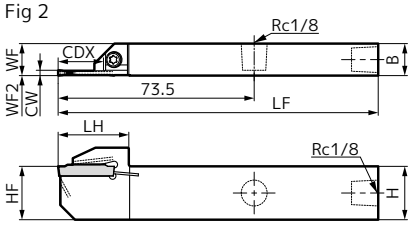


Fig 2

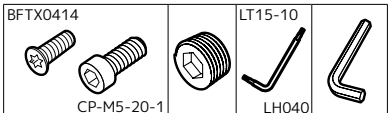


SumiSmall

Figure shows right-handed (R) tool.

*For traverse cutting (groove expansion).

Parts



Holder

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Offset WF2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw / Cap Screw	N·m	Plug	Top Hex Wrench	Bottom Hex Wrench
GNDM R/L1616JX-212J	★	★	16	16	120	(16)	16	30.0	0	**2.0**	**24**	GC□ □20○○-□□	1	CP-M5-20-1	**5.0**	XP02	LH040	LH025
R/L1616JX-312J	★	★	16	16	120	(16)	16	30.0	0	**3.0**	**24**	GC□ □30○○-□□	1					
GNDM R/L2012JX-217J	★	★	20	12	120	(12)	20	26.5	0	**2.0**	**34**	GC□ □20○○-□□	2	BFTX0414	**3.0**	XP02	LT15-10	—
R/L2012JX-317J	★	★	20	12	120	(12)	20	26.5	0	**3.0**	**34**	GC□ □30○○-□□	2					

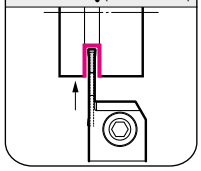
Select holders and inserts with matching width of cut (CW). Refer to page F103 for applicable inserts.

Indexable Heads ☞ D20

SumiSmall

GNDL-J

External Grooving (for Small Lathes)



External
Zero Offset
Internal Coolant

Fig 1

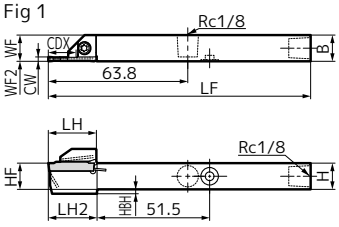


Fig 2

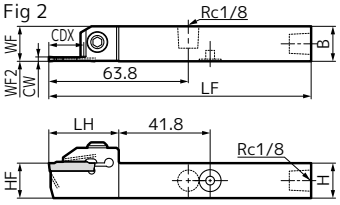


Fig 3

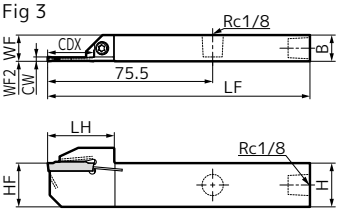
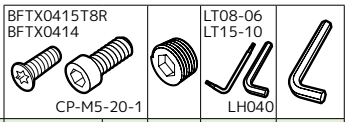


Figure shows right-handed (R) tool.

Parts



Holder

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Head LH	Head LH2	Offset WF2	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw / Cap Screw	N·m	Plug	Top Hex Wrench	Bottom Hex Wrench
GNDL R/L1212JX-212.5J	★	★	12	12	120	(12)	12	2.0	22.0	22.3	0	**2.0**	**25**	GC□ □20○○-□□	1	BFTX0415T8R	**1.5**	XP02	LT08-06	←
R/L1212JX-312.5J	★	★	12	12	120	(12)	12	2.0	22.0	22.3	0	**3.0**	**25**	GC□ □30○○-□□	1					
GNDL R/L1616JX-216J	★	★	16	16	120	(16)	16	—	32.0	—	0	**2.0**	**32**	GC□ □20○○-□□	2	CP-M5-20-1	**5.0**	XP02	LH040	LH025
R/L1616JX-316J	★	★	16	16	120	(16)	16	—	32.0	—	0	**3.0**	**32**	GC□ □30○○-□□	2					
GNDL R/L2012JX-221J	★	★	20	12	120	(12)	20	—	30.5	—	0	**2.0**	**42**	GC□ □20○○-□□	3	BFTX0414	**3.0**	XP02	LT15-10	—
R/L2012JX-321J	★	★	20	12	120	(12)	20	—	30.5	—	0	**3.0**	**42**	GC□ □30○○-□□	3					

Select holders and inserts with matching width of cut (CW). Refer to page F103 for applicable inserts.

Indexable Heads ☞ D20

Fig 1

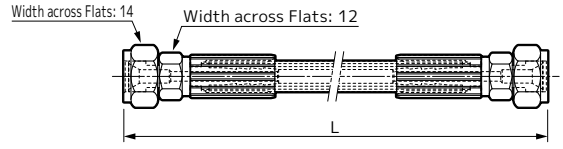


Fig 1

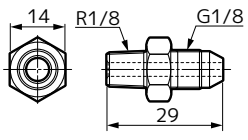
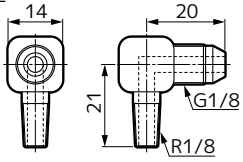


Fig 2



Parts (Hose)

Dimensions (mm)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors ☞ F25

Parts (Connector)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

Connectors are sold separately.

Piping Method for Hoses and Connectors ☞ F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM-J type / GNDL-J type

Inserts for GNDM-J type (For Small Lathes)/GNDL-J type (For Small Lathes)

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

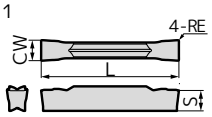
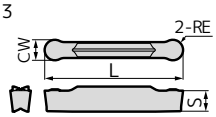


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6	5	1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6	5	2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	3
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDS type

External

* For traverse cutting (groove expansion), use a multi-functional or profiling insert.

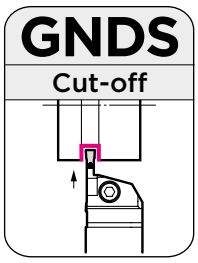


Fig 1

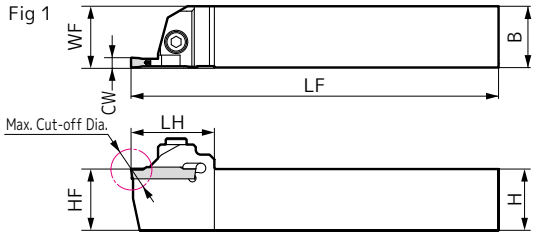


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	N·m	Wrench
GNDS R/L2020K-206	★	★	20	20	125	20	20	30	**2.0**	**12**	GC□ □20○○-□□	1			
R/L2020K-306	★	★	20	20	125	20	20	30	**3.0**	**12**	GC□ □30○○-□□	1			
R/L2020K-410	★	★	20	20	125	20	20	34	**4.0**	**20**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-510	★	★	20	20	125	20	20	34	**5.0**	**20**	GC□ N50○○-□□	1			
R/L2020K-610	★	★	20	20	125	20	20	34	**6.0**	**20**	GC□ N60○○-□□	1			
GNDS R/L2525M-206	★	★	25	25	150	25	25	30	**2.0**	**12**	GC□ □20○○-□□	1			
R/L2525M-306	★	★	25	25	150	25	25	30	**3.0**	**12**	GC□ □30○○-□□	1			
R/L2525M-410	★	★	25	25	150	25	25	34	**4.0**	**20**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-510	★	★	25	25	150	25	25	34	**5.0**	**20**	GC□ N50○○-□□	1			
R/L2525M-610	★	★	25	25	150	25	25	34	**6.0**	**20**	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW). Refer to page F105 for applicable inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDS type

Inserts for GNDS type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

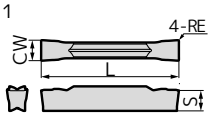
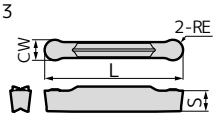


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500						CW		RE	L	S	Fig.
									Cutting Width	Tolerance				
GCG N2002 GA	★	★							2.0	±0.025	0.2	21.1	3.6	3
N3002 GA	★	★							3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★							4.0	±0.025	0.4	26.4	4.0	3
N5004-GA	★	★							5.0	±0.025	0.4	26.4	4.1	
N6004-GA	★	★							6.0	±0.025	0.4	26.4	4.5	
GCM N2010 P			★						2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★						3.0	±0.025	1.5	22.4	3.8	
N4020 P			★						4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF									3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF									4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★						3.0	±0.025	0.4	21.1	3.8	1
N40040 N									4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDM type

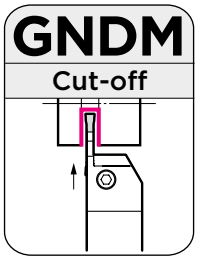


Fig 1

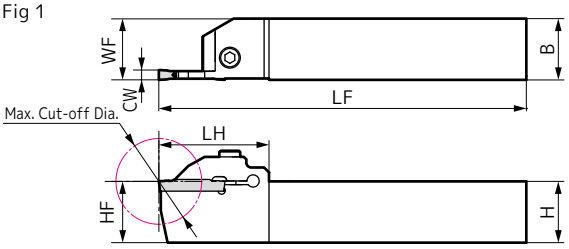


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Flat Head Screw (BX0520 / BX0620)	Flat Head Screw N·m	Wrench
GNDM R/L2020K-1.2510	★	★	20	20	125	20	20	34.0	**1.25**	**20**	GCM N125005-GF	1			
R/L2020K-1.510	★	★	20	20	125	20	20	34.0	**1.50**	**20**	GCM N150005-GF	1			
R/L2020K-210	★	★	20	20	125	20	20	33.6	**2.00**	**20**	GC□ □20○○-□□	1			
R/L2020K-312	★	★	20	20	125	20	20	36.6	**3.00**	**24**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-418	★	★	20	20	125	20	20	45.0	**4.00**	**36**	GC□ □40○○-□□	1			
R/L2020K-518	★	★	20	20	125	20	20	45.0	**5.00**	**36**	GC□ N50○○-□□	1			
R/L2020K-618	★	★	20	20	125	20	20	45.0	**6.00**	**36**	GC□ N60○○-□□	1			
GNDM R/L2525M-1.2510	★	★	25	25	150	25	25	36.0	**1.25**	**20**	GCM N125005-GF	1			
R/L2525M-1.510	★	★	25	25	150	25	25	36.0	**1.50**	**20**	GCM N150005-GF	1			
R/L2525M-210	★	★	25	25	150	25	25	33.6	**2.00**	**20**	GC□ □20○○-□□	1			
R/L2525M-312	★	★	25	25	150	25	25	36.6	**3.00**	**24**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-418	★	★	25	25	150	25	25	45.0	**4.00**	**36**	GC□ □40○○-□□	1			
R/L2525M-518	★	★	25	25	150	25	25	45.0	**5.00**	**36**	GC□ N50○○-□□	1			
R/L2525M-618	★	★	25	25	150	25	25	45.0	**6.00**	**36**	GC□ N60○○-□□	1			
GNDM R/L3225P-312			32	25	170	25	32	36.6	**3.00**	**24**	GC□ □30○○-□□	1			
R/L3225P-418			32	25	170	25	32	45.0	**4.00**	**36**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L3225P-518			32	25	170	25	32	45.0	**5.00**	**36**	GC□ N50○○-□□	1			
R/L3225P-618			32	25	170	25	32	45.0	**6.00**	**36**	GC□ N60○○-□□	1			
R/L3225P-718			32	25	170	25	32	50.0	**7.00**	**36**	GCM N70○○-□□	1	BX0620	**6.0**	LH050
R/L3225P-818			32	25	170	25	32	50.0	**8.00**	**36**	GCM N80○○-□□	1			
GNDM R/L3232P-312	★	★	32	32	170	32	32	36.6	**3.00**	**24**	GC□ □30○○-□□	1			
R/L3232P-418	★	★	32	32	170	32	32	45.0	**4.00**	**36**	GC□ □40○○-□□	1			
R/L3232P-518	★	★	32	32	170	32	32	45.0	**5.00**	**36**	GC□ N50○○-□□	1	BX0620	**6.0**	LH050
R/L3232P-618	★	★	32	32	170	32	32	45.0	**6.00**	**36**	GC□ N60○○-□□	1			
R/L3232P-718	★	★	32	32	170	32	32	50.0	**7.00**	**36**	GCM N70○○-□□	1			
R/L3232P-818	★	★	32	32	170	32	32	50.0	**8.00**	**36**	GCM N80○○-□□	1			

Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm.
Refer to page F107 for applicable inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM type

Inserts for GNDM type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

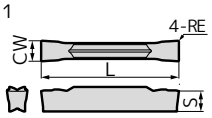
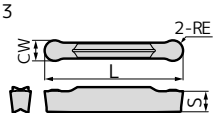


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-MG	★	★		★	★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-MG	★	★		★	★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-MG	★	★		★	★	★		★	—	7.0	±0.04	0.4	28.8	5.5		1
N7008-MG	★	★	▲	★	★	★	★	★	—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-MG	★	★		★	★	★		★	—	8.0	±0.04	0.4	28.8	6.0		1
N8008-MG	★	★	▲	★	★	★	★	★	—	8.0	±0.04	0.8	28.8	6.0		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-ML	★	★	▲	★	★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
N7008-ML	★	★		★	★	★		★	—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-ML	★	★	▲	★	★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1
N8008-ML	★	★		★	★	★		★	—	8.0	±0.04	0.8	28.8	6.0		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.										Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GG		★	▲		★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GG		★	▲		★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GL		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GL		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GL		★	▲		★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GL		★	▲		★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1
GCM N125005-GF	—	—	—	—	—	—	—	★	—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★	—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GF		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GF		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7002-GF		★	▲		★	★	★	★	—	7.0	±0.04	0.2	28.8	5.5		1
N7004-GF		★	▲		★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8002-GF		★	▲		★	★	★	★	—	8.0	±0.04	0.2	28.8	6.0		1
N8004-GF		★	▲		★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500						CW		RE	L	S	Fig.
									Cutting Width	Toler-ance				
GCG N2002 GA	★	★							2.0	±0.025	0.2	21.1	3.6	3
N3002 GA	★	★							3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★							4.0	±0.025	0.4	26.4	4.0	3
N5004-GA	★	★							5.0	±0.025	0.4	26.4	4.1	
N6004-GA	★	★							6.0	±0.025	0.4	26.4	4.5	
GCM N2010 P			★						2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★						3.0	±0.025	1.5	22.4	3.8	
N4020 P			★						4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF									3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF									4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★						3.0	±0.025	0.4	21.1	3.8	1
N40040 N									4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

Blank: Made-to-order item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

N·m Recommended Tightening Torque (N·m)

GNDM-J type

Cut-off | Internal Coolant

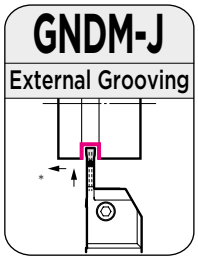
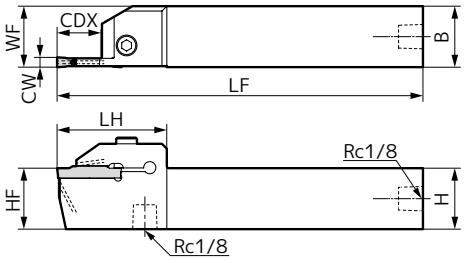


Fig 1



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	N·m	Plug	Wrench
GNDM R/L2020K-210J	★	★	20	20	125	20	20	33.6	**2.00**	**20**	GC□ □20○○-□□	1				
R/L2020K-312J	★	★	20	20	125	20	20	36.6	**3.00**	**24**	GC□ □30○○-□□	1				
R/L2020K-418J	★	★	20	20	125	20	20	45	**4.00**	**36**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2020K-518J	★	★	20	20	125	20	20	45	**5.00**	**36**	GC□ N50○○-□□	1				
R/L2020K-618J	★	★	20	20	125	20	20	45	**6.00**	**36**	GC□ N60○○-□□	1				
GNDM R/L2525K-210J	★	★	25	25	125	25	25	33.6	**2.00**	**20**	GC□ □20○○-□□	1				
R/L2525K-312J	★	★	25	25	125	25	25	36.6	**3.00**	**24**	GC□ □30○○-□□	1				
R/L2525K-418J	★	★	25	25	125	25	25	45	**4.00**	**36**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2525K-518J	★	★	25	25	125	25	25	45	**5.00**	**36**	GC□ N50○○-□□	1				
R/L2525K-618J	★	★	25	25	125	25	25	45	**6.00**	**36**	GC□ N60○○-□□	1				

Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm. Refer to page F109 for applicable inserts.

Fig 1

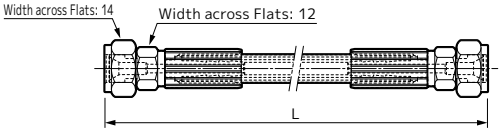


Fig 1

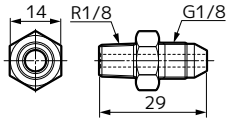
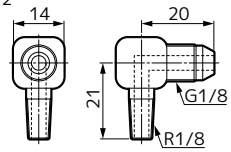


Fig 2



Parts (Hose)

Dimensions (mm)

ISO Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors F25

Parts (Connector)

Dimensions (mm)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

Connectors are sold separately.

Piping Method for Hoses and Connectors F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM-J/JE type

Inserts for GNDM-J/JE type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

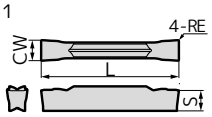
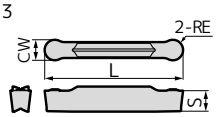


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML	★	★		★	★	★		★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500						CW		RE	L	S	Fig.
									Cutting Width	Tolerance				
GCG N2002 GA	★	★							2.0	± 0.025	0.2	21.1	3.6	3
N3002 GA	★	★							3.0	± 0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★							4.0	± 0.025	0.4	26.4	4.0	3
N5004-GA	★	★							5.0	± 0.025	0.4	26.4	4.1	
N6004-GA	★	★							6.0	± 0.025	0.4	26.4	4.5	
GCM N2010 P			★						2.0	± 0.025	1.0	21.7	3.6	2
N3015 P			★						3.0	± 0.025	1.5	22.4	3.8	
N4020 P			★						4.0	± 0.025	2.0	28.0	4.0	
GCM N3015 PLF									3.0	± 0.025	1.5	22.4	3.8	2
N4020 PLF									4.0	± 0.025	2.0	28.0	4.0	
GCM N30040 N			★						3.0	± 0.025	0.4	21.1	3.8	1
N40040 N									4.0	± 0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

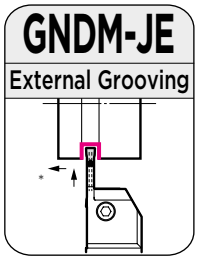
Blank: Made-to-order item

— mark: Not available

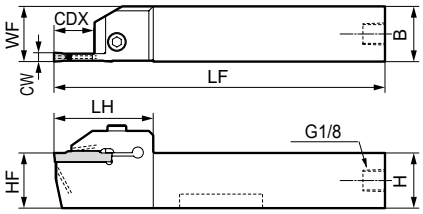
(N·m) Recommended Tightening Torque (N·m)

GNDM-JE type

Cut-off | Internal Coolant

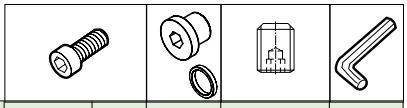


Use for multi-purpose or profiling insert for turning (wide grooves).



Above figures show right hand tools.

Spare Parts



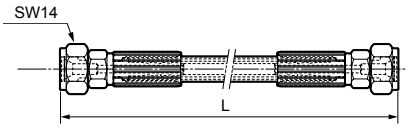
Holders

Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Groov. Depth (mm)	Max. Cutt-Off Dia (mm)	Applicable Insert	Cap Screw	N·m	Plug and Sealing	Grub Screw*	Wrench
	R	L	H	B	LF	WF	HF	LH	CW	CDX							
GNDM R/L 2020 X 210 JE	★	★	20	20	100	20	20	33,6	2,00	10	20	GC□ □20○○-□□	BX0520	**6.0**	XP02-E	BT0505-E	LH040
GNDM R/L 2020 X 312 JE	★	★	20	20	100	20	20	36,6	3,00	12	24	GC□ □30○○-□□					
GNDM R/L 2020 X 418 JE	★	★	20	20	110	20	20	45,0	4,00	18	36	GC□ □40○○-□□					
GNDM R/L 2020 X 518 JE	★	★	20	20	110	20	20	45,0	5,00	18	36	GC□ N50○○-□□					
GNDM R/L 2020 X 618 JE	★	★	20	20	110	20	20	45,0	6,00	18	36	GC□ N60○○-□□					
GNDM R/L 2525 X 210 JE	★	★	25	25	100	25	25	33,6	2,00	10	20	GC□ □20○○-□□					
GNDM R/L 2525 X 312 JE	★	★	25	25	100	25	25	36,6	3,00	12	24	GC□ □30○○-□□					
GNDM R/L 2525 X 418 JE	★	★	25	25	110	25	25	45,0	4,00	18	36	GC□ □40○○-□□					
GNDM R/L 2525 X 518 JE	★	★	25	25	110	25	25	45,0	5,00	18	36	GC□ N50○○-□□					
GNDM R/L 2525 X 618 JE	★	★	25	25	110	25	25	45,0	6,00	18	36	GC□ N60○○-□□					

Select holders and inserts with the same grooving width (CW).

*Grub screws are sold separately (M5x5)

Fig. 1



Parts (Hose)

Cat. No.	Stock	L (mm)	Screw Standard	Screw Standard	Fig.
J-HOSE-G1/8-G1/8-200-E	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300-E	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors ☞F25

Fig. 1

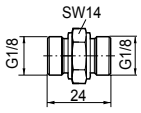


Fig. 2

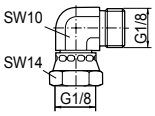
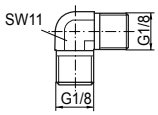


Fig. 3



Parts (Connector)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig.
J-G1/8-G1/8-00-E	★	G1/8	G1/8	1
J-G1/8-G1/8F-90-E	★	G1/8	G1/8	2
J-G1/8-G1/8-90-E	★	G1/8	G1/8	3

Connectors are sold separately.

Piping Method for Hoses and Connectors ☞F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDM-J/JE type

Inserts for GNDM-J/JE type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

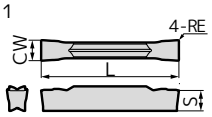
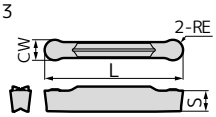


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML	★	★		★	★	★		★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	3
GCG N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	3
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	3
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	3
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	3
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	2
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	2
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	2
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	1

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDL type

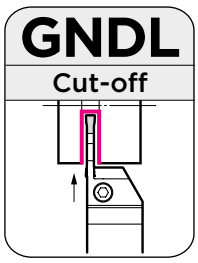


Fig 1

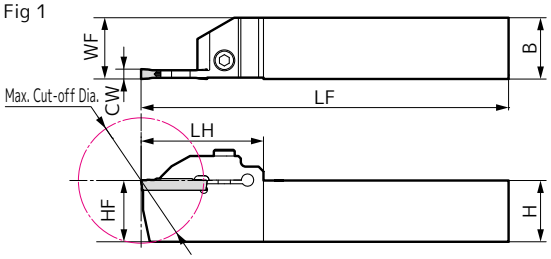


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw BX0520 / BX0620	Cap Screw N·m	Wrench
GNDL R/L2020K-1.2516	★	★	20	20	125	20	20	38.0	**1.25**	**32**	GCM N125005-GF	1			
R/L2020K-1.516	★	★	20	20	125	20	20	38.0	**1.50**	**32**	GCM N150005-GF	1			
R/L2020K-220	★	★	20	20	125	20	20	44.5	**2.00**	**40**	GC□ □20○○-□□	1			
R/L2020K-320	★	★	20	20	125	20	20	44.5	**3.00**	**40**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2020K-425	★	★	20	20	125	20	20	50.0	**4.00**	**50**	GC□ □40○○-□□	1			
R/L2020K-525	★	★	20	20	125	20	20	50.0	**5.00**	**50**	GC□ N50○○-□□	1			
R/L2020K-625	★	★	20	20	125	20	20	50.0	**6.00**	**50**	GC□ N60○○-□□	1			
GNDL R/L2525M-1.2516	★	★	25	25	150	25	25	40.0	**1.25**	**32**	GCM N125005-GF	1			
R/L2525M-1.516	★	★	25	25	150	25	25	40.0	**1.50**	**32**	GCM N150005-GF	1			
R/L2525M-220	★	★	25	25	150	25	25	44.5	**2.00**	**40**	GC□ □20○○-□□	1			
R/L2525M-320	★	★	25	25	150	25	25	44.5	**3.00**	**40**	GC□ □30○○-□□	1	BX0520	**5.0**	LH040
R/L2525M-425	★	★	25	25	150	25	25	50.0	**4.00**	**50**	GC□ □40○○-□□	1			
R/L2525M-525	★	★	25	25	150	25	25	50.0	**5.00**	**50**	GC□ N50○○-□□	1			
R/L2525M-625	★	★	25	25	150	25	25	50.0	**6.00**	**50**	GC□ N60○○-□□	1			
GNDL R/L3225P-320			32	25	170	25	32	44.5	**3.00**	**40**	GC□ □30○○-□□	1			
R/L3225P-425			32	25	170	25	32	50.0	**4.00**	**50**	GC□ □40○○-□□	1	BX0520	**5.0**	LH040
R/L3225P-525			32	25	170	25	32	50.0	**5.00**	**50**	GC□ N50○○-□□	1			
R/L3225P-625			32	25	170	25	32	50.0	**6.00**	**50**	GC□ N60○○-□□	1			
R/L3225P-725			32	25	170	25	32	50.0	**7.00**	**50**	GCM N70○○-□□	1	BX0620	**6.0**	LH050
R/L3225P-825			32	25	170	25	32	50.0	**8.00**	**50**	GCM N80○○-□□	1			
GNDL R/L3232P-320	★	★	32	32	170	32	32	44.5	**3.00**	**40**	GC□ □30○○-□□	1			
R/L3232P-425	★	★	32	32	170	32	32	50.0	**4.00**	**50**	GC□ □40○○-□□	1			
R/L3232P-525	★	★	32	32	170	32	32	50.0	**5.00**	**50**	GC□ N50○○-□□	1	BX0620	**6.0**	LH050
R/L3232P-625	★	★	32	32	170	32	32	50.0	**6.00**	**50**	GC□ N60○○-□□	1			
R/L3232P-725	★	★	32	32	170	32	32	50.0	**7.00**	**50**	GCM N70○○-□□	1			
R/L3232P-825	★	★	32	32	170	32	32	50.0	**8.00**	**50**	GCM N80○○-□□	1			

Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm.
Refer to page F113 for applicable inserts.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDL type

Inserts for GNDL type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

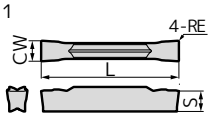
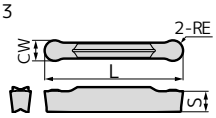


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-MG	★	★		★	★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-MG	★	★		★	★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-MG	★	★		★	★	★		★	—	7.0	±0.04	0.4	28.8	5.5		1
N7008-MG	★	★	▲	★	★	★	★	★	—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-MG	★	★		★	★	★		★	—	8.0	±0.04	0.4	28.8	6.0		1
N8008-MG	★	★	▲	★	★	★	★	★	—	8.0	±0.04	0.8	28.8	6.0		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-ML	★	★	▲	★	★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
N7008-ML	★	★		★	★	★		★	—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-ML	★	★	▲	★	★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1
N8008-ML	★	★		★	★	★		★	—	8.0	±0.04	0.8	28.8	6.0		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.										Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GG		★	▲		★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GG		★	▲		★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GL		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GL		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7004-GL		★	▲		★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GL		★	▲		★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1
GCM N125005-GF	—	—	—	—	—	—	—	★	—	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	—	—	—	—	—	—	—	★	—	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★		3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GF		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1	5	1
GCM N6002-GF		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N7002-GF		★	▲		★	★	★	★	—	7.0	±0.04	0.2	28.8	5.5		1
N7004-GF		★	▲		★	★	★	★	—	7.0	±0.04	0.4	28.8	5.5		1
GCM N8002-GF		★	▲		★	★	★	★	—	8.0	±0.04	0.2	28.8	6.0		1
N8004-GF		★	▲		★	★	★	★	—	8.0	±0.04	0.4	28.8	6.0		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals

Dimensions (mm)

ISO Cat. No.	H10	DL1500							Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCG N2002-GA	★	★							2.0	±0.025	0.2	21.1	3.6		3
N3002-GA	★	★							3.0	±0.025	0.2	21.1	3.8		3
GCG N4004-GA	★	★							4.0	±0.025	0.4	26.4	4.0	5	3
N5004-GA	★	★							5.0	±0.025	0.4	26.4	4.1		3
N6004-GA	★	★							6.0	±0.025	0.4	26.4	4.5		3

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDL-J type

Cut-off | Internal Coolant

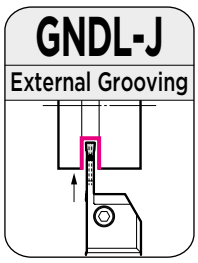


Fig 1

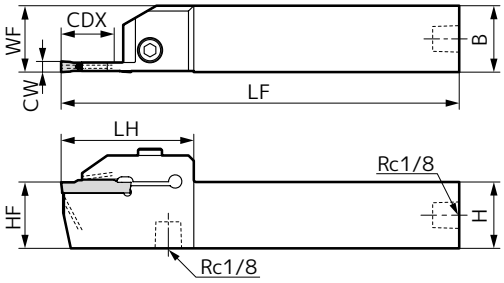


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Plug	Wrench
GNDL R/L2020K-220J	★	★	20	20	125	20	20	44.5	**2.00**	**40**	GC□ □20○○-□□	1				
R/L2020K-320J	★	★	20	20	125	20	20	44.5	**3.00**	**40**	GC□ □30○○-□□	1				
R/L2020K-425J	★	★	20	20	125	20	20	50	**4.00**	**50**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2020K-525J	★	★	20	20	125	20	20	50	**5.00**	**50**	GC□ N50○○-□□	1				
R/L2020K-625J	★	★	20	20	125	20	20	50	**6.00**	**50**	GC□ N60○○-□□	1				
GNDL R/L2525K-220J	★	★	25	25	125	25	25	44.5	**2.00**	**40**	GC□ □20○○-□□	1				
R/L2525K-320J	★	★	25	25	125	25	25	44.5	**3.00**	**40**	GC□ □30○○-□□	1				
R/L2525K-425J	★	★	25	25	125	25	25	50	**4.00**	**50**	GC□ □40○○-□□	1	BX0520	**6.0**	XP02	LH040
R/L2525K-525J	★	★	25	25	125	25	25	50	**5.00**	**50**	GC□ N50○○-□□	1				
R/L2525K-625J	★	★	25	25	125	25	25	50	**6.00**	**50**	GC□ N60○○-□□	1				

Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm. Refer to page F115 for applicable inserts.

Fig 1

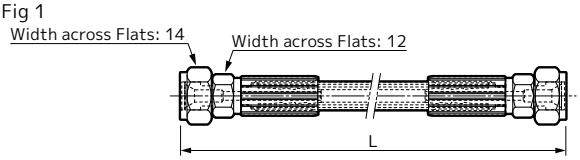


Fig 1

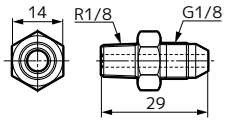
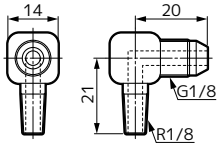


Fig 2



Parts (Hose)

Dimensions (mm)

ISO Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	★	300	G1/8	G1/8	1

Hoses are sold separately.

Piping Method for Hoses and Connectors F25

Parts (Connector)

Dimensions (mm)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	★	G1/8	R1/8	1
J-G1/8-R1/8-90	★	G1/8	R1/8	2

Connectors are sold separately.

Piping Method for Hoses and Connectors F25

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDL-J/JE type

Inserts for GNDL-J/JE type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

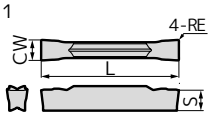
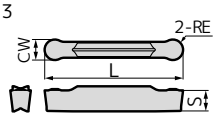


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	**4.0**	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	**4.0**	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★	—	**5.0**	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	**5.0**	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★	—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	**6.0**	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	**4.0**	±0.03	0.4	26.4	4.0		1
N4008-ML	★	★		★	★	★		★	★	**4.0**	±0.03	0.8	26.4	4.0	5	1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	**5.0**	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	**5.0**	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	**6.0**	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	**6.0**	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	**4.0**	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★	—	**5.0**	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★	—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	**6.0**	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★	—	**2.0**	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	**2.0**	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	**4.0**	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★	—	**5.0**	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★	—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	**6.0**	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	—	—	—	—	★	★		★	★	**2.0**	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	**2.0**	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	**3.0**	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	**4.0**	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	**4.0**	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★	—	**5.0**	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	**5.0**	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★	—	**6.0**	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	**6.0**	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	**2.0**	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	**2.0**	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	**3.0**	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05	★	▲	★	★	★	★	—	5°	**3.0**	±0.03	0.2	21.3	3.8		2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	**4.0**	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	**4.0**	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	**2.0**	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	**2.0**	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	**3.0**	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	**3.0**	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	**2.0**	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	**2.0**	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	**3.0**	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	**3.0**	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals

Dimensions (mm)

ISO Cat. No.	H10	DL1500							Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
									Width of Cut	Tolerance	RE	L	S		
GCG N2002-GA	★	★							**2.0**	±0.025	0.2	21.1	3.6		3
N3002-GA	★	★							**3.0**	±0.025	0.2	21.1	3.8		3
GCG N4004-GA	★	★							**4.0**	±0.025	0.4	26.4	4.0	5	3
N5004-GA	★	★							**5.0**	±0.025	0.4	26.4	4.1		3
N6004-GA	★	★							**6.0**	±0.025	0.4	26.4	4.5		3

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

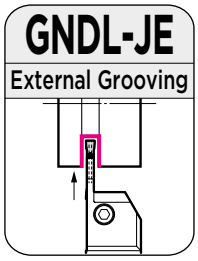
Blank: Made-to-order item

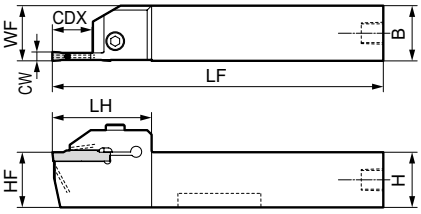
— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDL-JE type

Cut-off | Internal Coolant





Above figures show right hand tools.

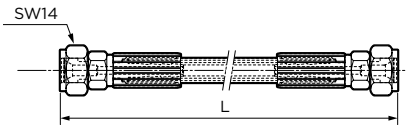
Holders

ISO Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Groov. Depth (mm)	Max. Cut-Off Dia (mm)	Applicable Insert	Cap Screw	N·m	Plug and Sealing	Grub Screw*	Wrench
	R	L	H	B	LF	WF	HF	LH	CW	CDX							
GNDL R/L 2020 X 220 JE	★	★	20	20	110	20	20	44,5	2,00	20	40	GC□ □20OO-□□	BX0520	**6.0**	XP02-E	BT0505-E	LH040
GNDL R/L 2020 X 320 JE	★	★	20	20	110	20	20	44,5	3,00	20	40	GC□ □30OO-□□					
GNDL R/L 2020 X 425 JE	★	★	20	20	115	20	20	50,0	4,00	25	50	GC□ □40OO-□□					
GNDL R/L 2020 X 525 JE	★	★	20	20	115	20	20	50,0	5,00	25	50	GC□ N50OO-□□					
GNDL R/L 2020 X 625 JE	★	★	20	20	115	20	20	50,0	6,00	25	50	GC□ N60OO-□□					
GNDL R/L 2525 X 220 JE	★	★	25	25	110	25	25	44,5	2,00	20	40	GC□ □20OO-□□					
GNDL R/L 2525 X 320 JE	★	★	25	25	110	25	25	44,5	3,00	20	40	GC□ □30OO-□□					
GNDL R/L 2525 X 425 JE	★	★	25	25	115	25	25	50,0	4,00	25	50	GC□ □40OO-□□					
GNDL R/L 2525 X 525 JE	★	★	25	25	115	25	25	50,0	5,00	25	50	GC□ N50OO-□□					
GNDL R/L 2525 X 625 JE	★	★	25	25	115	25	25	50,0	6,00	25	50	GC□ N60OO-□□					

Spare Parts

*Grub screws are sold separately (M5x5)

Fig. 1



Parts (Hose)

ISO Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200-E	★	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300-E	★	300	G1/8	G1/8	1

Hoses are sold separately.

Fig. 1

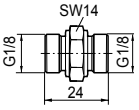


Fig. 2

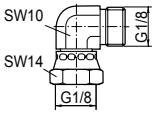
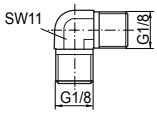


Fig. 3



Parts (Connector)

ISO Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-G1/8-00-E	★	G1/8	G1/8	1
J-G1/8-G1/8F-90-E	★	G1/8	G1/8	2
J-G1/8-G1/8-90-E	★	G1/8	G1/8	3

Connectors are sold separately.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDL-J/JE type

Inserts for GNDL-J/JE type

(Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

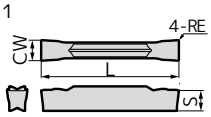
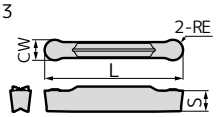


Fig 2 (Figure shows right-handed (R) tool.)



Fig 3



Grooving / Traverse Cutting

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N3002-MG	★	★		★	★	★		★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG	★	★	▲	★	★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	★	★		★	★	★		★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	★	★		★	★	★		★	—	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	★	★	▲	★	★	★	★	★	—	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG	★	★		★	★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG	★	★		★	★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	—	—	—	—	★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML	★	★	▲	★	★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML	★	★		★	★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML	★	★		★	★	★		★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-ML	★	★	▲	★	★	★	★	★	★	4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML	★	★		★	★	★		★	★	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML	★	★	▲	★	★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML	★	★		★	★	★		★	—	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML	★	★	▲	★	★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML	★	★		★	★	★		★	—	6.0	±0.03	0.8	26.4	4.5		1

Grooving / Cut-off

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
										Width of Cut	Tolerance	RE	L	S		
GCM N2002-GG		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		★	▲		★	★	★	★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG		★	▲		★	★	★	★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG		★	▲		★	★	★	★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG		★	▲		★	★	★	★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL		★	▲		★	★	★	★	—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		★			★	★		★	—	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		★	▲		★	★	★	★	—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL		★			★	★		★	—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL		★	▲		★	★	★	★	—	4.0	±0.03	0.2	26.4	4.0		1
N4004-GL		★			★	★		★	—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	—	—	—	—	★	★		★	★	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		★	▲		★	★	★	★	★	3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		★			★	★		★	★	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF		★	▲		★	★	★	★	★	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF		★			★	★		★	★	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GF		★	▲		★	★	★	★	—	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF		★			★	★		★	—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF		★	▲		★	★	★	★	—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF		★			★	★		★	—	6.0	±0.03	0.4	26.4	4.5		1

Cut-off (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	Lead Angle	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
								PSI	Width of Cut	Tolerance	RE	L	S		
GCM R2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05	★	▲	★	★	★	★	—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8		2
L3002-CG-05	★	▲	★	★	★	★	—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05	★	▲	★	★	★	★	—	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	—	★	★	—	—	★	10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	—	★	★	—	—	★	10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-15	—	—	★	★	—	—	★	15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	—	—	★	★	—	—	★	15°	3.0	±0.08	0.03	22.4	3.8		2

GCM R: Right-handed, GCM L: Left-handed

Non-Ferrous Metals/Grooving CBN

Dimensions (mm)

ISO Cat. No.	H10	DL1500	BN7500							CW		RE	L	S	Fig.
										Cutting Width	Tolerance				
GCG N2002 GA	★	★								2.0	±0.025	0.2	21.1	3.6	3
N3002 GA	★	★								3.0	±0.025	0.2	21.1	3.8	
GCG N4004-GA	★	★								4.0	±0.025	0.4	26.4	4.0	3
N5004-GA	★	★								5.0	±0.025	0.4	26.4	4.1	
N6004-GA	★	★								6.0	±0.025	0.4	26.4	4.5	
GCM N2010 P			★							2.0	±0.025	1.0	21.7	3.6	2
N3015 P			★							3.0	±0.025	1.5	22.4	3.8	
N4020 P			★							4.0	±0.025	2.0	28.0	4.0	
GCM N3015 PLF										3.0	±0.025	1.5	22.4	3.8	2
N4020 PLF										4.0	±0.025	2.0	28.0	4.0	
GCM N30040 N			★							3.0	±0.025	0.4	21.1	3.8	1
N40040 N										4.0	±0.025	0.4	26.4	4.0	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	MG	Multi-functional / General-purpose
	ML	Multi-functional / Low feed
Grooving / Cut-off	GG	Grooving / General-purpose
	GL	Grooving / Low feed
	GF	Grooving / Low cutting force

Type	Symbol	Application
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
	CF	Cut-off / Low cutting force
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Chipbreaker Selection F15 | Precautions for Use F24 | Recommended Cutting Conditions F21

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

GNDXL type

Cut-off

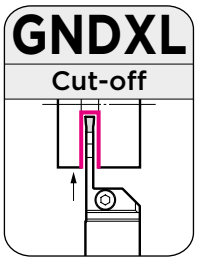


Fig 1

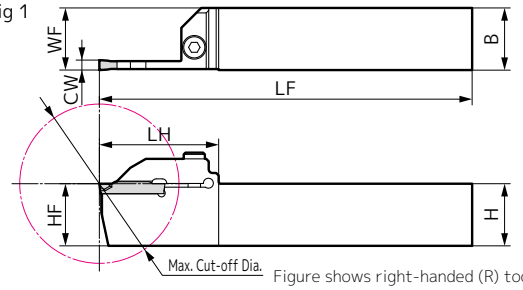


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-off Dia.	Applicable Insert	Fig	Cap Screw	N·m	Wrench
GNDXL R/L2020K-226			20	20	125	20	20	42.0	**2.0**	**52**	GCM N2002-GF1	1			
R/L2020K-332	★	★	20	20	125	20	20	48.0	**3.0**	**64**	GCM N30○○-□□1	1			
R/L2020K-432	★	★	20	20	125	20	20	48.0	**4.0**	**64**	GCM N40○○-□□1	1	BX0520	**5.0**	LH040
R/L2020K-532	★	★	20	20	125	20	20	48.0	**5.0**	**64**	GCM N50○○-□□1	1			
R/L2020K-632	★	★	20	20	125	20	20	48.0	**6.0**	**64**	GCM N60○○-□□1	1			
GNDXL R/L2525M-226			25	25	150	25	25	42.0	**2.0**	**52**	GCM N2002-GF1	1			
R/L2525M-332	★	★	25	25	150	25	25	48.0	**3.0**	**64**	GCM N30○○-□□1	1			
R/L2525M-432	★	★	25	25	150	25	25	48.0	**4.0**	**64**	GCM N40○○-□□1	1	BX0520	**5.0**	LH040
R/L2525M-532	★	★	25	25	150	25	25	48.0	**5.0**	**64**	GCM N50○○-□□1	1			
R/L2525M-632	★	★	25	25	150	25	25	48.0	**6.0**	**64**	GCM N60○○-□□1	1			

Select holders and inserts with matching width of cut (CW). Only 1-cornered inserts can be used. Refer to page F119 for applicable inserts.

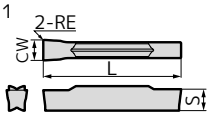
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GNDXL type

Inserts for GNDXL type (1-cornered)

(Coated Carbide)

Fig 1



Grooving / Traverse Cutting (1-cornered)

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
				Width of Cut	Tolerance	RE	L	S		
GCM N3002-ML1	★	★	★	**3.0**	±0.03	0.2	21.1	3.8	5	1
N4004-ML1	★	★	★	**4.0**	±0.03	0.4	26.4	4.0		1
N5004-ML1	★	★	★	**5.0**	±0.03	0.4	26.4	4.1		1
N6004-ML1	★	★	★	**6.0**	±0.03	0.4	26.4	4.5		1

Grooving / Cut-off (1-cornered)

Dimensions (mm)

ISO Cat. No.	AC5015S	AC5025S	AC530U	Width of Cut CW		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
				Width of Cut	Tolerance	RE	L	S		
GCM N2002-GF1				**2.0**	±0.03	0.2	21.1	3.6	5	1
N3002-GF1	★	★	★	**3.0**	±0.03	0.2	21.1	3.8		1
N4002-GF1	★	★	★	**4.0**	±0.03	0.2	26.4	4.0		1
N5002-GF1	★	★	★	**5.0**	±0.03	0.2	26.4	4.1		1
N6002-GF1	★	★	★	**6.0**	±0.03	0.2	26.4	4.5		1

Select holders and inserts with matching width of cut (CW). Use in combination with GNDXL type holders. Not usable with GNDIS type holders.

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Application
Grooving / Traverse Cutting	ML	Multi-functional / Low feed
Grooving / Cut-off	GF	Grooving / Low cutting force

Chipbreaker Selection F15 Precautions for Use F24 Recommended Cutting Conditions F21

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

MEMO

Threading Tools F

F121 to F143



Threading Tools

		SEC-Threading Tool series Selection Guide F122
		Basics of Screw Threads F125
	For External Threading/Internal Threading	SSTE type / SSTI type F126
		SSTE/SSTI type Guidelines for Depth of Cut and No. of Passes F132
	For External Threading	STH series (Small Pitch) F134
		GME-TH series (Large Pitch) F135
		LTE series (General-purpose) F136
		STE series (General-purpose) F137
		THE series (General-purpose) / THE series (For Small Lathes) F138
	For Internal Threading	STI series (General-purpose) F139
		STHI series (Small Diameter / General-purpose) F140
		THI series (General-purpose) F141
		Threading Tool Guidelines for Depth of Cut and No. of Passes F142

Stock Markings and Symbols

★ mark: Global stocked item

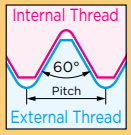
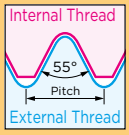
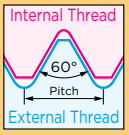
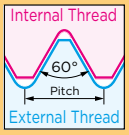
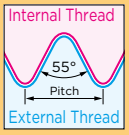
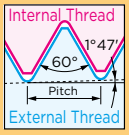
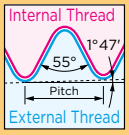
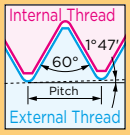
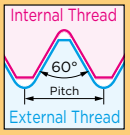
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Blank: Made-to-order item

— mark: Not available

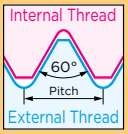
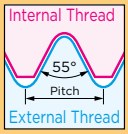
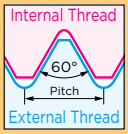
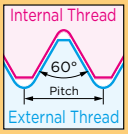
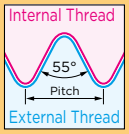
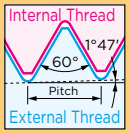
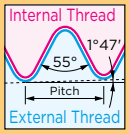
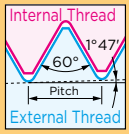
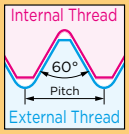
Selection Guide

■ External Threading

Application / Thread Ridge Shape / Type	General Industrial Use				Pipe Coupling for Gas, Water and Water Faucets		Pipe Threads for Steam, Gas and Water Supply Pipes		For Aerospace Equipment
									
	60° General-purpose Thread	55° General-purpose Thread (Whitworth)	60° ISO Metric Thread	60° Unified Thread	55° Parallel Thread for Pipe/Whitworth	60° American NPT	55° Taper Thread for Pipe BSPT	60° American NPTF	UNJ 60°
Symbol	M UNC/UNF	W	M	UNC/UNF	G/Rp/W	NPT	R/Rc	NPTF	UNJ
Pitch	mm Threads/Inch	Threads/Inch	mm	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch
Wiper Edge	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSTE type → F127	0.50 to 3.00 48 to 8	48 to 8	0.75, 1.00 1.25, 1.50 1.75, 2.00 2.50, 3.00	32, 28, 24 20, 18, 16 14, 13, 12 10, 8	36, 32, 28 24, 20, 19 18, 16, 14 12, 11, 10 8	27, 18, 14 11.5, 8	28, 19, 14 11	27, 18, 14 11.5	32, 28, 24 20, 18, 16 14, 12, 10
LTE series → F136	1.00 to 3.00 24 to 8	24 to 10	1.00, 1.25 1.50, 1.75 2.00, 2.50 3.00, 3.50 4.00	24, 20, 18 16, 14, 12 8	—	—	28, 19, 14 11	—	—
STE type → F137	1.00 to 3.00 24 to 8	24 to 10	1.00, 1.25 1.50, 1.75 2.00, 2.50 3.00	24, 20, 18 16, 14, 12 8	—	—	28, 19, 14 11	—	—
THE series → F138	0.80 to 3.00	24 to 10	0.80, 1.00 1.25, 1.50 1.75, 2.00 2.50	—	—	—	28, 19	—	—
GME-TH series → F135	3.00 to 6.00	11 to 4.5	—	—	—	—	—	—	—
 **GWC** series TTE type Insert → F7	0.20 to 3.00	80 to 8	—	—	—	—	—	—	—
STH series → F134	0.20 to 1.50	48 to 16	—	—	—	—	—	—	—

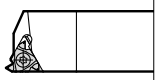
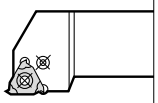
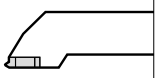
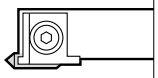
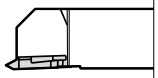
Selection Guide

■ Internal Threading

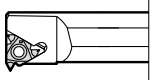
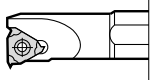
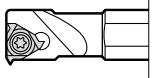
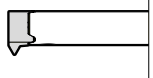
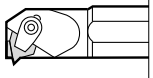
Application / Thread Ridge Shape	General Industrial Use				Pipe Coupling for Gas, Water and Water Faucets		Pipe Threads for Steam, Gas and Water Supply Pipes		For Aerospace Equipment
									
Type	60° General-purpose Thread	55° General-purpose Thread (Whitworth)	60° ISO Metric Thread	60° Unified Thread	55° Parallel Thread for Pipe/Whitworth	60° American NPT	55° Taper Thread for Pipe BSPT	60° American NPTF	UNJ 60°
Symbol	M / UNC/UNF	W	M	UNC/UNF	G/Rp/W	NPT	R/Rc	NPTF	UNJ
Pitch	mm / Threads/Inch	Threads/Inch	mm	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch
Wiper Edge	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSTI type → F127	0.50 to 3.00 / 48 to 8	48 to 8	0.75, 1.00 1.25, 1.50 1.75, 2.00 2.50, 3.00	32, 28, 24 20, 18, 16 14, 13, 12 10, 8	28, 24, 20 19	27, 18, 14 11.5, 8	28, 19	27, 18, 14 11.5, 8	32, 28, 24 20, 18, 16 14, 12, 10
STI type → F139	1.00 to 3.00 / 24 to 8	—	1.00, 1.25 1.50, 1.75 2.00, 2.50 3.00	—	—	—	—	—	—
STHI type → F140	0.40 to 1.00	—	—	—	—	—	—	—	—
 **SSH** series SSHT type Inserts → F70	0.50 to 2.50	—	—	—	—	—	—	—	—
THI type → F141	0.80 to 2.50	—	1.50, 2.00	—	—	—	—	—	—

Selection Guide

■ External Threading Tools

Series	Appearance	Structure: Screw-on	Clamp-on	Lever Lock	Drawing Pin	Double Clamp	Features	Applicable Thread Symbol
SSTE type	 → F127	●					· Adopts a flat-mounted 3-cornered insert. Ground cutting edge flank produces superior machined surface with sharp cutting edge. · Stable chip control through use of a 3D molded chipbreaker. · Large lineup of inserts with a wiper edge.	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ
LTE series **STE type**	 → F136, F137	●		●			· LTE series: Lever lock holders 20 / 25 / 32mm square, STE type: Screw-on specifications 12 / 16mm square · M-Class flat-mounted 3-cornered insert is economical · Range of cermet grades · Stable chip control with incorporated chipbreaker	M W UNC/UNF R/Rc
THE series	 → F138	●			●		· 3-cornered tangentially-mounted G-class insert with excellent sharpness · 20 and 25mm square shanks use a strong draw-pin system, while 12 and 16mm square shanks use a screw-on type system. · Cermet grades are available for inserts without a wiper edge	M W G/Rp/W
GME-TH series	 → F135		●				· 2-cornered insert adopted for large-pitch threading of 3 to 6mm · 55° apex angle available in 11 to 4.5 TPI · Strong clamping through the use of clamp plate	M W
GWC series TTE type Insert	 → F7	●				●	· GWC series lineup includes TTE type inserts for threading · 20 and 25mm square shanks use a high-rigidity double clamp system, while 10, 12, and 16mm square shanks use a screw-on type system. · Utilises economical 3-cornered inserts	M W
STH series	 → F134	●					· For small lathes 20mm square or less · 2-cornered tangentially-mounted insert enables space-saving threading · Can also be used for back-turn threading with bar feeder · Can also be used for small-pitch (min. 0.2mm) threading	M W

■ Internal Threading Tools

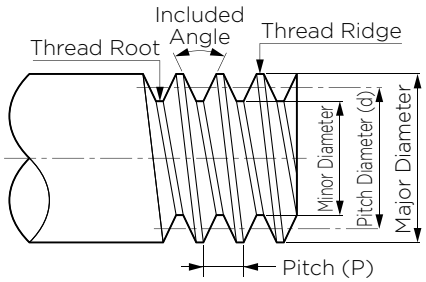
Series	Appearance	Structure: Screw-on	Clamp-on	Lever Lock	Drawing Pin	Double Clamp	Features	Min. Bore Dia. (mm)	Applicable Thread Symbol
SSTI type	 → F126	●					· Adopts a flat-mounted 3-cornered insert. Ground cutting edge flank produces superior machined surface with sharp cutting edge. · Stable chip control through use of a 3D molded chipbreaker. · Large lineup of inserts with a wiper edge.	ø18	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ
STI series	 → F139	●					· M-Class flat-mounted 3-cornered insert is economical · Stable chip control with incorporated chipbreaker · Range of cermet grades	ø20	M UNC/UNF G/Rp/W
STHI series	 → F140	●					· Applicable for internal diameters from ø8mm, small pitch (0.4 - 1.0mm) threading · Perfect for small product machining	ø8	M
SSH series SSHT type Insert with Internal Coolant Supply	 → F73	●					· SSH series lineup includes SSHT type inserts for threading · Tough carbide body for stable machining even with small diameters, suppressing chatter · Internal coolant supply for outstanding chip control · Applicable for internal diameters from ø8mm, small pitch (0.5 - 2.5mm) threading	ø8	M
THI series	 → F141		●				· G-Class 3-cornered insert with good sharpness	ø18	M

Note: The minimum bore diameter is the diameter of the prepared hole.

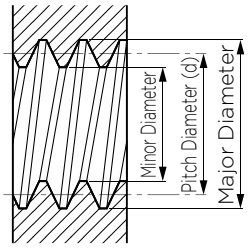
M : 60° ISO General-purpose Metric Thread
W : 55° General-purpose Thread (Whitworth)
UNC/UNF : 60° Unified Thread
G/Rp/W : 55° Parallel Thread for Pipe
NPT : 60° American NPT
R/Rc : 55° Taper Thread for Pipe BSPT
NPTF : 60° American NPTF
UNJ : 60° UNJ

Basics of Screw Threads

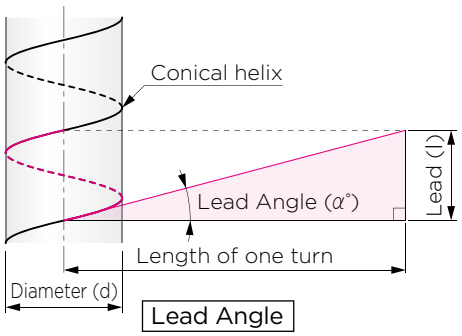
■ Parts of a Screw Thread



External Thread



Internal Thread



Lead Angle

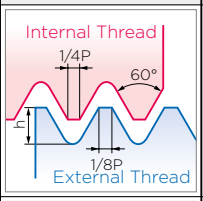
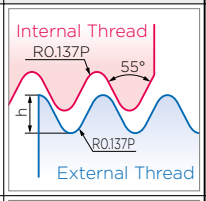
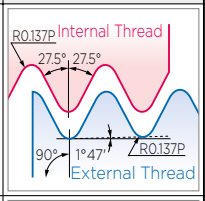
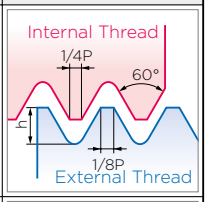
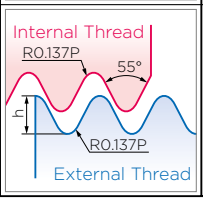
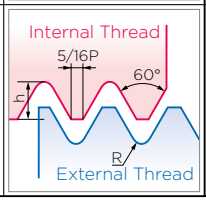
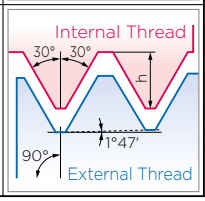
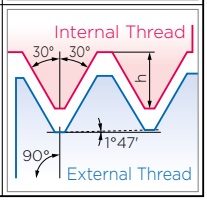
Effective Diameter (d) : Diameter of imaginary cylinder that passes through the thread at the point where the groove and ridge widths are equal
Pitch (P) : Distance between two ridges adjacent to each other
Lead (l) : Distance the screw thread moves axially in one turn (On a single threaded screw, the lead and pitch are identical.)
Lead Angle (α) : Angle made by the conical helix of the thread ridge at a pitch diameter with a plane perpendicular to the axis

● Lead Angle Calculation

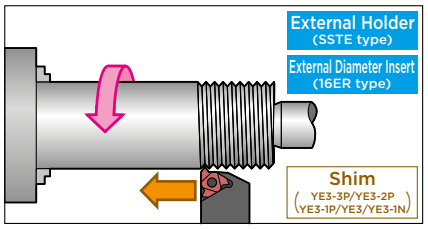
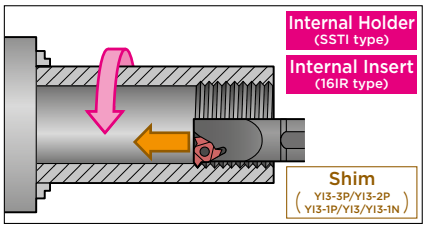
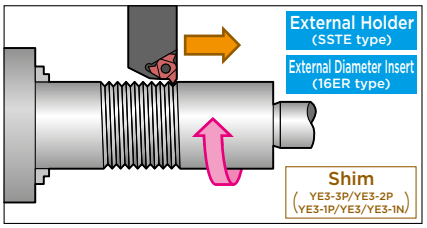
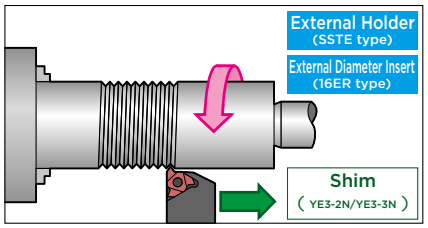
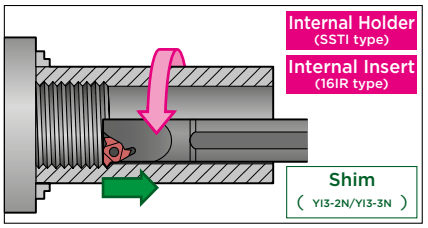
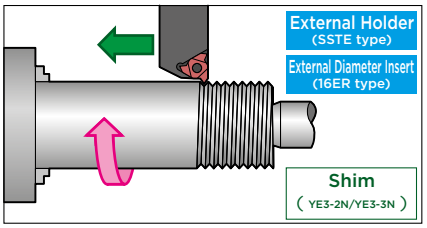
$$\tan\alpha^\circ = \frac{l}{\pi \times d} = \frac{n \times P}{\pi \times d}$$

α° : Lead Angle
l : Lead
n : No. of Threads
P : Pitch
d : Diameter

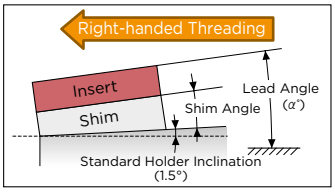
■ Main Screw Thread Types and Standard Thread Patterns

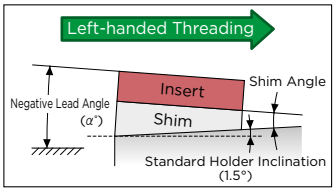
Application	Symbol	Basic Profile	Application	Symbol	Basic Profile	Application	Symbol	Basic Profile	Application	Symbol	Basic Profile
Metric Thread	M		Parallel Thread for Pipe	Internal Thread G(PF) / Rp(PS) / External Thread G(PF)		Taper Thread for Pipe	Internal Thread Rc(PT) (BSPT) / External Thread R(PT) (BSPT)		Unified Thread	UN / UNC / UNF / UNEF	
Whitworth Thread	W / BSW / BSP		Thread for Aerospace Instruments	UNJ		American Taper Thread for Pipe	NPT		American Taper Thread for Pipe	NPTF	

■ Tool Holder and Insert Selection Guide (SSTE type / SSTI type)

	External Threads (Normal Spindle Rotation)	Internal Threads (Normal Spindle Rotation)	External Threads (Reverse Spindle Rotation)
Right-handed Threading			
Left-handed Threading			

■ Threading Method and Insert Angle



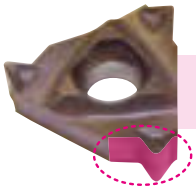


SSTE type/SSTI type



■ Features

- ★ High-precision inserts with wiper edge for threading, supporting a wide range of applications from general industrial machinery to pipes and aerospace devices
- ★ Stable chip control through use of a 3D molded chipbreaker.
- ★ Ground cutting edge flank for improved cutting edge sharpness, resulting in high quality threads



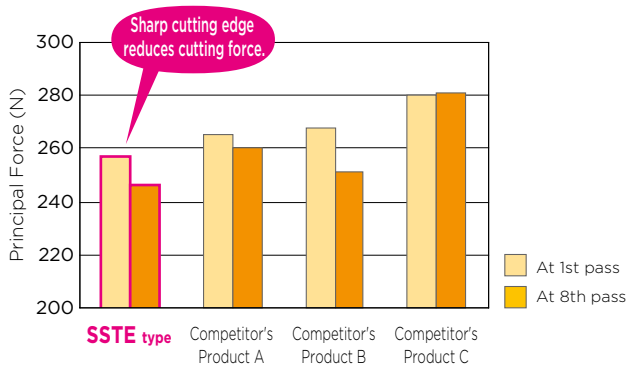
Ground flanks around cutting edge

■ Product Range

Applications	Type	Wiper Edge	External/ Internal	Pitch (mm)	TPI (Threads/Inch) 48 36 32 28 27 24 20 19 18 16 14 13 12 11.5 11 10 8	Insert Cat. No. Example:
General Industrial Use	60° General-purpose Thread	No	External	0.5 – 3.0	48 to 8	16ER A60-CB
			Internal	0.5 – 3.0	48 to 8	16IR A60-CB
	55° General-purpose Thread		External		48 to 8	16ER A55-CB
			Internal		48 to 8	16IR A55-CB
	60° ISO Metric Thread	Yes	External	0.75 1.0 1.25 1.5 1.75 2.0 2.5 3.0		16ER 075ISO-CB
			Internal	0.75 1.0 1.25 1.5 1.75 2.0 2.5 3.0		16IR 075ISO-CB
	60° Unified Thread		External			16ER 32UN-CB
			Internal			16IR 32UN-CB
Pipe Coupling for Gas, Water and Water Faucets	55° Parallel Thread for Pipe/Whitworth		External			16ER 36W-CB
			Internal			16IR 28W-CB
	60° American NPT		External			16ER 27NPT-CB
			Internal			16IR 27NPT-CB
Steam, Gas and Water Supply Pipes	55° Taper Thread for Pipe BSPT		External			16ER 28BSPT-CB
			Internal			16IR 28BSPT-CB
	60° American NPTF		External			16ER 27NPTF-CB
			Internal			16IR 27NPTF-CB
For Aerospace Equipment	UNJ 60°		External			16ER 32UNJ-CB
			Internal			16IR 32UNJ-CB

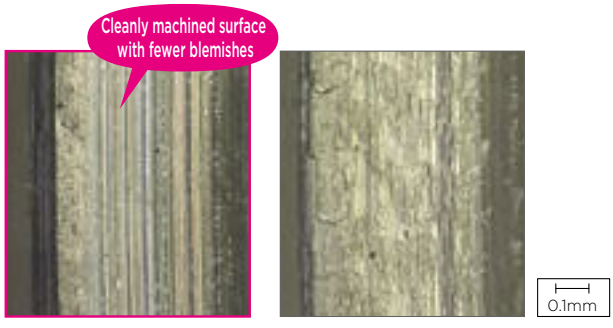
■ Application Examples

★ Comparison of Cutting Force



Work Material: C45 M30 × 1.5
Cutting Conditions: vc = 150m/min Wet, 8 Passes Thread Infeed Method: Radial Infeed

★ Machined Surface Comparison



Work Material: C45 M30 × 1.5
Cutting Conditions: vc = 150m/min Wet, 8 Passes Thread Infeed Method: Radial Infeed

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

SSTE type/SSTI type

External

External Turning
Screw-on

SSTE
External Threading

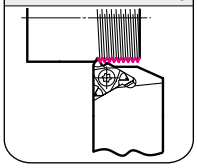
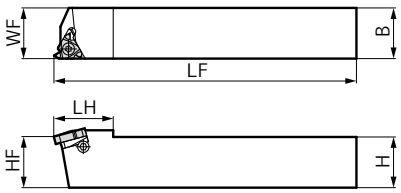
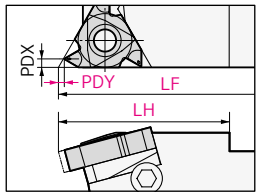


Fig 1





The values for dimensions LF and LH below are only for reference.
The actual value is the value below minus the PDY value for the corresponding insert on page F114.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Flat Head Screw		Shim Screw	Flat Washer	Shim	Wrench
														
SSTE R1616H16	★	16	16	100	20.5	16	16	1						
R2020K16	★	20	20	125	30.0	20	20	1	BFTX0312N	**2.0**	BX0304*1	PW3	YE3	TRX10
R2525M16	★	25	25	150	30.0	25	25	1						

*1: Shim screw wrench is sold separately.

Internal

Internal Threading
Screw-on

SSTI
Internal Threading

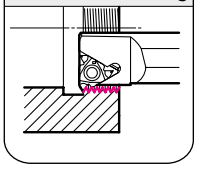


Fig 1

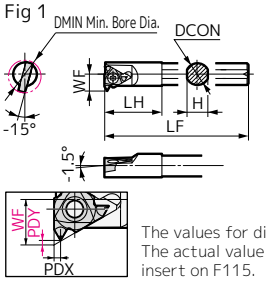


Fig 2

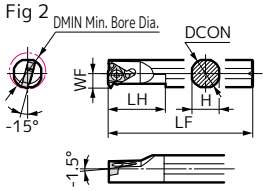
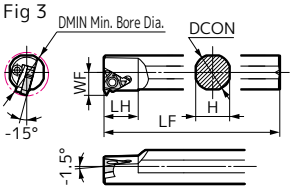


Fig 3



The values for dimension WF below are only for reference.
The actual value is the value below minus the PDY value for the corresponding insert on F115.

Holder

Parts

Dimensions (mm)

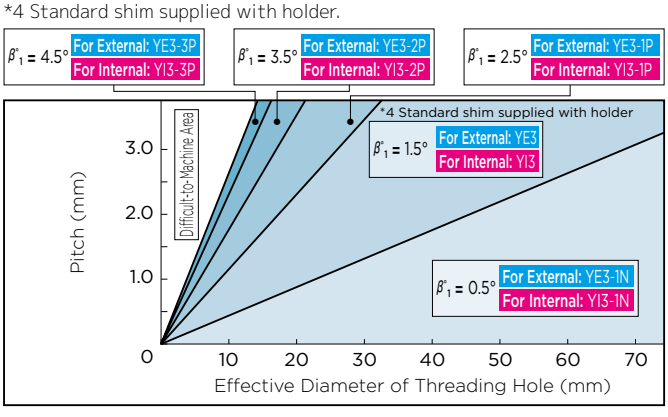
ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Cutting Edge Distance WF	Min. Bore Dia. DMIN*2	Fig	Flat Head Screw		Shim Screw	Flat Washer	Shim	Wrench
														
SSTI R1812M16*3	★	12	11.0	150	32.0	10.2	18	1	BFTX03085N	**2.0**	—	—	—	TRX10
R2016M16*3	★	16	15.0	150	63.5	9.2	20	2						
SSTI R2420Q16	★	20	18.0	180	19.0	13.5	24	3						
R3125S16	★	25	23.0	250	14.3	16.5	31	3	BFTX0312N	**2.0**	BX0304*1	PW3	YI3	
R3732S16	★	32	30.0	250	14.3	20.0	37	3						

*1 Shim screw wrench is sold separately. *2 The minimum bore diameter is the diameter of the prepared hole. *3 Left-hand threads are not available.

Shim and Selection Criteria

Application	Recommended Lead Angle (β°_1)	External Threading Cat. No.	External Threading Stock	Internal Threading Cat. No.	Internal Threading Stock
Right-hand Thread	**4.5°**	**YE3-3P**	★	**YI3-3P**	★
	3.5°	**YE3-2P**	★	**YI3-2P**	★
	2.5°	**YE3-1P**	★	**YI3-1P**	★
	1.5°	**YE3***4	★	**YI3***4	★
	0.5°	**YE3-1N**	★	**YI3-1N**	★
Left-hand Thread	**-0.5°**	**YE3-2N**	★	**YI3-2N**	★
	-1.5°	**YE3-3N**	★	**YI3-3N**	★

*4 Standard shim supplied with holder.



Holder Identification Code

Example: **SST E R 25 25 M 16**

(1) Series Code: SST series

(2) External/Internal

Symbol	Distinction
E	External
I	Internal

(3) Feed Direction

Symbol	Feed Direction
R	Right-handed

(4) Shank Height/Work Dia.

Symbol	(mm)
16	16
20	20
25	25
18	18
20	20
24	24
31	31
37	37

(5) Shank Width/ Diameter

Symbol	(mm)
16	16
20	20
25	25
12	12
16	16
20	20
25	25
32	32

(6) Overall Length Symbol

Symbol	(mm)
H	100
K	125
M	150
Q	180
S	250

(7) Insert Size

Symbol	Inscribed Circle (mm)
16	9.525

Details of Shim Selection F136

SSTE type/SSTI type

External

SSTE type Guidelines for Depth of Cut and No. of Passes F118

Fig 1

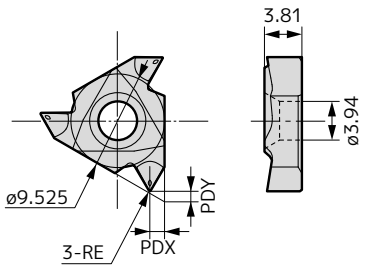
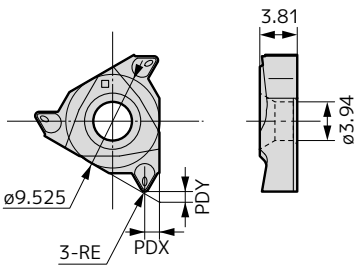


Fig 2



(Coated Carbide)

60°/55° General-purpose Threads (Without Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16ER A60-CB**	★	0.5-1.5	16 - 48	0.8	0.6	0.09	5	1
	16ER AG60-CB	★	0.5-3.0	8 - 48	1.5	1.1	0.10		1
	16ER G60-CB	★	2.0-3.0	8 - 14	1.5	1.1	0.20		1
55°	**16ER A55-CB**	★	—	16 - 48	0.8	0.5	0.05	5	1
	16ER AG55-CB	★	—	8 - 48	1.5	1.1	0.08		1
	16ER G55-CB	★	—	8 - 14	1.5	1.1	0.22		1

60° ISO Metric Thread (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16ER 075 ISO-CB**	★	0.75	—	0.5	1.0	0.09	5	2
	16ER 100 ISO-CB	★	1.00	—	0.8	0.6	0.14		2
	16ER 125 ISO-CB	★	1.25	—	0.8	0.7	0.15		2
	16ER 150 ISO-CB	★	1.50	—	0.8	0.7	0.20		2
	16ER 175 ISO-CB	★	1.75	—	1.5	1.0	0.23		2
	16ER 200 ISO-CB	★	2.00	—	1.5	1.1	0.26		2
	16ER 250 ISO-CB	★	2.50	—	1.5	1.2	0.33		2
	16ER 300 ISO-CB	★	3.00	—	1.5	1.1	0.41		2

60° Unified Thread (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16ER 32UN-CB**	★	—	32	0.5	1.0	0.10	5	2
	16ER 28UN-CB	★	—	28	0.8	0.7	0.11		2
	16ER 24UN-CB	★	—	24	0.8	0.7	0.13		2
	16ER 20UN-CB	★	—	20	0.8	0.7	0.16		2
	16ER 18UN-CB	★	—	18	0.8	0.7	0.18		2
	16ER 16UN-CB	★	—	16	0.8	0.8	0.20		2
	16ER 14UN-CB	★	—	14	1.5	1.2	0.23		2
	16ER 13UN-CB	★	—	13	1.5	1.1	0.26		2
	16ER 12UN-CB	★	—	12	1.5	1.0	0.27		2
	16ER 10UN-CB	★	—	10	1.5	1.2	0.33		2
	16ER 08UN-CB	★	—	8	1.5	1.2	0.42		2

55° Parallel Thread for Pipe/Whitworth (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
55°	**16ER 36W-CB**	★	—	36	0.5	1.0	0.10	5	2
	16ER 32W-CB	★	—	32	0.5	1.0	0.11		2
	16ER 28W-CB	★	—	28	0.8	0.6	0.12		2
	16ER 24W-CB	★	—	24	0.8	0.6	0.15		2
	16ER 20W-CB	★	—	20	0.8	0.6	0.18		2
	16ER 19W-CB	★	—	19	0.8	0.6	0.18		2
	16ER 18W-CB	★	—	18	0.8	0.6	0.19		2
	16ER 16W-CB	★	—	16	0.8	0.6	0.22		2
	16ER 14W-CB	★	—	14	1.5	1.0	0.25		2
	16ER 12W-CB	★	—	12	1.5	1.1	0.29		2
	16ER 11W-CB	★	—	11	1.5	1.1	0.32		2
	16ER 10W-CB	★	—	10	1.5	1.1	0.35		2
	16ER 08W-CB	★	—	8	1.5	1.1	0.43		2

60° American NPT (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16ER 27NPT-CB**	★	—	27	0.8	0.6	0.06	5	2
	16ER 18NPT-CB	★	—	18	0.8	0.6	0.06		2
	16ER 14NPT-CB	★	—	14	1.5	1.0	0.08		2
	16ER 115NPT-CB	★	—	11.5	1.5	1.0	0.08		2
	16ER 08NPT-CB	★	—	8	1.5	1.1	0.13		2

55° Taper Thread for Pipe/BSPT (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
55°	**16ER 28BSPT-CB**	★	—	28	0.8	0.6	0.13	5	2
	16ER 19BSPT-CB	★	—	19	0.8	0.6	0.18		2
	16ER 14BSPT-CB	★	—	14	1.5	1.3	0.25		2
	16ER 11BSPT-CB	★	—	11	1.5	1.0	0.31		2

60° American NPTF (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16ER 27NPTF-CB**	★	—	27	0.8	0.6	0.06	5	2
	16ER 18NPTF-CB	★	—	18	0.8	0.6	0.06		2
	16ER 14NPTF-CB	★	—	14	1.5	1.0	0.13		2
	16ER 115NPTF-CB	★	—	11.5	1.5	1.0	0.12		2

60° UNJ (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16ER 32UNJ-CB**	★	—	32	0.5	1.0	0.13	5	2
	16ER 28UNJ-CB	★	—	28	0.8	0.6	0.15		2
	16ER 24UNJ-CB	★	—	24	0.8	0.6	0.18		2
	16ER 20UNJ-CB	★	—	20	0.8	0.7	0.21		2
	16ER 18UNJ-CB	★	—	18	0.8	0.6	0.23		2
	16ER 16UNJ-CB	★	—	16	0.8	0.6	0.25		2
	16ER 14UNJ-CB	★	—	14	1.5	1.1	0.29		2
	16ER 12UNJ-CB	★	—	12	1.5	1.1	0.34		2
	16ER 10UNJ-CB	★	—	10	1.5	1.1	0.40		2

Insert Identification Code

Example: **16 E R 150 ISO - CB**

(1) Insert Size			(3) Feed Direction	
Symbol	Inscribed Circle (mm)		Symbol	Feed Direction
16	9.525		R	Right-handed

(2) External/Internal	
Symbol	Distinction
E	External
I	Internal

(4) Pitch or TPI

With Wiper Edge: Metric = Pitch x 100; Inch=TPI (115 only for 11.5)

(Example) 075: Pitch 0.75mm; 150: Pitch 1.5mm; 20: 20TPI

Without Wiper Edge	Symbol	Pitch/TPI
	A	Pitch : 0.5 to 1.5mm TPI : 16 to 48
	AG	Pitch : 0.5 to 3.0mm TPI : 8 to 48
	G	Pitch : 2.0 to 3.0mm TPI : 8 to 14

(5) Thread type

Wiper Edge	Symbol	Type
Yes	ISO	Metric Thread
	UN	Unified Thread
	W	Whitworth
	NPT	American Taper Thread for Pipe
	BSPT	Taper Thread for Pipe
	NPTF	American Taper Thread for Pipe
	UNJ	For Aerospace Equipment
No	60	60° General-purpose Thread
	55	55° General-purpose Thread

(6) Chipbreaker

Symbol	Description
CB	With Chipbreaker

For these inserts, only SSTE type holders can be used.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

SSTE type/SSTI type

Internal

SSTI type Guidelines for Depth of Cut and No. of Passes F119

Fig 1

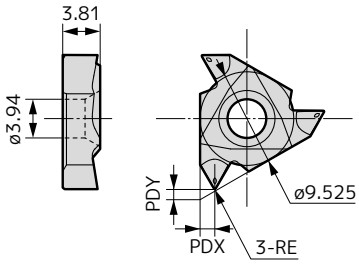
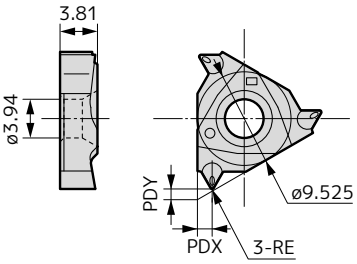


Fig 2



(Coated Carbide)

60°/55° General-purpose Threads (Without Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR A60-CB**	★	0.5-1.5	16 - 48	0.8	0.5	0.09	5	1
	16IR AG60-CB	★	0.5-3.0	8 - 48	1.5	1.1	0.10		1
	16IR G60-CB	★	2.0-3.0	8 - 14	1.5	1.1	0.18		1
55°	**16IR A55-CB**	★	—	16 - 48	0.8	0.5	0.05	5	1
	16IR AG55-CB	★	—	8 - 48	1.5	1.1	0.08		1
	16IR G55-CB	★	—	8 - 14	1.5	1.1	0.20		1

60° ISO Metric Thread (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 075 ISO-CB**	★	0.75	—	0.5	0.9	0.04	5	2
	16IR 100 ISO-CB	★	1.00	—	0.8	0.6	0.06		2
	16IR 125 ISO-CB	★	1.25	—	0.8	0.6	0.07		2
	16IR 150 ISO-CB	★	1.50	—	0.8	0.6	0.09		2
	16IR 175 ISO-CB	★	1.75	—	1.5	1.0	0.10		2
	16IR 200 ISO-CB	★	2.00	—	1.5	1.1	0.13		2
	16IR 250 ISO-CB	★	2.50	—	1.5	1.1	0.15		2
	16IR 300 ISO-CB	★	3.00	—	1.5	1.1	0.19		2

60° Unified Thread (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 32UN-CB**	★	—	32	0.5	0.9	0.04	5	2
	16IR 28UN-CB	★	—	28	0.8	0.6	0.06		2
	16IR 24UN-CB	★	—	24	0.8	0.7	0.06		2
	16IR 20UN-CB	★	—	20	0.8	0.6	0.08		2
	16IR 18UN-CB	★	—	18	0.8	0.6	0.08		2
	16IR 16UN-CB	★	—	16	0.8	0.7	0.09		2
	16IR 14UN-CB	★	—	14	1.5	1.1	0.13		2
	16IR 13UN-CB	★	—	13	1.5	1.1	0.11		2
	16IR 12UN-CB	★	—	12	1.5	1.1	0.13		2
	16IR 10UN-CB	★	—	10	1.5	1.1	0.15		2
	16IR 08UN-CB	★	—	8	1.5	1.1	0.20		2

55° Parallel Thread for Pipe/Whitworth (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
55°	**16IR 28W-CB**	★	—	28	0.8	0.6	0.12	5	2
	16IR 24W-CB	★	—	24	0.8	0.6	0.14		2
	16IR 20W-CB	★	—	20	0.8	0.6	0.18		2
	16IR 19W-CB	★	—	19	0.8	0.6	0.18		2

60° American NPT (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 27NPT-CB**	★	—	27	0.8	0.6	0.06	5	2
	16IR 18NPT-CB	★	—	18	0.8	0.6	0.06		2
	16IR 14NPT-CB	★	—	14	1.5	1.1	0.08		2
	16IR 115NPT-CB	★	—	11.5	1.5	1.0	0.08		2
	16IR 08NPT-CB	★	—	8	1.5	1.0	0.13		2

55° Taper Thread for Pipe/BSPT (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
55°	**16IR 28BSPT-CB**	★	—	28	0.8	0.6	0.13	5	2
	16IR 19BSPT-CB	★	—	19	0.8	0.6	0.18		2

60° American NPTF (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 27NPTF-CB**	★	—	27	0.8	0.6	0.06	5	2
	16IR 18NPTF-CB	★	—	18	0.8	0.6	0.08		2
	16IR 14NPTF-CB	★	—	14	1.5	1.0	0.13		2
	16IR 115NPTF-CB	★	—	11.5	1.5	1.0	0.08		2
	16IR 08NPTF-CB	★	—	8	1.5	1.1	0.13		2

60° UNJ (With Wiper Edge)

Dimensions (mm)

Included Angle	ISO Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 32UNJ-CB**	★	—	32	0.5	0.9	0.04	5	2
	16IR 28UNJ-CB	★	—	28	0.8	0.6	0.05		2
	16IR 24UNJ-CB	★	—	24	0.8	0.6	0.06		2
	16IR 20UNJ-CB	★	—	20	0.8	0.6	0.06		2
	16IR 18UNJ-CB	★	—	18	0.8	0.6	0.06		2
	16IR 16UNJ-CB	★	—	16	0.8	0.6	0.09		2
	16IR 14UNJ-CB	★	—	14	1.5	1.1	0.09		2
	16IR 12UNJ-CB	★	—	12	1.5	1.1	0.11		2
	16IR 10UNJ-CB	★	—	10	1.5	1.1	0.15		2

Insert Identification Code

Example: **16 I R 150 ISO - CB**

(1) Insert Size	
Symbol	Inscribed Circle (mm)
16	9.525

(2) External/Internal	
Symbol	Distinction
E	External
I	Internal

(3) Feed Direction	
Symbol	Feed Direction
R	Right-handed

(4) Pitch or TPI

With Wiper Edge: Metric = Pitch x 100 / Inch=TPI (115 only for 11.5)

(Example) 075: Pitch 0.75mm, 150: Pitch 1.5mm, 20: 20TPI

Without Wiper Edge	Symbol	Pitch/TPI
	A	Pitch : 0.5 to 1.5mm, TPI : 16 to 48
	AG	Pitch : 0.5 to 3.0mm, TPI : 8 to 48
	G	Pitch : 2.0 to 3.0mm, TPI : 8 to 14

(5) Thread type

Wiper Edge	Symbol	Type
Yes	ISO	Metric Thread
	UN	Unified Thread
	W	Whitworth
	NPT	American Taper Thread for Pipe
	BSPT	Taper Thread for Pipe
	NPTF	American Taper Thread for Pipe
	UNJ	For Aerospace Equipment
No	60	60° General-purpose Thread
	55	55° General-purpose Thread

(6) Chipbreaker	
Symbol	Description
CB	With Chipbreaker

For these inserts, only SSTI type holders can be used.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

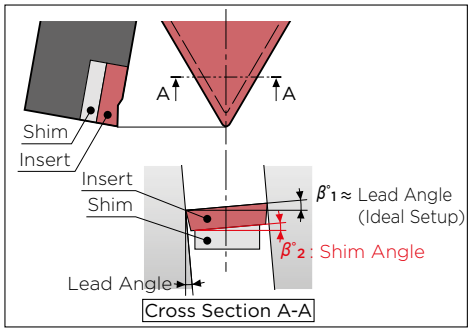
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N·m Recommended Tightening Torque (N·m)

SSTE type/SSTI type

■ Shim Selection

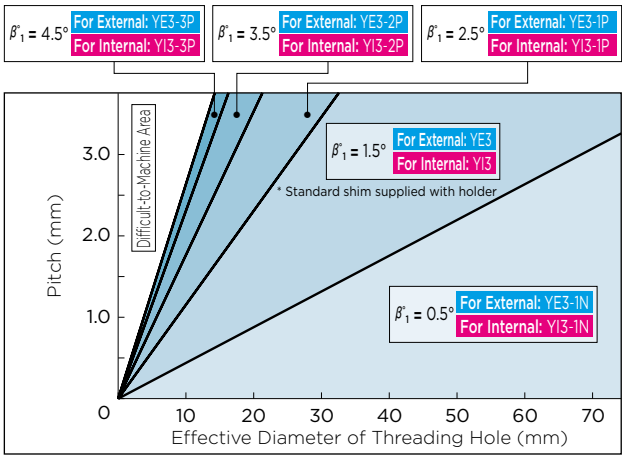
If the pitch is large or thread diameter is small, the lead angle of the thread becomes larger and the effective relief angle of the leading edge becomes smaller.
It is ideal to set the threading insert so that both right and left relief angles are equal.
Therefore, it is necessary to select an appropriate shim based on the thread pitch and effective diameter using the table below.



■ Shim Selection Procedure

(1) Choose from [Right-Hand Thread / Left-Hand Thread] in the table.
(2) Locate the required threading "pitch".
(3) Locate the cell with the required "Effective Diameter" range.
(4) Confirm the part no. at the "Shim" row above the corresponding "Effective Diameter" cell located previously. If the shim part no. is different from the one currently in use, change to the correct one.

Example: When turning an M16×2.0 external right-hand thread, the pitch diameter is **14.701mm**. In the table below, locate **[2.0]**mm under the "Pitch" column and then move along the row to the right to locate the required "Effective Diameter" range **[11.4 - 17.4]**mm. As such, the correct shim should be **[YE3-1P]**, shown in the corresponding cell under the **"External Turning"** row below.



● Pitch (mm)

Right-hand/Left-hand Thread		For Right-hand Thread					For Left-hand Thread	
Lead Angle		4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
Shim	External Threading	YE3-3P	YE3-2P	YE3-1P	**YE3***	YE3-1N	YE3-2N	YE3-3N
	Internal Threading	YI3-3P	YI3-2P	YI3-1P	**YI3***	YI3-1N	YI3-2N	YI3-3N
	Shim Angle (β°_1)	3°	2°	1°	0°	-1°	-2°	-3°
Pitch (mm)		Effective Diameter (mm)						
0.5		1.9 - 2.2	2.2 - 2.8	2.8 - 4.3	4.3 - 11.4	> 11.4	> 11.4	11.4 - 4.3
0.75		2.8 - 3.3	3.3 - 4.3	4.3 - 6.5	6.5 - 17.1	> 17.1	> 17.1	17.1 - 6.5
1.0		3.8 - 4.3	4.3 - 5.7	5.7 - 8.7	8.7 - 22.8	> 22.8	> 22.8	22.8 - 8.7
1.25		4.7 - 5.4	5.4 - 7.1	7.1 - 10.9	10.9 - 28.5	> 28.5	> 28.5	28.5 - 10.9
1.5		5.7 - 6.5	6.5 - 8.5	8.5 - 13.0	13.0 - 34.2	> 34.2	> 34.2	34.2 - 13.0
1.75		6.6 - 7.6	7.6 - 10.0	10.0 - 15.2	15.2 - 39.9	> 39.9	> 39.9	39.9 - 15.2
2.0		7.6 - 8.7	8.7 - 11.4	11.4 - 17.4	17.4 - 45.6	> 45.6	> 45.6	45.6 - 17.4
2.5		9.5 - 10.8	10.8 - 14.2	14.2 - 21.7	21.7 - 57.0	> 57.0	> 57.0	57.0 - 21.7
3.0		11.4 - 13.0	13.0 - 17.1	17.1 - 26.0	26.0 - 68.4	> 68.4	> 68.4	68.4 - 26.0

● TPI (threads/inch)

Right-hand/Left-hand Thread		For Right-hand Thread					For Left-hand Thread	
Lead Angle		4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
Shim	External Threading	YE3-3P	YE3-2P	YE3-1P	**YE3***	YE3-1N	YE3-2N	YE3-3N
	Internal Threading	YI3-3P	YI3-2P	YI3-1P	**YI3***	YI3-1N	YI3-2N	YI3-3N
	Shim Angle (β°_1)	3°	2°	1°	0°	-1°	-2°	-3°
TPI (Threads/Inch)		Effective Diameter (mm)						
32		3.0 - 3.3	3.3 - 4.6	4.6 - 6.9	6.9 - 18.0	> 18.0	> 18.0	18.0 - 6.9
28		3.0 - 3.8	3.8 - 5.1	5.1 - 7.9	7.9 - 20.8	> 20.8	> 20.8	20.8 - 7.9
27		3.6 - 4.1	4.1 - 5.3	5.3 - 8.1	8.1 - 21.3	> 21.3	> 21.3	21.3 - 8.1
24		4.1 - 4.6	4.6 - 6.1	6.1 - 9.1	9.1 - 24.4	> 24.4	> 24.4	24.4 - 9.1
20		4.8 - 5.6	5.6 - 7.1	7.1 - 10.9	10.9 - 29.0	> 29.0	> 29.0	29.0 - 10.9
18		5.3 - 6.1	6.1 - 8.1	8.1 - 12.4	12.4 - 32.5	> 32.5	> 32.5	32.5 - 12.4
16		5.8 - 6.9	6.9 - 8.9	8.9 - 13.7	13.7 - 35.8	> 35.8	> 35.8	35.8 - 13.7
14		6.9 - 7.9	7.9 - 10.2	10.2 - 15.7	15.7 - 41.1	> 41.1	> 41.1	41.1 - 15.7
13		7.4 - 8.4	8.4 - 11.2	11.2 - 17.0	17.0 - 44.7	> 44.7	> 44.7	44.7 - 17.0
12		8.1 - 9.1	9.1 - 12.2	12.2 - 18.5	18.5 - 48.8	> 48.8	> 48.8	48.8 - 18.5
11.5		8.4 - 9.7	9.7 - 12.4	12.4 - 19.3	19.3 - 50.3	> 50.3	> 50.3	50.3 - 19.3
11		8.9 - 9.9	9.9 - 13.2	13.2 - 20.1	20.1 - 52.6	> 52.6	> 52.6	52.6 - 20.1
10		9.7 - 10.9	10.9 - 14.5	14.5 - 22.1	22.1 - 57.9	> 57.9	> 57.9	57.9 - 22.1
9		10.7 - 12.2	12.2 - 16.0	16.0 - 24.4	24.4 - 64.3	> 64.3	> 64.3	64.3 - 24.4
8		11.9 - 13.7	13.7 - 18.0	18.0 - 27.7	27.7 - 72.4	> 72.4	> 72.4	72.4 - 27.7

*SSTE type / SSTI type holders are shipped with shims for a lead angle of β°_1 = 1.5° (SSTE type: **YE3**, SSTI type: **YI3**).
Shims for lead angles of β°_1 = -1.5°, -0.5°, 0.5°, 2.5°, 3.5°, and 4.5° are sold separately.
*Shims are not needed for SSTI R1812M16 and SSTI R2016M16. (The holders are already provided with the standard holder inclination of 1.5°.)

SSTE type/SSTI type

■ Shim Replacement



Remove the insert to expose the shim.



Loosen the shim screw by one to two turns.

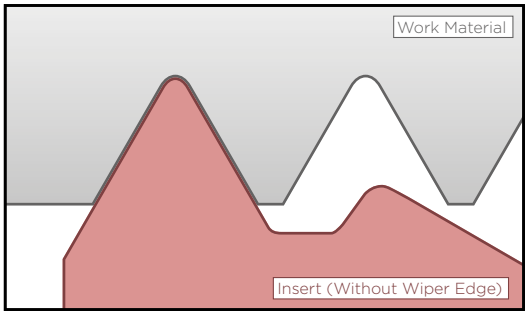
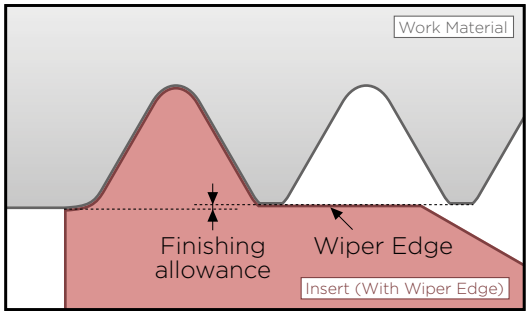


Remove the shim and attach a different shim that matches the lead.



Tighten the shim screw. (Recommended tightening torque 1.0 to 1.5N·m)

■ Wiper Edge

Without Wiper Edge	With Wiper Edge
	
· Performs threading without machining thread ridges (the machined surface from the previous process is left unworked.) · Enables machining of threads with different pitch widths with the same insert. · Finishing of the internal (or external) diameter is required before the threading process. · Fine burrs are easily formed on edges of ridges.	· Enables turning of workpieces into shapes compliant with thread standards. · Only specific thread specifications and pitch can be machined. · In order to finish a thread with the wiper edge, a finishing allowance of 0.1mm on each side is required. · Edges of ridges can be rounded off.

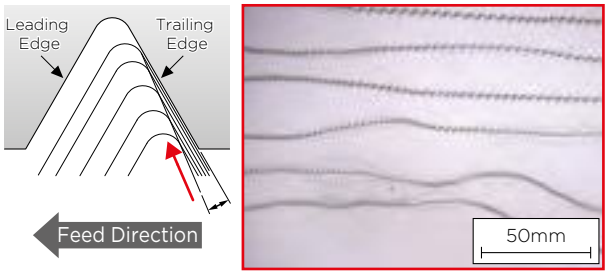
■ Infeed Method

The modified flank infeed is recommended for the SSTE type / SSTI type.
This infeed method, which features reduced chip curl diameters and stable chip control, can also decrease chipping on trailing edges that often occurs in radial infeed machining. (1° is recommended for the modification angle.)

● Impact of Infeed Method on Chip Shapes

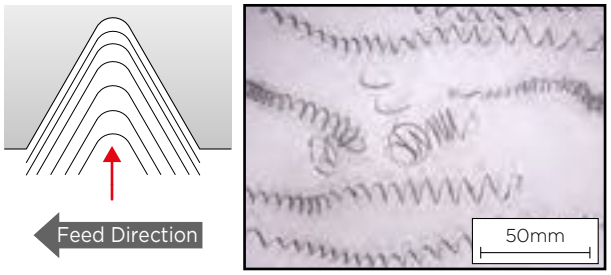
Work Material: X5CrNiMo17-12-2, M30 x 1.5 Cutting Conditions: vc = 60m/min Wet, 8 Passes

Modified Flank Infeed



Reduced curl diameters ensure smooth, stable chip control (performance).

Radial Infeed Machining



Large curl diameters cause unstable chip control.

Guide to Depth of Cut and No. of Passes

SSTE type Guidelines for Depth of Cut

External Metric Threads (Depth of cut per pass: mm)

Pitch (mm)	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Overall Depth of Cut (mm)	0.48	0.64	0.80	0.92	1.10	1.26	1.57	1.87
No. of Passes	4	5	7	8	10	12	14	16
1	0.24	0.25	0.25	0.28	0.28	0.30	0.38	0.40
2	0.12	0.15	0.15	0.15	0.15	0.16	0.19	0.22
3	0.07	0.11	0.12	0.12	0.12	0.13	0.15	0.15
4	0.05	0.08	0.09	0.10	0.10	0.10	0.10	0.13
5		0.05	0.08	0.09	0.10	0.09	0.10	0.12
6			0.06	0.07	0.09	0.09	0.09	0.10
7			0.05	0.06	0.08	0.08	0.09	0.10
8				0.05	0.07	0.07	0.08	0.09
9					0.06	0.07	0.08	0.09
10					0.05	0.06	0.07	0.08
11						0.06	0.07	0.08
12						0.05	0.06	0.07
13							0.06	0.07
14							0.05	0.06
15								0.06
16								0.05

External Unified Threads (Depth of cut per pass: mm)

Threads/Inch	32	28	24	20	18	16	14	13	12	11	10	9	8
Overall Depth of Cut (mm)	0.50	0.57	0.67	0.80	0.89	1.00	1.15	1.23	1.34	1.46	1.60	1.78	2.00
No. of Passes	4	4	5	7	8	10	11	12	12	14	14	16	16
1	0.24	0.25	0.25	0.26	0.26	0.28	0.28	0.30	0.30	0.30	0.38	0.38	0.40
2	0.14	0.17	0.19	0.15	0.15	0.15	0.15	0.18	0.18	0.18	0.20	0.20	0.25
3	0.07	0.10	0.12	0.10	0.12	0.10	0.12	0.13	0.13	0.13	0.15	0.13	0.19
4	0.05	0.05	0.06	0.09	0.10	0.09	0.10	0.10	0.12	0.12	0.12	0.12	0.16
5			0.05	0.08	0.08	0.08	0.10	0.08	0.11	0.11	0.10	0.11	0.14
6				0.07	0.07	0.07	0.09	0.08	0.10	0.10	0.09	0.10	0.12
7				0.05	0.06	0.07	0.08	0.07	0.09	0.08	0.09	0.10	0.11
8					0.05	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.10
9						0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09
10						0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08
11							0.05	0.05	0.05	0.06	0.07	0.08	0.07
12								0.05	0.05	0.06	0.06	0.07	0.07
13										0.05	0.06	0.07	0.06
14										0.05	0.05	0.06	0.06
15												0.05	0.05
16												0.05	0.05

No. of passes and depths of cut in the table above are general guidelines only. Increase or decrease depending on conditions. However, the maximum depth of cut should be kept to 0.5mm or less.
When using an insert with a wiper edge, add machining allowance to the total depth of cut.

Recommended Cutting Conditions

Work Material	P Carbon Steel	P Alloy Steel (up to 330HB)	M Stainless Steel	K Grey Cast Iron (up to 330HB)	K Ductile Cast Iron	S Titanium Alloy
Cutting Speed vc (m/min)	75-150	75-135	60-120	90-180	75-135	24-90

Guide to Depth of Cut and No. of Passes

SSTI type Guidelines for Depth of Cut

■ Internal Metric Threads (Depth of cut per pass: mm)

Pitch (mm)	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Overall Depth of Cut (mm)	0.49	0.58	0.74	0.89	1.04	1.18	1.47	1.76
No. of Passes	4	5	8	10	11	12	14	16
1	0.20	0.22	0.22	0.25	0.25	0.25	0.30	0.30
2	0.12	0.14	0.14	0.12	0.17	0.18	0.19	0.20
3	0.12	0.10	0.09	0.08	0.10	0.12	0.15	0.17
4	0.05	0.07	0.07	0.08	0.08	0.10	0.12	0.14
5		0.05	0.06	0.07	0.08	0.09	0.10	0.12
6			0.06	0.07	0.07	0.08	0.09	0.11
7			0.05	0.06	0.07	0.07	0.08	0.10
8			0.05	0.06	0.06	0.07	0.08	0.10
9				0.05	0.06	0.06	0.07	0.08
10				0.05	0.05	0.06	0.07	0.08
11					0.05	0.05	0.06	0.07
12						0.05	0.06	0.07
13							0.05	0.06
14							0.05	0.06
15								0.05
16								0.05

■ Internal Unified Threads (Depth of cut per pass: mm)

Threads/Inch	32	28	24	20	18	16	14	13	12	11	10	9	8
Overall Depth of Cut (mm)	0.43	0.49	0.57	0.69	0.76	0.86	0.98	1.06	1.15	1.25	1.37	1.53	1.72
No. of Passes	4	4	5	7	8	10	11	12	12	14	14	16	16
1	0.20	0.20	0.20	0.22	0.22	0.22	0.25	0.25	0.27	0.27	0.27	0.30	0.30
2	0.10	0.16	0.16	0.12	0.13	0.13	0.15	0.15	0.16	0.16	0.18	0.18	0.22
3	0.08	0.08	0.09	0.09	0.10	0.08	0.10	0.10	0.12	0.12	0.16	0.16	0.18
4	0.05	0.05	0.07	0.08	0.08	0.08	0.08	0.08	0.10	0.10	0.12	0.11	0.15
5			0.05	0.07	0.07	0.07	0.07	0.08	0.09	0.08	0.10	0.09	0.12
6				0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.11
7				0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.10
8					0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.09
9						0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.08
10						0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.07
11							0.04	0.05	0.05	0.05	0.05	0.06	0.06
12								0.04	0.04	0.05	0.05	0.06	0.06
13										0.04	0.04	0.05	0.05
14										0.04	0.04	0.05	0.05
15												0.04	0.04
16												0.04	0.04

No. of passes and depths of cut in the table above are general guidelines only. Increase or decrease depending on conditions. However, the maximum depth of cut should be kept to 0.5mm or less.
When using an insert with a wiper edge, add machining allowance to the total depth of cut.

■ Recommended Cutting Conditions

Work Material	P Carbon Steel	P Alloy Steel (up to 330HB)	M Stainless Steel	K Grey Cast Iron (up to 330HB)	K Ductile Cast Iron	S Titanium Alloy
Cutting Speed vc (m/min)	75-150	75-135	60-120	90-180	75-135	24-90

STH series

External

External Turning
Screw-on

M Metric Thread
W Whitworth Thread

SumiSmall

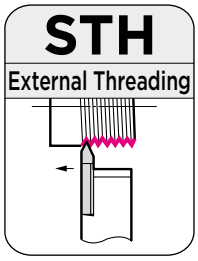


Fig 1

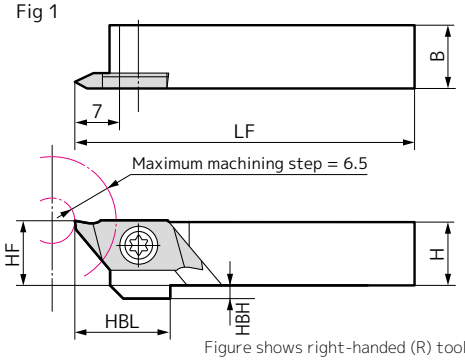


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Step HBH	Bottom Offset HBL	Applicable Insert	Fig	Flat Head Screw	Wrench
STH R/L0810	★	★	8	10	120	8	4	15	TH R/L type	1	BFTX0410NTW	RT08
R/L1010	★	★	10	10	120	10	2	15		1		
R/L1212F	★	★	12	12	85	12	—	15		1	BFTX0412NTW	
R/L1212	★	★	12	12	120	12	—	15		1		
R/L1616H	★	★	16	16	100	16	—	15		1		
R/L1616	★	★	16	16	120	16	—	15		1		
R/L2020	★	★	20	20	80	20	—	15		1	BFTX0410NT	LT25NT

Insert (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	ACZ150 R	ACZ150 L	Pitch mm	Pitch Threads/Inch	Overall Length L	Height W1	Corner Radius RE	X Direction PDX	Included Angle PNA	Cutting Edge Shape	Applicable Holder	Fig
TH R/L6002075A	★	★	0.20 to 0.75	—	20	8	—	0.40	60	(A)	STH series	1
R/L6002075B	★	★	0.20 to 0.75	—	20	8	—	0.40	60	(A)		2
R/L6005125A	★	★	0.50 to 1.25	—	20	8	0.05	0.80	60	(B)		1
R/L6005125B	★	★	0.50 to 1.25	—	20	8	0.05	0.80	60	(B)		2
R/L601015N	★	★	1.00 to 1.50	—	20	8	0.10	1.25	60	(B)		3
R/L550515A	★	★	0.529 to 1.58	48 to 16	20	8	0.05	0.80	55	(B)		1
R/L550515B	★	★	0.529 to 1.58	48 to 16	20	8	0.05	0.80	55	(B)		2

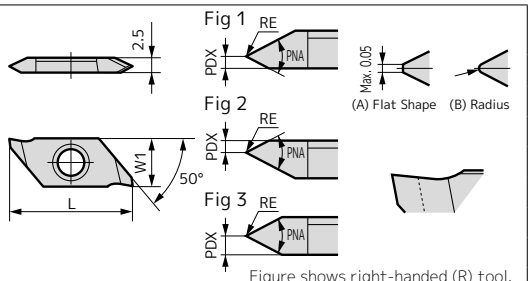
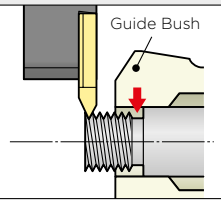
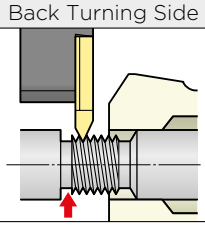
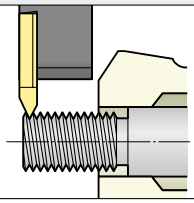
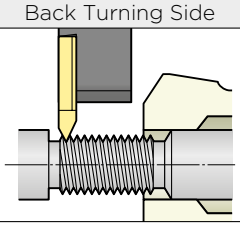


Figure shows right-handed (R) tool.

Recommended Cutting Conditions A24

Holder/Insert Combinations

Feed Direction	Right-handed		Left-handed	
Cutting Edge Position	Guide Bush Side	Back Turning Side	Guide Bush Side	Back Turning Side
Threading Condition				
Holder	**STH R (Right-Hand)**	**STH R (Right-Hand)**	**STH L (Left-Hand)**	**STH L (Left-Hand)**
Insert	**TH R····A**	**TH R····B**	**TH L····B**	**TH L····A**
Features	It is often used in common tooling for workpieces that have a thread at their top end. In this type of tooling, the necking width indicated with the arrow can be reduced, since the cutting edge point is placed closer to the guide bush side.	Often used when a thread is at the middle of the workpiece or at the rear. In this type of tooling, the necking width indicated with the arrow can be reduced, since the cutting edge point is placed closer to the back turning side.	With a left hand holder used, a sufficient cutting distance can be kept since the cutting edge position is separate from the guide bush. For the left-hand holder, the selection of A type and B type is the reverse of the right-hand holder. (B indicates the guide bush side while A indicates the back turning side.)	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

GME-TH series

External

Clamp-on
for Large External Pitch

M Metric Thread
W Whitworth Thread

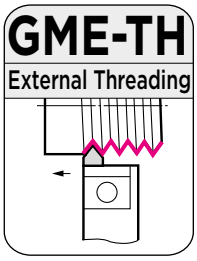


Fig 1

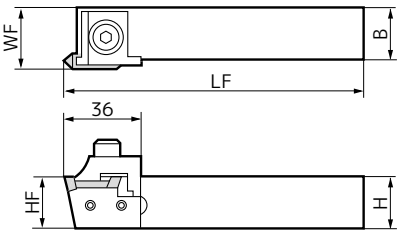


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

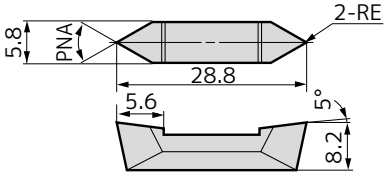
ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp Plate	Support	Cap Screw	Wrench
GME R/L2525TH			25	25	144.7	29.3	25	1	GTCR/L	GTR/L	BX0414 (For Support) BX0820 (For Clamp Plate)	LH030 (For Support) LH060 (For Clamp Plate)
R/L2525THL			25	25	150.0	29.3	25	1				
R/L3232TH			32	32	170.0	36.3	32	1				

Inserts (Cemented Carbide)

Dimensions (mm)

ISO Cat. No.	ST20E	A30	G10E	Pitch mm	Pitch Threads/Inch	Thread Ridge PNA	Corner Radius RE	Fig
MTG 40		★		3 to 4	—	60	0.3	1
50		★		5	—	60	0.4	1
60		★		6	—	60	0.5	1
MWG 40		★		—	11 to 9.0	55	0.3	1
50		★		—	8 to 6.0	55	0.4	1
60		★		—	5 to 4.5	55	0.6	1

Fig 1



Recommended Cutting Conditions

Work Material	P Carbon Steel	P Alloy Steel	M Stainless Steel
Cutting Speed vc (m/min)	70-120	70-100	70-100

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SEC-External Threading Tool Holders LTE series

External

External Turning
Screw-on / Lever Lock

M Metric Thread
W Whitworth Thread
UNC/UNF Unified Thread
R/Rc Taper Thread for Pipe

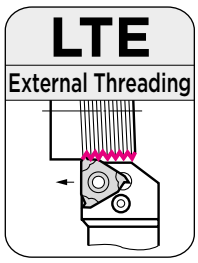
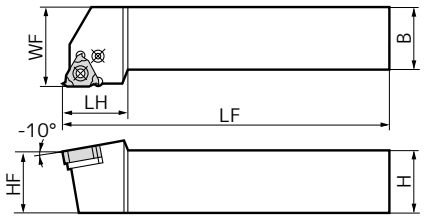


Fig 1



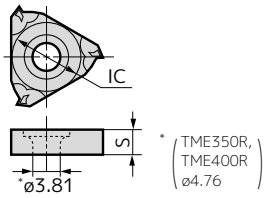
Holder

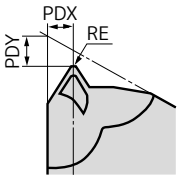
Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
LTE R2020	★	20	20	125	25	20	25	1	LCL3S	LCS3TE	LSTE31-0	LSP3	LH025
R2525	★	25	25	150	32	25	25	1					
LTE R2525M22	★	25	25	150	32	25	28	1	LCL4S	LCS4	LSTE42-0	LSP4	LH030
R3232P22	★	32	32	170	40	32	28	1					

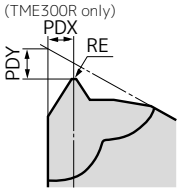
Refer to page F129 for shim selection.

Fig 1





Close-up of Cutting Edge



Close-up of Cutting Edge

Inserts (Cermet)

Dimensions (mm)

Type	ISO Cat. No.	Reference ISO Cat. No.	Pitch mm	Pitch Threads/Inch	T1500A	Corner Radius RE	X Direction PDX	Y Direction PDY	Inscribed Circle IC	Thickness S	Wiper Edge	Applicable Holder	Fig
60° Metric Thread	**TME 100R**	16ER100ISO-TE	1.00	—	★	0.11	0.8	1.2	9.525	3.65	Yes	LTE R2020 LTE R2525	1
	125R	16ER125ISO-TE	1.25	—	★	0.15	0.8	1.2	9.525	3.65	Yes		1
	150R	16ER150ISO-TE	1.50	—	★	0.19	1.0	1.2	9.525	3.65	Yes		1
	175R	16ER175ISO-TE	1.75	—	★	0.22	1.2	1.2	9.525	3.65	Yes		1
	200R	16ER200ISO-TE	2.00	—	★	0.26	1.4	1.2	9.525	3.65	Yes		1
	250R	16ER250ISO-TE	2.50	—	★	0.33	1.4	1.2	9.525	3.65	Yes		1
	300R	16ER300ISO-TE	3.00	—	★	0.40	1.8	1.2	9.525	3.65	Yes		1
	TME 350R	22ER350ISO-TE	3.50	—	★	0.47	2.5	1.7	12.70	4.60	Yes	LTE R2525M22	1
	400R	22ER400ISO-TE	4.00	—	★	0.54	2.5	1.7	12.70	4.60	Yes	LTE R3232P22	1
	TME 1020R	16ER102060-TE	1.00 to 2.00	24 to 12	★	0.11	1.1	1.2	9.525	3.65	No	LTE R2020 LTE R2525	1
	1530R	16ER153060-TE	1.50 to 3.00	16 to 8	★	0.19	1.6	1.0	9.525	3.65	No		1
55° Whitworth Thread	**TWE 1410R**	16ER141055-TE	—	14 to 10	★	0.21	1.4	1.2	9.525	3.65	No		1
	2416R	16ER241655-TE	—	24 to 16	★	0.11	1.1	1.2	9.525	3.65	No		1
60° Unified Thread	**TUE 24R**	16ER24UN-TE	—	24	★	0.12	0.8	1.2	9.525	3.65	Yes		1
	20R	16ER20UN-TE	—	20		0.15	0.8	1.2	9.525	3.65	Yes		1
	18R	16ER18UN-TE	—	18		0.17	1.0	1.2	9.525	3.65	Yes		1
	16R	16ER16UN-TE	—	16	★	0.20	1.2	1.2	9.525	3.65	Yes		1
	14R	16ER14UN-TE	—	14	★	0.23	1.2	1.2	9.525	3.65	Yes		1
	12R	16ER12UN-TE	—	12	★	0.28	1.4	1.2	9.525	3.65	Yes		1
	08R	16ER08UN-TE	—	8		0.43	1.8	1.2	9.525	3.65	Yes		1
55° Taper Thread for Pipe	**TPE 28R**	16ER28BSPT-TE	—	28		0.09	0.9	0.7	9.525	3.65	Yes		1
	19R	16ER19BSPT-TE	—	19	★	0.15	0.9	0.7	9.525	3.65	Yes		1
	14R	16ER14BSPT-TE	—	14	★	0.22	1.6	1.2	9.525	3.65	Yes		1
	11R	16ER11BSPT-TE	—	11	★	0.29	1.6	1.2	9.525	3.65	Yes		1

For these inserts, only LTE/STE type holders can be used.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-External Threading Tool Holders STE series

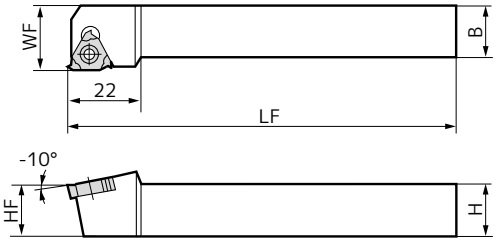
External

External Turning
Screw-on / Lever Lock

M Metric Thread
W Whitworth Thread
UNC/UNF Unified Thread
R/Rc Taper Thread for Pipe



Fig 1



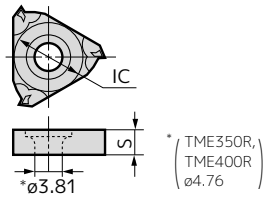
Holder

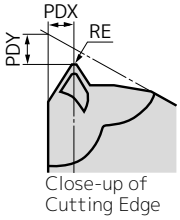
Parts

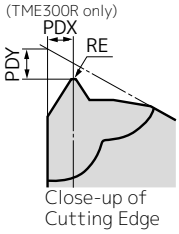
Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Flat Head Screw	N·m	Wrench
STE R1212	★	12	12	100	16	12	1	BFTX03508	**2.0**	TRX10
R1616	★	16	16	100	20	16	1			

Fig 1







Inserts (Cermet)

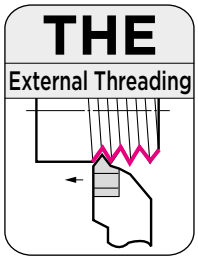
Dimensions (mm)

Type	ISO Cat. No.	Reference ISO Cat. No.	Pitch mm	Pitch Threads/Inch	T1500A	Corner Radius RE	X Direction PDX	Y Direction PDY	Inscribed Circle IC	Thickness S	Wiper Edge	Applicable Holder	Fig
60° Metric Thread	**TME 100R**	16ER100ISO-TE	1.00	—	★	0.11	0.8	1.2	9.525	3.65	Yes	STE R1212 STE R1616	1
	125R	16ER125ISO-TE	1.25	—	★	0.15	0.8	1.2	9.525	3.65	Yes		1
	150R	16ER150ISO-TE	1.50	—	★	0.19	1.0	1.2	9.525	3.65	Yes		1
	175R	16ER175ISO-TE	1.75	—	★	0.22	1.2	1.2	9.525	3.65	Yes		1
	200R	16ER200ISO-TE	2.00	—	★	0.26	1.4	1.2	9.525	3.65	Yes		1
	250R	16ER250ISO-TE	2.50	—	★	0.33	1.4	1.2	9.525	3.65	Yes		1
	300R	16ER300ISO-TE	3.00	—	★	0.40	1.8	1.2	9.525	3.65	Yes		1
	TME 1020R	16ER102060-TE	1.00 to 2.00	24 to 12	★	0.11	1.1	1.2	9.525	3.65	No		1
	1530R	16ER153060-TE	1.50 to 3.00	16 to 8	★	0.19	1.6	1.0	9.525	3.65	No		1
55° Whitworth Thread	**TWE 1410R**	16ER141055-TE	—	14 to 10	★	0.21	1.4	1.2	9.525	3.65	No		1
	2416R	16ER241655-TE	—	24 to 16	★	0.11	1.1	1.2	9.525	3.65	No		1
60° Unified Thread	**TUE 24R**	16ER24UN-TE	—	24	★	0.12	0.8	1.2	9.525	3.65	Yes		1
	20R	16ER20UN-TE	—	20		0.15	0.8	1.2	9.525	3.65	Yes		1
	18R	16ER18UN-TE	—	18		0.17	1.0	1.2	9.525	3.65	Yes		1
	16R	16ER16UN-TE	—	16	★	0.20	1.2	1.2	9.525	3.65	Yes		1
	14R	16ER14UN-TE	—	14	★	0.23	1.2	1.2	9.525	3.65	Yes		1
	12R	16ER12UN-TE	—	12	★	0.28	1.4	1.2	9.525	3.65	Yes		1
	08R	16ER08UN-TE	—	8		0.43	1.8	1.2	9.525	3.65	Yes		1
55° Taper Thread for Pipe	**TPE 28R**	16ER28BSPT-TE	—	28		0.09	0.9	0.7	9.525	3.65	Yes		1
	19R	16ER19BSPT-TE	—	19	★	0.15	0.9	0.7	9.525	3.65	Yes		1
	14R	16ER14BSPT-TE	—	14	★	0.22	1.6	1.2	9.525	3.65	Yes		1
	11R	16ER11BSPT-TE	—	11	★	0.29	1.6	1.2	9.525	3.65	Yes		1

For these inserts, only LTE/STE type holders can be used.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

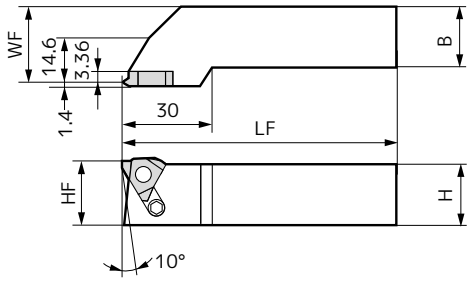
External



External Turning
Screw-on / Drawing Pin

M Metric Thread
W Whitworth Thread
R/Rc Taper Thread for Pipe

Fig 1

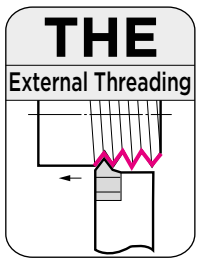


Holder

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Parts: Drawing Pin	Set Screw	Wrench
THE R-33	★	20	20	125	25.0	20	1	SR124	BTD0510	LH025
R-44	★	25	25	150	32.2	25	1			

External

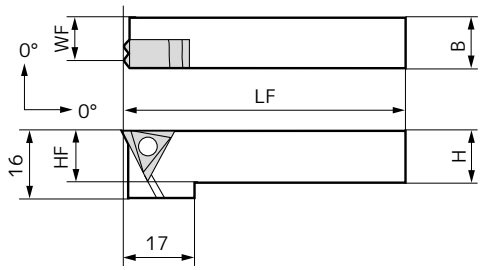


Screw-on / Drawing Pin for SEC-External Diameter (Mini Holders)

M Metric Thread
W Whitworth Thread
R/Rc Taper Thread for Pipe

SumiSmall

Fig 1



Holder

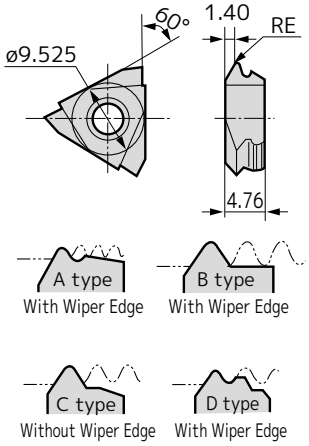
Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Parts: Flat Head Screw	Wrench
THE R1010-33	★	10	10	100	8.6	10	1	BFX0410R	TH025
R1212-33	★	12	12	100	10.6	12	1		

Inserts (Cermet / Cemented Carbide)

Dimensions (mm)

ISO Cat. No.	T1500A	ST10P	A30	Pitch mm	Pitch Threads/Inch	Corner Radius RE	Included Angle PNA	Cutting Edge Design	Applicable Holder
NE R080		★	★	0.80	—	0.08	60	A	THE R-33 THE R-44 THE R1010-33 THE R1212-33
R100		★	★	1.00	—	0.11	60	A	
R125		★	★	1.25	—	0.15	60	B	
R150		★	★	1.50	—	0.18	60	B	
R175		★	★	1.75	—	0.22	60	B	
R200		★	★	2.00	—	0.25	60	B	
R250		★	★	2.50	—	0.33	60	B	
R0815	★	★	★	0.80 to 1.50	—	0.08	60	C	
R1530	★	★	★	1.50 to 3.00	—	0.18	60	C	
WE R1410	★			—	14 to 10	0.21	55	C	
R2416	★			—	24 to 16	0.11	55	C	
PTE R28				—	28	0.09	55	D	
R19				—	19	0.15	55	D	



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

Internal Threading Tools STI series

Internal Threading
Screw-on

M Metric Thread
UNC/UNF Unified Thread

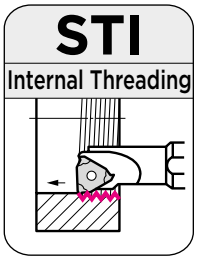
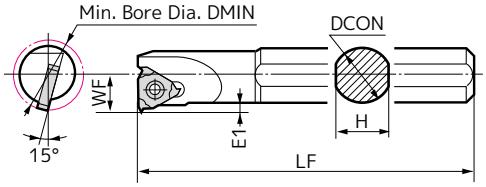


Fig 1



Holder

Parts

Dimensions (mm)

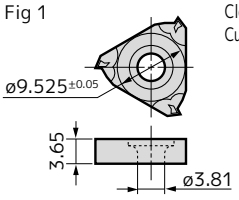
ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Distance E1	Min. Bore Dia. DMIN	Fig	Flat Head Screw	N·m	Wrench
STI R316	★	16	15	150	11	3.5	20	1	BFTX03508	**2.0**	TRX10
R320	★	20	18	180	14	5.0	25	1			

Inserts (Cermet)

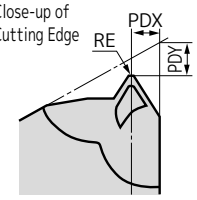
Dimensions (mm)

ISO Cat. No.	Reference ISO Cat. No.	Pitch mm	Pitch Threads/Inch	T15000A	Corner Radius RE	Included Angle PNA	X Direction PDX	Y Direction PDY	Fig
TMI 100R	16IR100ISO-TI	1.00	—	★	0.04	60	0.8	1.2	1
125R	16IR125ISO-TI	1.25	—	★	0.05	60	0.8	1.2	1
150R	16IR150ISO-TI	1.50	—	★	0.07	60	1.0	1.2	1
175R	16IR175ISO-TI	1.75	—	★	0.09	60	1.2	1.2	1
200R	16IR200ISO-TI	2.00	—	★	0.10	60	1.4	1.2	1
250R	16IR250ISO-TI	2.50	—	★	0.14	60	1.4	1.2	1
300R	16IR300ISO-TI	3.00	—	★	0.18	60	1.8	1.2	1
TMI 1020R	16IR102060-TI	1.00 to 2.00	24 to 12	★	0.04	60	1.0	1.2	1
1530R	16IR153060-TI	1.50 to 3.00	16 to 8	★	0.07	60	1.5	1.2	1

Fig 1



Close-up of Cutting Edge



For these inserts, only STI type holders can be used.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

STHI series

Internal Threading
Screw-on

M Metric Thread

SumiSmall

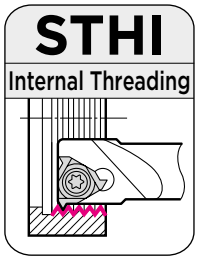
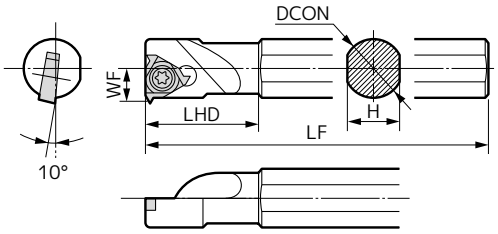


Fig 1



Holder

Parts

Dimensions (mm)

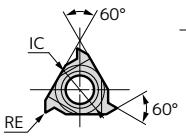
ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Min. Bore Dia.	Applicable Insert	Fig	Flat Head Screw	Wrench
STHI 06	★	6	5.5	100	3.8	13.0	8.0	TI R06	1	BFTX0204NS	RT06
08	★	8	7.0	125	4.7	17.0	10.0	TI R08	1	BFTX0205NS	
10	★	10	9.0	150	6.0	20.0	12.0	TI R09	1	BFTX02206NT	

Insert (Coated Carbide)

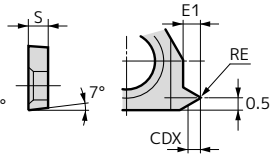
Dimensions (mm)

ISO Cat. No.	Reference ISO Cat. No.	ACZ150	Pitch (mm)	Corner Radius RE	Inscribed Circle IC	Thickness S	Cutting Edge Distance E1	Maximum Depth of Cut CDX	Applicable Holder	Fig
TI R06	06IR041060-HI	★	0.4 to **0.5** to 1.0	0.03	3.97	1.59	0.7	0.5	STHI06	1
R08	08IR041060-HI	★	0.4 to **0.5** to 1.0	0.03	4.76	2.38	0.7	0.5	STHI08	1
R09	09IR041060-HI	★	0.4 to **0.5** to 1.0	0.03	5.56	2.38	0.7	0.5	STHI10	1

Fig 1



E1: Cutting Edge Distance
CDX: Maximum Depth of Cut



· For these inserts, only STHI type holders can be used.
· Recommended pitch is 0.5mm.

Recommended Cutting Conditions A24

★ mark: Global stocked item
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— mark: Not available

Internal

Internal Threading
Clamp-on

M Metric Thread

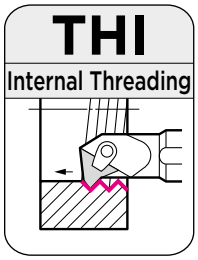
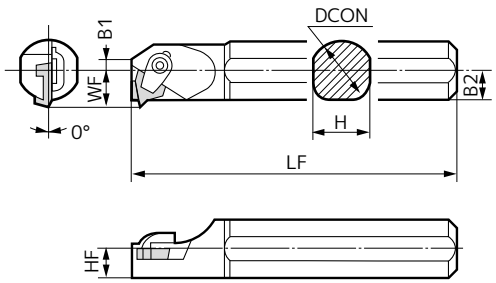


Fig 1



Holder

Parts

Dimensions (mm)

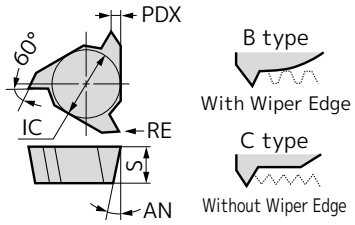
ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width B1	Width B2	Min. Pilot Hole Diameter	Applicable Insert	Fig	Clamp Plate	Double Screw	Wrench
THI R216	★	16	15	160	9.3	7.5	4	7.5	ø18	NI R2○○○	1	CCM5BSL	WB5-10	TH025
R320	★	20	18	160	11.7	9.0	6	9.0	ø22	NI R3○○○	1		WB5-12	
R325	★	25	23	180	14.2	11.5	5	11.5	ø27	NI R3○○○	1	CCM6BL	WB6-16	LH030

Inserts (▭ Cemented Carbide)

Dimensions (mm)

ISO Cat. No.	ST10P	Pitch (mm)	Inscribed Circle IC	Thickness S	X Direction PDX	Corner Radius RE	Main Blade Relief Angle AN	Cutting edge design	Applicable Holder	Fig
NI R2000	★	0.8 to 1.5	6.350	3.18	0.85	0.05	12	C	THI R216	1
R2150	★	1.5	6.350	3.18	0.85	0.07	12	B		1
NI R3000	★	0.8 to 2.5	9.525	3.18	1.35	0.05	10	C	THI R320 THI R325	1
R3150	★	1.5	9.525	3.18	0.85	0.07	10	B		1
R3200	★	2.0	9.525	3.18	1.10	0.11	10	B		1

Fig 1



· The cutting edge honing of the inserts can be enlarged for threading at a pitch of 1.5mm or more with the NIR2000 and a pitch of 2.5mm or more with the NIR3000. The honing amount must be within the threading tolerance.
· Inserts use 3 corners.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Guide to Depth of Cut and No. of Passes

Threading Tool Depth of Cut Guide

■ With Wiper Edge

Application		ISO Cat. No.	Reference Cat. No.	Pitch	Depth of Cut	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
60° Metric Thread	External Threading	**TME 100R**	16ER 100ISO-TE	1.00mm	0.68	5	0.20	0.16	0.14	0.11	0.07									
		TME 125R	16ER 125ISO-TE	1.25	0.83	6	0.20	0.18	0.15	0.12	0.11	0.07								
		TME 150R	16ER 150ISO-TE	1.50	0.96	7	0.22	0.18	0.14	0.13	0.12	0.10	0.07							
		TME 175R	16ER 175ISO-TE	1.75	1.12	8	0.22	0.19	0.16	0.14	0.13	0.12	0.09	0.07						
		TME 200R	16ER 200ISO-TE	2.00	1.25	8	0.25	0.21	0.18	0.16	0.15	0.13	0.10	0.07						
		TME 250R	16ER 250ISO-TE	2.50	1.55	10	0.27	0.24	0.20	0.18	0.16	0.13	0.11	0.10	0.09	0.07				
		TME 300R	16ER 300ISO-TE	3.00	1.85	12	0.28	0.25	0.20	0.19	0.17	0.15	0.13	0.12	0.10	0.10	0.09	0.07		
		TME 350R	22ER 350ISO-TE	3.50	2.25	13	0.30	0.27	0.24	0.22	0.20	0.18	0.16	0.15	0.14	0.12	0.11	0.09	0.07	
		TME 400R	22ER 400ISO-TE	4.00	2.57	14	0.35	0.32	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10	0.09	0.08	0.07
	Internal Threading	**TMI 100R**	16IR 100ISO-TI	1.00mm	0.63	5	0.18	0.16	0.12	0.10	0.07									
		TMI 125R	16IR 125ISO-TI	1.25	0.77	6	0.18	0.16	0.14	0.12	0.10	0.07								
		TMI 150R	16IR 150ISO-TI	1.50	0.90	7	0.20	0.16	0.14	0.13	0.11	0.09	0.07							
		TMI 175R	16IR 175ISO-TI	1.75	1.03	8	0.20	0.18	0.15	0.14	0.11	0.10	0.08	0.07						
		TMI 200R	16IR 200ISO-TI	2.00	1.18	8	0.22	0.19	0.17	0.15	0.14	0.13	0.11	0.07						
		TMI 250R	16IR 250ISO-TI	2.50	1.44	10	0.25	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.09	0.07				
		TMI 300R	16IR 300ISO-TI	3.00	1.70	12	0.27	0.24	0.20	0.17	0.14	0.12	0.12	0.10	0.10	0.09	0.08	0.07		
60° Unified Thread	External Threading	**TUE 24R**	16ER 24UN-TE	24TPI	0.72	5	0.20	0.18	0.15	0.12	0.07									
		TUE 20R	16ER 20UN-TE	20	0.85	6	0.21	0.18	0.16	0.13	0.10	0.07								
		TUE 18R	16ER 18UN-TE	18	0.95	6	0.22	0.20	0.18	0.16	0.12	0.07								
		TUE 16R	16ER 16UN-TE	16	1.05	7	0.22	0.20	0.17	0.15	0.13	0.11	0.07							
		TUE 14R	16ER 14UN-TE	14	1.20	8	0.22	0.20	0.18	0.16	0.14	0.12	0.11	0.07						
		TUE 12R	16ER 12UN-TE	12	1.38	9	0.25	0.22	0.19	0.17	0.15	0.13	0.11	0.09	0.07					
		TUE 08R	16ER 08UN-TE	8	2.05	12	0.28	0.25	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.07		
55° Taper Thread for Pipe	External Threading	**TPE 28R**	16ER 28BSPT-TE	28TPI	0.62	5	0.18	0.15	0.13	0.10	0.06									
		TPE 19R	16ER 19BSPT-TE	19	0.92	6	0.22	0.20	0.17	0.15	0.11	0.07								
		TPE 14R	16ER 14BSPT-TE	14	1.04	7	0.22	0.20	0.17	0.15	0.13	0.10	0.07							
		TPE 11R	16ER 11BSPT-TE	11	1.50	9	0.25	0.22	0.21	0.19	0.17	0.15	0.13	0.11	0.07					

*When pitch becomes smaller, decrease the cutting speed. In the case of inserts for internal threading without wiper edge, the number of passes should be increased.

■ Recommended Cutting Speeds

(Units: m/min)

Work Material \ Tool Grade		T1500A / T130A	A30	ST10P
P	Mild Steel	100 - 150	70 - 120	120 - 180
P	Low-carbon Steel	80 - 130	70 - 100	90 - 150
P	Alloy Steel	80 - 120	70 - 100	80 - 130
M	Stainless Steel	—	70 - 100	—

Guide to Depth of Cut and No. of Passes

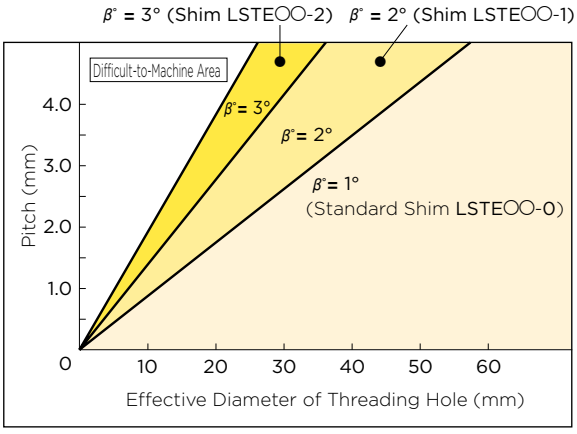
Threading Tool Depth of Cut Guide

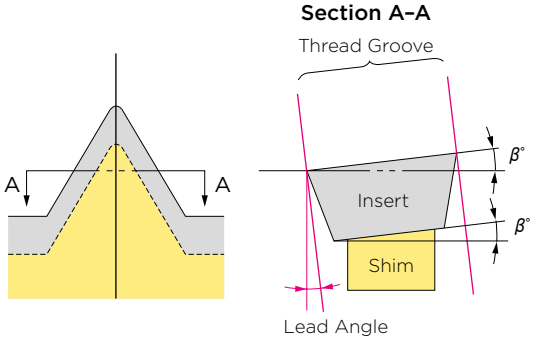
■ Without Wiper Edge

Application		ISO Cat. No.	Reference Cat. No.	Corner Radius	Pitch	Depth of Cut	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
60° Metric Thread	External Threading	**TME 1020R**	16ER 102060-TE	0.13	1.00mm	0.65	5	0.20	0.16	0.12	0.10	0.07									
					1.25	0.84	6	0.20	0.18	0.16	0.13	0.10	0.07								
					1.50	1.03	7	0.22	0.20	0.17	0.15	0.12	0.10	0.07							
					1.75	1.22	8	0.22	0.21	0.18	0.16	0.15	0.13	0.10	0.07						
					2.00	1.41	10	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.09	0.07				
		TME 1530R	16ER 153060-TE	0.20	1.50mm	0.95	7	0.22	0.17	0.14	0.13	0.12	0.10	0.07							
					1.75	1.14	8	0.22	0.18	0.16	0.15	0.14	0.12	0.10	0.07						
					2.00	1.33	9	0.25	0.20	0.18	0.16	0.15	0.13	0.10	0.09	0.07					
					2.50	1.71	12	0.25	0.22	0.19	0.17	0.15	0.14	0.13	0.12	0.10	0.09	0.08	0.07		
					3.00	2.09	14	0.25	0.22	0.20	0.20	0.18	0.17	0.15	0.14	0.14	0.10	0.10	0.09	0.08	0.07
	Internal Threading	**TMI 1020R**	16IR 102060-TI	0.06	1.00mm	0.59	6	0.16	0.12	0.10	0.08	0.08	0.05								
					1.25	0.75	7	0.16	0.14	0.12	0.10	0.10	0.08	0.05							
					1.50	0.92	8	0.18	0.15	0.14	0.12	0.10	0.10	0.08	0.05						
					1.75	1.08	9	0.18	0.16	0.14	0.13	0.12	0.12	0.10	0.08	0.05					
					2.00	1.24	10	0.20	0.18	0.15	0.14	0.12	0.12	0.10	0.10	0.08	0.05				
		TMI 1530R	16IR 153060-TI	0.09	1.50mm	0.91	8	0.18	0.14	0.14	0.12	0.10	0.10	0.08	0.05						
					1.75	1.07	9	0.18	0.16	0.13	0.13	0.12	0.12	0.10	0.08	0.05					
					2.00	1.23	10	0.20	0.18	0.14	0.14	0.12	0.12	0.10	0.10	0.08	0.05				
					2.50	1.56	12	0.20	0.18	0.16	0.16	0.15	0.13	0.13	0.11	0.11	0.10	0.08	0.05		
					3.00	1.88	14	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.10	0.10	0.10	0.08	0.07	0.05
55° Whitworth Thread	External Threading	**TWE 2416R**	16ER 241655-TE	0.13	20TPI	0.80	6	0.20	0.17	0.15	0.12	0.09	0.07								
					19	0.84	6	0.20	0.18	0.16	0.13	0.10	0.07								
					18	0.90	7	0.20	0.18	0.15	0.12	0.10	0.08	0.07							
					16	1.03	7	0.22	0.20	0.17	0.15	0.12	0.10	0.07							
					14TPI	1.07	8	0.20	0.17	0.15	0.14	0.13	0.12	0.09	0.07						
		TWE 1410R	16ER 141055-TE	0.23	12	1.29	9	0.22	0.20	0.17	0.15	0.14	0.13	0.12	0.09	0.07					
					11	1.43	10	0.22	0.21	0.18	0.16	0.14	0.13	0.12	0.11	0.09	0.07				
					10	1.60	11	0.22	0.21	0.18	0.17	0.16	0.14	0.13	0.12	0.11	0.09	0.07			

*When pitch becomes smaller, decrease the cutting speed. In the case of inserts for internal threading without wiper edge, the number of passes should be increased.

■ Shim Selection for External Threading Tool LTE series Holder





Standard shim that comes with LTE has β° = 1°.
β° = 2°, 3° shims are sold separately.
STE and STI type holders do not come with shims.

Tooling Systems Cartridges G1 to G40

G

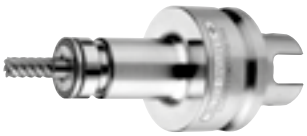


General Features of Tooling Systems G2
ICTM HSK Tooling System G3
Polygonal Taper Shank SumiPolygon G8
GND Grooving System G22
Adapter for Holder and Boring Bar SumiPolygon .. G29
2 Locating Faces Modular Taper Shank/
2 Locating Faces HSK Tooling System G30
Smart Damper™ for Milling G32
IGETALLOY ABS System G34
SEC-Micro Units G36
SEC-Cartridge Units G37
Boring Quills / Carbide Line Boring Bars G39

Stock Markings and Symbols	★ mark: Global stocked item ▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)	Blank: Made-to-order item — mark: Not available

General Features of Tooling Systems

■ Tooling Systems

Application	System Name		Feature	Ref. Page
Turning	ICTM STANDARD HSK Tooling System		Shanks for turning applications in multi-tasking machines, conforming to the ICTM (Interface Committee for Turning Mill) Standard. Compatible with HSK-A type, tools can be shared between multi-tasking machines and machining centres. Compliant with ISO standard ISO12164-3:2008.	G3 ~
Turning / Milling	Polygon Taper Shank SumiPolygon		Polygonal keyless coupling system achieves an indexing accuracy of ±2μm. Supports both turning and rotating tools. Compliant with ISO standard ISO26623-1:2008.	G8 ~
Milling	Modular Taper Shank		Achieving high-precision machining by increasing rigidity at high-speed rotations with two locating faces on the taper and flange, along with an excellent clamping mechanism. Compliant with ISO standard ISO 26622-1:2008.	G30
Milling	HSK Tooling System		The ISO standard for milling shanks with 2 locating faces.	G30
Milling	Smart Damper™		A special anti-vibration mechanism is built in to realize high-efficiency and high quality machining with a long overhang.	G32 ~
Milling	IGETALLOY ABS System		This quick change system for round tools uses an unique mechanism with a strong holding force. The system offers high rigidity and precision, and exhibits good indexing accuracy during tool changes.	G34 ~

HSK Tooling System



ICTM STANDARD

■ Features

The HSK tooling system has been adopted by Japan's 17 major machine tool manufacturers as the interface for turning tools in multi-tasking machines. It is based on the ICTM (Interface Committee for Turning Mill) standard. Based on the ISO standard HSK shank, this system is designed to improve precision in turning applications, and is compatible with the HSK-A type that is in widely use on machining centres.

*** Catalogue numbers have been changed due to ISO standardisation (ISO 12164-3:2008).**

For support with non-standard specifications, contact us directly.

General External Turning and Profiling
Double Clamp

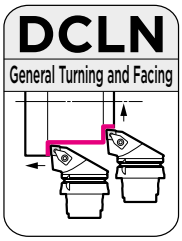


Fig 1

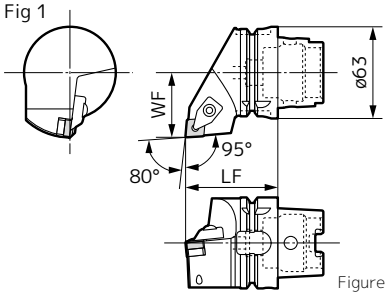


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
CN□□1204○○	B14 ~

(Representative example)



CNMG120408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Overhang LF	Cutting Edge WF	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
HSK63TH-DCLN R/L-DX12	H63A-WH-DCLN R/L-DX12			65	45	1	SCP-2	**5.0**	CNS1204	BFTX0409N	TRX15 (*)	LH040

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

General External Turning and Profiling
Double Clamp

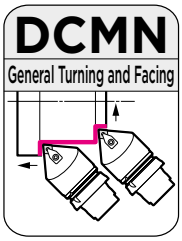
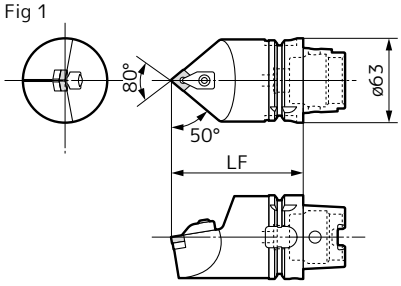


Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
CN□□1204○○	B14 ~

(Representative example)



CNMG120408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Overhang LF	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
HSK63TH-DCMN N-H12	H63A-WH-DCMN N-H12		100	1	SCP-2	**5.0**	CNS1204	BFTX0409N	TRX15 (*)	LH040
HSK63TH-DCMN N-L12	H63A-WH-DCMN N-L12		140	1						

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HSK Tooling System

General External Turning and Profiling
Double Clamp

DDJN
External Turning and Profiling

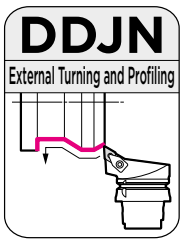


Fig 1

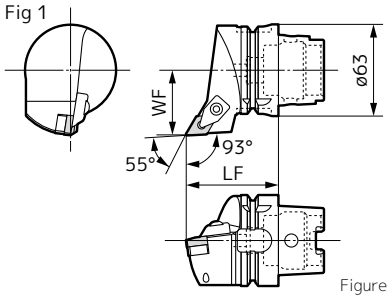


Figure shows right-handed (R) tool.

Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
DN□□1504○○	B24 ~
DN□□1506○○	B28 ~



DNMG150408N-GE
DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Overhang LF	Cutting Edge WF	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
HSK63TH-DDJN R/L-DX15	H63A-WH-DDJN R/L-DX15			65	45	1	SCP-2	**5.0**	DNS1504/ DNS1506	BFTX0409N	TRX15 (*)	LH040

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

General External Turning and Profiling
Double Clamp

DDNN
External Turning and Profiling

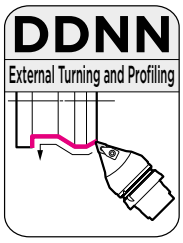
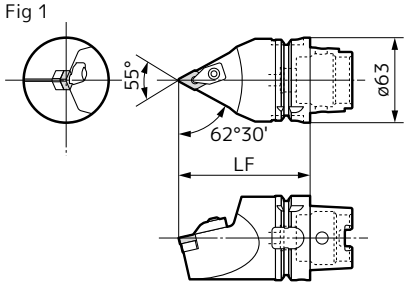


Fig 1



Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
DN□□1504○○	B24 ~
DN□□1506○○	B28 ~



DNMG150408N-GE
DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Overhang LF	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
HSK63TH-DDNN N-H15	H63A-WH-DDNN N-H15		100	1	SCP-2	**5.0**	DNS1504/ DNS1506	BFTX0409N	TRX15 (*)	LH040
HSK63TH-DDNN N-L15	H63A-WH-DDNN N-L15		140	1						

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

General External Turning and Profiling
Double Clamp

DVPN
Necking

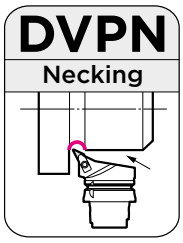


Fig 1

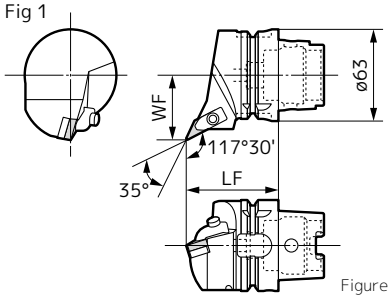


Figure shows right-handed (R) tool.

Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
VN□□1604○○	B58 ~



VNMG 160408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Overhang LF	Cutting Edge WF	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
HSK63TH-DVPN R/L-DX16	H63A-WH-DVPN R/L-DX16			65	45	1	SCP-4	**5.0**	VNS1604	BFTX0307N	TRX10 (*)	LH040

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HSK Tooling System

General External Turning and Profiling
Double Clamp

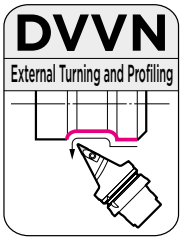
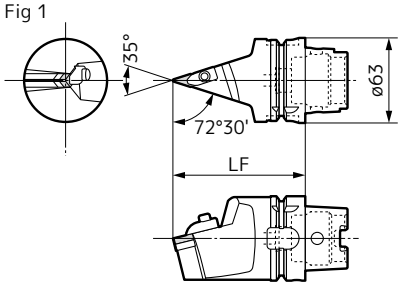


Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
VN□□1604○○	B58 ~

(Representative example)



VNMG 160408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Overhang LF	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
HSK63TH-DVVN N-H16	H63A-WH-DVVN N-H16		100	1	SCP-4	**5.0**	VNS1604	BFTX0307N	TRX10 (*)	LH040

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

General External Turning and Profiling
Screw-on

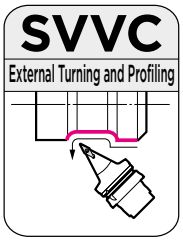
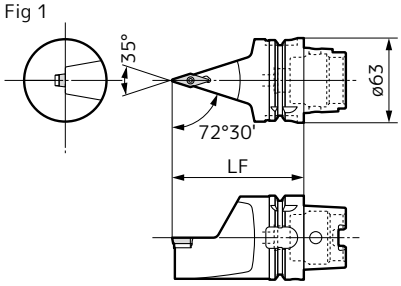


Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~

(Representative example)



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Overhang LF	Fig	Pin	Nut	Shim	Flat Insert Screw	Wrench for Shim	Wrench
HSK63TH-SVVC N-H16	H63A-WH-SVVCN-H16		100	1	VP25	CPV33N	SVP32	BFTX03508	LH025(*)	TRX10
HSK63TH-SVVC N-L16	H63A-WH-SVVCN-L16		140	1						

*Wrench for shim is sold separately from the main body.

General External Turning and Profiling
Screw-on

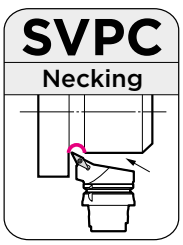


Fig 1

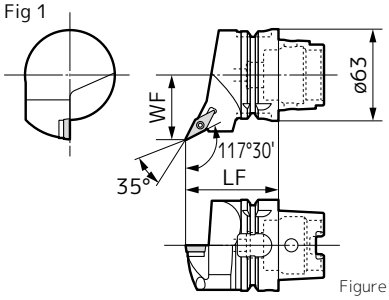


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~

(Representative example)



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock R	Stock L	Overhang LF	Cutting Edge WF	Fig	Pin	Nut	Shim	Flat Insert Screw	Wrench for Shim	Wrench
HSK63TH-SVPC R/L-DX16	H63A-WH-SVPCL-DX16			65	45	1	VP20	CPV33N	SVP32	BFTX03508	LH025(*)	TRX10

*Wrench for shim is sold separately from the main body.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

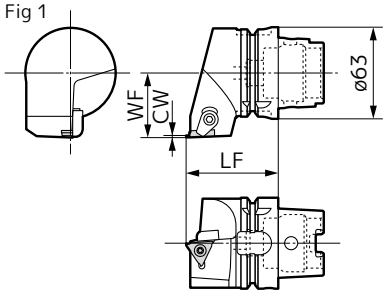
HSK Tooling System

External Grooving
Double Clamp

GWC
External Grooving



Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
TGAR4○○○□	F6 to F8
TGAR4○○○BF	F9

(Representative example)



TGAR4150

Holder

Parts

Dimensions (mm)

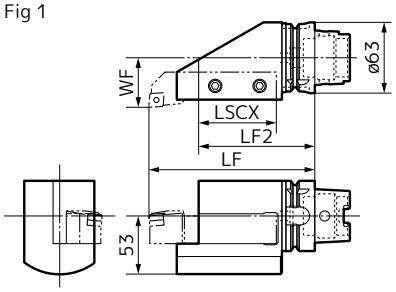
ISO Cat. No.	Cat. No.	Stock	Overhang LF	Cutting Edge WF	Width of Cut CW	Group No.	Fig	Flat Insert Screw	N·m	Clamp Plate	Double Screw	Wrench	Wrench
HSK63TH-GWC R-DX412	H63A-WH-GWC R-DX412		65	45	1.25 to 1.45	2	1						
HSK63TH-GWC R-DX415	H63A-WH-GWC R-DX415		65	45	1.50 to 2.30	3	1	BFTX0511N	**5.0**	CCM8UL	WB8-22T	TRX20	LT27
HSK63TH-GWC R-DX425	H63A-WH-GWC R-DX425		65	45	2.50 to 4.80	4	1						

Refer to TGA series insert group numbers on pages F6, F7, F8, and F9 for applicable inserts. Select applicable inserts for the holders by using matching group numbers.

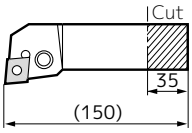
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Square Shank Holder

Fig 1



Cut off the 25mm square shank as shown below.



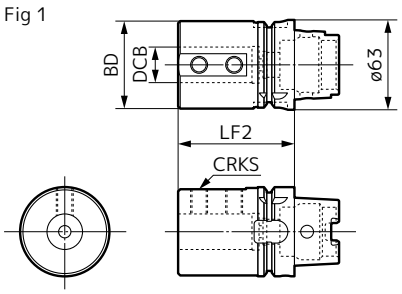
Holder

Parts Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Overhang LF	Overhang LF2	Clamping Length LSCX	Cutting Edge WF	Fig	Set Screw	Wrench
HSK63TH-S2525 R-105	H63A-WH-S2525 R-105		150	105	70	45	1	BT1230	LH060

Holder for Boring Bar

Fig 1



Holder

Parts Dimensions (mm)

ISO Cat. No.	Cat. No.	Stock	Shank Dia. DCB	Body Dia. BD	Min. Clamping Length LF2	Screw CRKS	Fig	Set Screw (BTD / BT)	Wrench
HSK63TH-C08-65	H63A-WH-C08-65		8	28	65	M8	1	BTD0809	LH040
HSK63TH-C10-70	H63A-WH-C10-70		10	35	70	M8	1	BTD0812	
HSK63TH-C12-70	H63A-WH-C12-70		12	42	70	M8	1		
HSK63TH-C16-75	H63A-WH-C16-75		16	48	75	M10	1	BT1015	LH050
HSK63TH-C20-75	H63A-WH-C20-75		20	52	75	M10	1		
HSK63TH-C25-83	H63A-WH-C25-83		25	62	83	M12	1	BT1215	LH060
HSK63TH-C32-87	H63A-WH-C32-87		32	62	87	M12	1		
HSK63TH-C40-97	H63A-WH-C40-97		40	65	97	M16	1	BT1612	LH080

Cut the boring bar to fit.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon



■ Features

SumiPolygon is a keyless coupling with a characteristic polygonal shape, which evenly distributes cutting torque across three surfaces, providing high rigidity and high indexing accuracy.

For support with non-standard design specifications, contact us directly.

■ Features

● Sizes
- Mounting size PSC32 (DCSFMS = 32mm) to PSC80 (DCSFMS = 80mm) supported

● High Rigidity and High Precision
- 1/20 polygon tapered shape supported on 2 faces for high rigidity Keyless coupling distributes cutting torque uniformly to 3 faces, reducing fluctuations in cutting edge height
- Repeatability when tools are changed is within ±2µm on all 3 axes

● Reduced Tool Change Time
- No need to change inserts on the machine, so the tool change time is significantly reduced

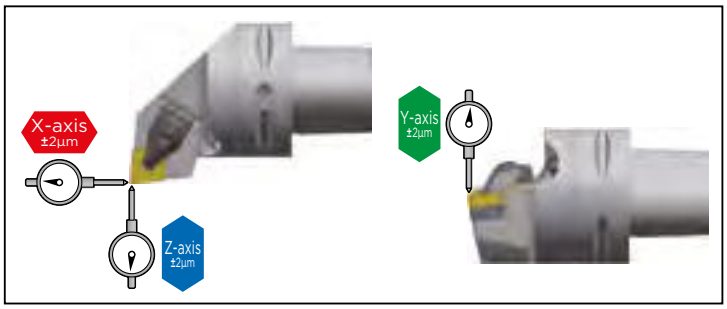
● Coolant supported (up to 1MPa)

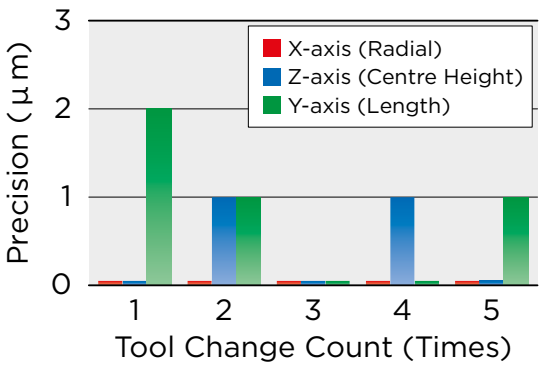
■ Coupling Structure



■ Repetitive Accuracy

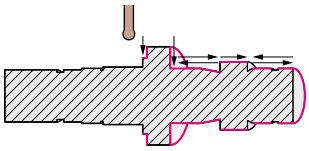
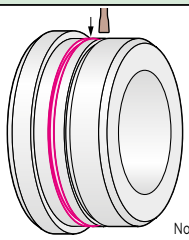
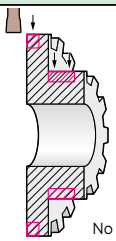
Repeatability when tools are changed is within ±2µm on all 3 axes:
X-axis (Radial Direction) Y-axis (Centre Height Direction), Z-axis (Lengthwise Direction)





SumiPolygon

Application Examples

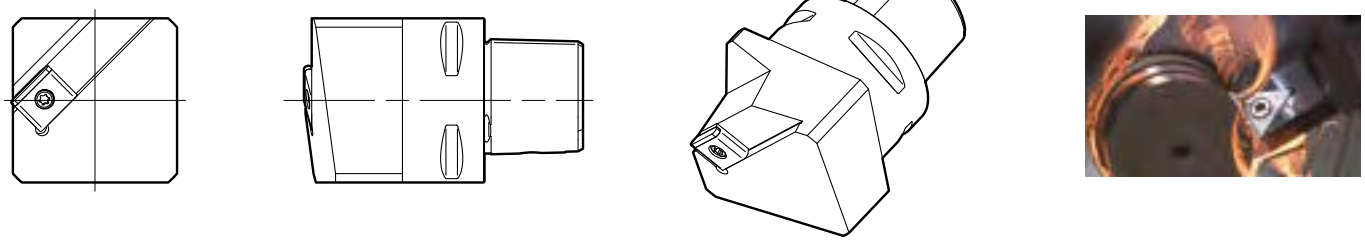
Nickel-Chromium Molybdenum Alloy Output Shaft Grooving	Stainless Steel Socket Joint Grooving	Sintered Alloy Sprocket Grooving/Facing
 No Abnormal Chatter or Vibration	 No Abnormal Chatter or Vibration	 No Abnormal Chatter or Vibration
Holder : PSC40 Made-to-Order Product Insert : GCMN4020-RG (AC425K) Cutting Conditions: vc = 120 to 140m/min, f = 0.25 to 0.35mm/rev ap = 2mm Wet	Holder : PSC40 Made-to-Order Product Insert : GCMN4008-MG (AC530U) Cutting Conditions: vc = 100m/min, f = 0.1mm/rev ap = 3mm Wet	Holder : PSC40 Made-to-Order Product Insert : Made-to-Order Insert (Diameter 6.35mm) MG (AC530U) Cutting Conditions: Grooving vc = 180m/min, f = 0.16mm/rev, ap = 4mm x 2 Passes Wet Facing vc = 190m/min, f = 0.18mm/rev, ap = 0.2mm Wet

Made-to-Order Product Design Example

For support with non-standard design specifications, contact us directly.

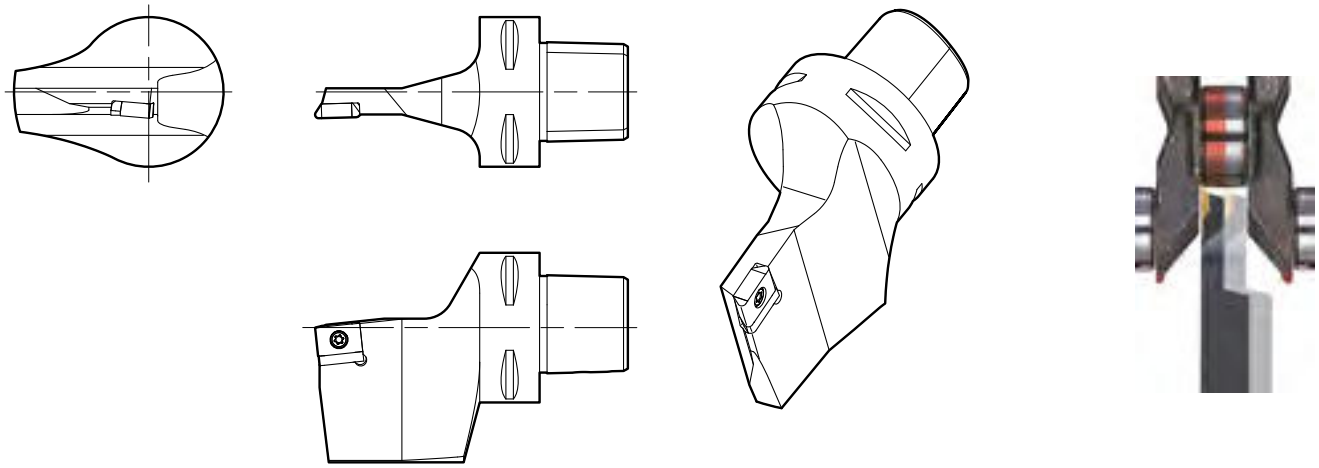
Hard Skiving Tool

High-efficiency Hardened Steel Machining Tool



SEC-XD series Holders

Tools for Crank Shaft Machining



SumiPolygon

External | 80° | 95° | Internal Coolant

External Turning
Double Clamp

DCLN

External Turning and Facing

Fig 1

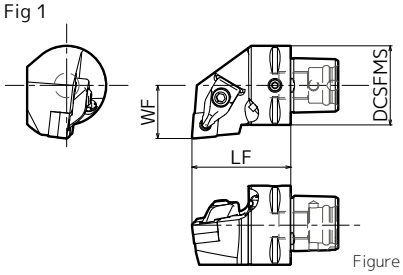


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
CN□□1204○○	B14 ~

(Representative example)



CNMG120408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DCLN R/L 27050-12-NP	★	★	27	50	40	1	SCP-2	**5.0**	CNS1204	BFTX0409N	TRX15 (*)	LH040	LH025	C4-CNZ
PSC50 DCLN R/L 35060-12-NP	★	★	35	60	50	1								
PSC63 DCLN R/L 45065-12-NP	★	★	45	65	63	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

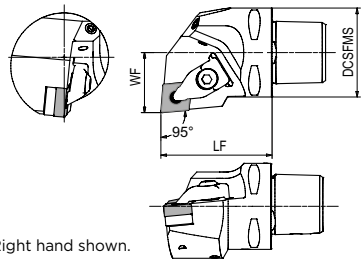
External | 80° | 95° | Internal Coolant

External Turning
Double Clamp

DCLN

External Turning and Facing

Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
CN□□1204○○	B14 ~

(Representative example)



CNMG120408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DCLN R/L 27050-12	★	★	27	50	40	1	SCP-2	**5.0**	CNS1204	BFTX0409N	TRX15 (*)	LH040	—	—
PSC50 DCLN R/L 35060-12	★	★	35	60	50	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

External | 80° | 95° | Internal Coolant

External Turning
Lever Lock

PCLN

External Turning and Facing

Fig 1

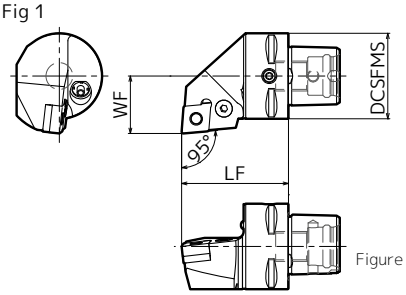


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
CN□□1204○○	B14 ~

(Representative example)



CNMG120408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench	Coolant Nozzle
PSC40 PCLN R/L 27050-12-NP	★	★	27	50	40	1	LCL4	LCS4	LSC42	LSP4	LH030	C4-CNZ
PSC50 PCLN R/L 35060-12-NP	★	★	35	60	50	1						
PSC63 PCLN R/L 45065-12-NP	★	★	45	65	63	1						

Clamp Set Parts C50

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | C 80° | 49.5° | Internal Coolant

External Turning
Double Clamp

DCMN
External Turning and Facing

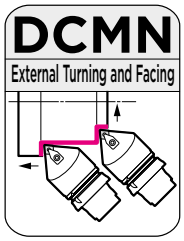
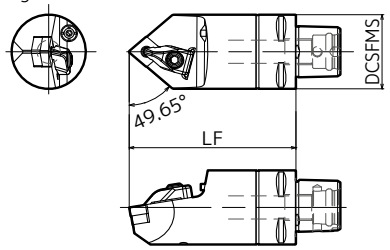


Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
CN□□1204○○	B14 ~

(Representative example)



CNMG120408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock N	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DCMN N 00090-12-NP	★	90	40	1	SCP-2	**5.0**	CNS1204	BFTX0409N	TRX15 (*)	LH040	LH025	C4-CNZ
PSC50 DCMN N 00105-12-NP	★	105	50	1								
PSC63 DCMN N 00140-12-NP	★	140	63	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

External | D 55° | 93° | Internal Coolant

External Turning
Double Clamp

DDJN
External/Profiling

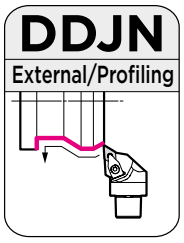


Fig 1

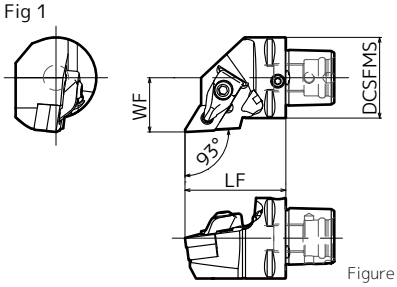


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
DN□□1504○○	B24 ~
DN□□1506○○	B28 ~

(Representative example)



DNMG150408N-GE
DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DDJN R/L 27050-15-NP*	★	★	27	50	40	1	SCP-2	**5.0**	DNS1504/ DNS1506	BFTX0409N	TRX15 (*)	LH040	LH025	C4-CNZ
PSC40 DDJN R/L 27055-15-NP	★	★	27	55	40	1								
PSC50 DDJN R/L 35060-15-NP	★	★	35	60	50	1								
PSC63 DDJN R/L 45065-15-NP	★	★	45	65	63	1								
PSC63 DDJN R/L 45130-15-NP	★	★	45	130	63	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

External | D 55° | 93° | Internal Coolant

External Turning
Double Clamp

DDJN
External/Profiling

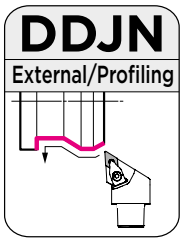
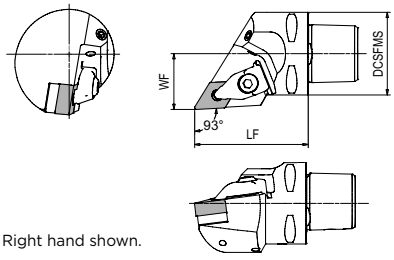


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
DN□□1506○○	B28 ~

(Representative example)



DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DDJN R/L 27055-15	★	★	27	55	40	1	SCP-2	**5.0**	DNS1506	BFTX0409N	TRX15 (*)	LH040	—	—
PSC50 DDJN R/L 35060-15	★	★	35	60	50	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | D 55° | 93° | Internal Coolant

External Turning
Lever Lock

PDJN

External/Profiling

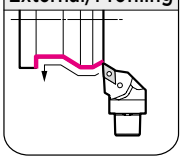
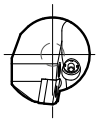


Fig 1



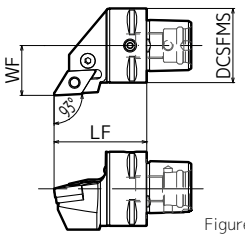


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
DN□□1504○○	B24 ~

(Representative example)



DNMG150408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench	Coolant Nozzle
PSC40 PDJN R/L 27050-15-NP	★	★	27	50	40	1	LCL4	LCS4	LSD42	LSP4	LH030	C4-CNZ
PSC50 PDJN R/L 35060-15-NP	★	★	35	60	50	1						
PSC63 PDJN R/L 45065-15-NP	★	★	45	65	63	1						

External | D 55° | 63° | Internal Coolant

External Turning
Double Clamp

DDNN

External/Profiling

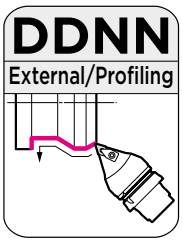
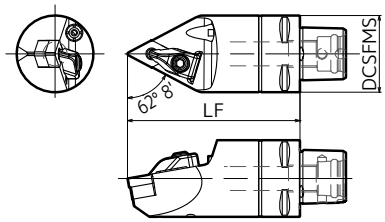


Fig 1



Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
DN□□1504○○	B24 ~
DN□□1506○○	B28 ~



DNMG150408N-GE
DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock N	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DDNN N 00090-15-NP	★	90	40	1	SCP-2	**5.0**	DNS1504/ DNS1506	BFTX0409N	TRX15 (*)	LH040	LH025	C4-CNZ
PSC50 DDNN N 00090-15-NP	★	90	50	1								
PSC50 DDNN N 00125-15-NP	★	125	50	1								
PSC63 DDNN N 00100-15-NP	★	100	63	1								
PSC63 DDNN N 00140-15-NP	★	140	63	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C50

External | D 55° | 107.5° | Internal Coolant

External Turning
Double Clamp

DDHN

External/Profiling

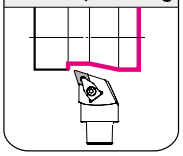
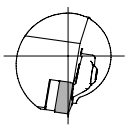
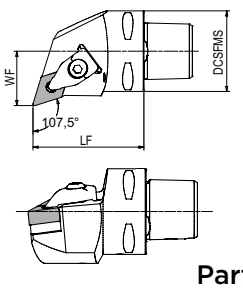


Fig. 1



Right hand shown.



Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
DN□□1506○○	B28 ~



DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Wrench
PSC40 DDHN R/L 27055-15	★	★	27	55	40	1	SCP-2	**5.0**	DNS1506	BFTX0409N	TRX15 (*)	LH040
PSC50 DDHN R/L 35060-15		★	35	60	50	1						

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C50

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | 90° | 75° | Internal Coolant

External Turning
Double Clamp

DSBN
External Turning

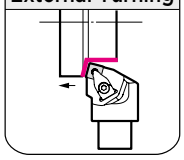


Fig 1

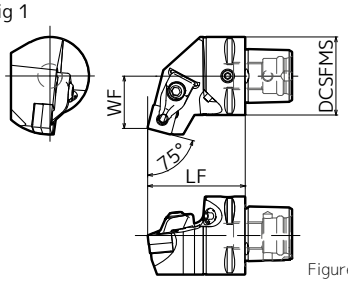


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
SN□□1204○○	B33 ~

(Representative example)



SNMG120404N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DSBN R/L 27050-12-NP	★	★	27	50	40	1	SCP-2	**5.0**	SNS1204	BFTX0409N	TRX15 (*)	LH040	LH025	C4-CNZ
PSC50 DSBN R/L 35060-12-NP	★	★	35	60	50	1								
PSC63 DSBN R/L 45065-12-NP	★	★	45	65	63	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C50

External | 90° | 75° | Internal Coolant

External Turning
Double Clamp

DSBN
External Turning

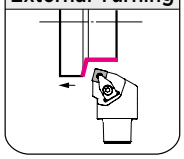
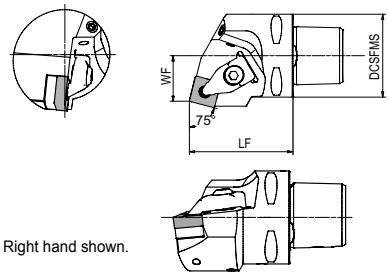


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
SN□□1204○○	B33 ~

(Representative example)



SNMG120404N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DSBN R/L 22050-12		★	22	50	40	1	SCP-2	**5.0**	SNS1204	BFTX0409N	TRX15 (*)	LH040	—	—
PSC50 DSBN R/L 27060-12	★		27	60	50	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C50

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | T 60° | 93° | Internal Coolant

External Turning
Double Clamp

DTJN
External/Profiling

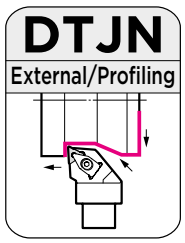
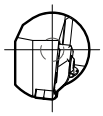


Fig 1



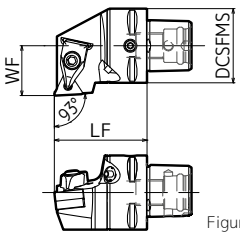


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
TN□□1604○○	B48 ~

(Representative example)



TNMG160404N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DTJN R/L 27050-16-NP	★	★	27	50	40	1	SCP-1	**5.0**	TNS1604	BFTX0307N	TRX10 (*)	LH040	LH025	C4-CNZ
PSC50 DTJN R/L 35060-16-NP	★	★	35	60	50	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

External | T 60° | 93° | Internal Coolant

External Turning
Double Clamp

DTJN
External/Profiling

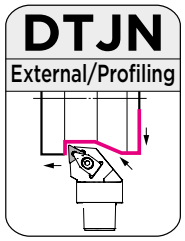
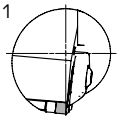
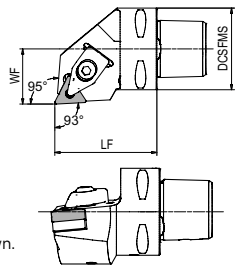


Fig. 1





Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
TN□□1604○○	B48 ~

(Representative example)



TNMG160404N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DTJN R/L 27050-16		★	27	50	40	1	SCP-1	**5.0**	TNS1604	BFTX0307N	TRX15 (*)	LH040	—	—
PSC50 DTJN R/L 35060-16	★		35	60	50	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

External | V 35° | 93° | Internal Coolant

External Turning
Screw-on

SVJC
External/Profiling

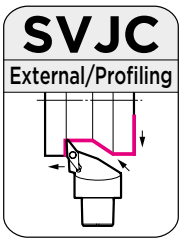


Fig 1



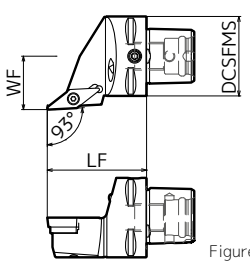


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~

(Representative example)



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Pin	Nut	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench	Coolant Nozzle
PSC40 SVJC R/L 27050-16-NP*	★	★	27	50	40	1	VP20	CPV33N	SVP32	BFTX03508	**2.0**	LH025	TRX10	C4-CNZ
PSC50 SVJC R/L 35060-16-NP	★	★	35	60	50	1	VP25							
PSC63 SVJC R/L 45065-16-NP	★	★	45	65	63	1								

* Depending on the design, ATC and extension bars may not be usable in some cases. Contact your local sales office prior to use.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | V 35° | 93° | Internal Coolant

External Turning
Screw-on

SVJC
External/Profiling

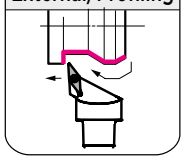
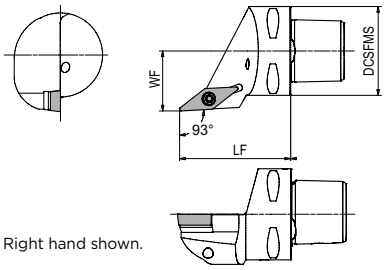


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~

(Representative example)



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Nut	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench	Coolant Nozzle
PSC40 SVJC R/L 27050-16-NP		★	27	50	40	1	KGBS1111	—	VCS1604	KSS1111	**3.5**	LH035K	LT15K	—
PSC50 SVJC R/L 35060-16-NP	★	★	35	60	50	1								

*Wrench for shim is sold separately from the main body.

External | V 35° | 72.5° | Internal Coolant

External Turning
Screw-on

SVVC
External/Profiling

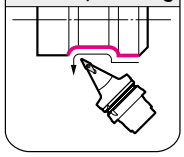
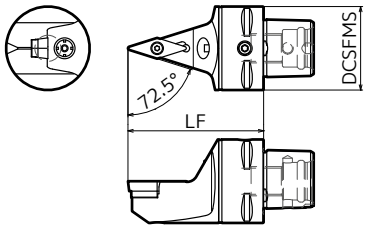


Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~

(Representative example)



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock N	Overhang LF	Mounting DCSFMS	Fig	Pin	Nut	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench	Coolant Nozzle
PSC40 SVVC N 00065-16-NP	★	65	40	1	VP20	CPV33N	SVP32	BFTX03508	**2.0**	LH025	TRX10	C4-CNZ
PSC50 SVVC N 00090-16-NP	★	90	50	1								
PSC50 SVVC N 00125-16-NP	★	125	50	1	VP25							
PSC63 SVVC N 00100-16-NP	★	100	63	1								
PSC63 SVVC N 00140-16-NP	★	140	63	1								

*Wrench for shim is sold separately from the main body.

External | V 35° | 72.5° | Internal Coolant

External Turning
Screw-on

SVVC
External/Profiling

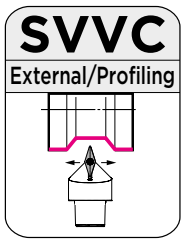
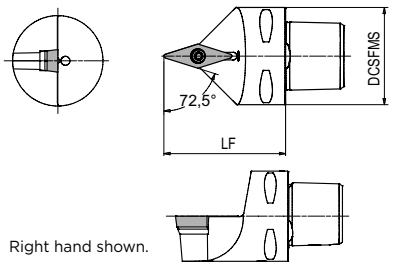


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~

(Representative example)



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock N	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Nut	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench	Coolant Nozzle
PSC40 SVVC N 00050-16		50	40	1	KGBS1111	—	VCS1604	KSS1111	**3.5**	LH035K	LT15K	—
PSC50 SVVC N 00060-16		60	50	1								

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | W 80° | 95° 95° | Internal Coolant

External Turning
Double Clamp

DWLN

External Turning and Facing

Fig 1

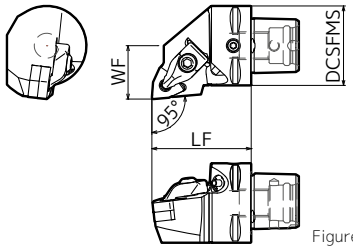


Figure shows right-handed (R) tool.

Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
WN□□0804○○	B63 ~



WNMG080404N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DWLN R/L 27050-08-NP	★	★	27	50	40	1	SCP-2	**5.0**	WNS0804	BFTX0409N	TRX15 (*)	LH040	LH025	C4-CNZ

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

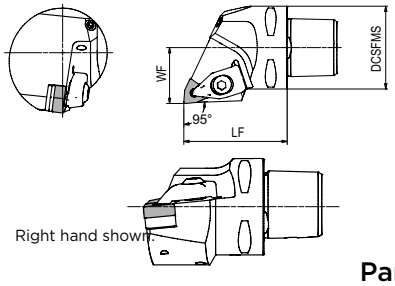
External | W 80° | 95° 95° | Internal Coolant

External Turning
Double Clamp

DWLN

External Turning and Facing

Fig. 1



Right hand shown.

Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
WN□□0804○○	B63 ~



WNMG080404N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench	Coolant Nozzle
PSC40 DWLN R/L 27050-06	★	★	27	50	40	1	SCP-1	**5.0**	WNS0604	BFTX0307N	TRX15 (*)	LH040	—	—
PSC50 DWLN R/L 35060-06	★		35	60	50	1								
PSC40 DWLN R/L 27050-08	★	★	27	50	40	1	SCP-2		WNS0804	BFTX0409N				
PSC50 DWLN R/L 35060-08	★		35	60	50	1								

*Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

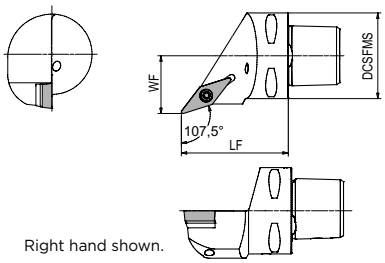
External | V 35° | 107.5° | Internal Coolant

External Turning
Screw-on

SVHC

External/Profiling

Fig. 1



Right hand shown.

Insert

(Representative example)

Applicable Insert Cat. No.	Ref. Page
VC□□1604○○	B120 ~



VCMT160404N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	Flat Insert Screw N·m	Wrench for Shim	Wrench
PSC40 SVHC R/L 27050-16	★	★	27	50	40	1	KGBS1111	VCS1604	KSS1111	**3.5**	LH035K	LT15K
PSC50 SVHC R/L 35060-16	★		35	60	50	1						

*Wrench for shim is sold separately from the main body.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | C 80° | 95° 95° | Internal Coolant

External Turning
Screw-on

SCLC

External Turning and Facing

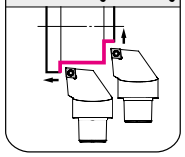
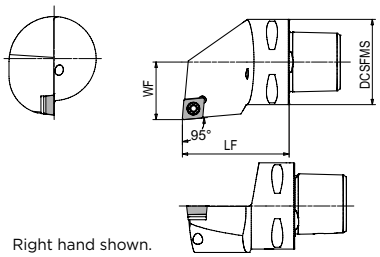


Fig. 1

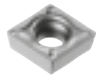


Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
CC□□09T3○○	B71 ~

(Representative example)



CCMT09T308N-SU

Holder **Parts**

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench
PSC40 SCLC R/L 27050-09	★	★	27	50	40	1	KGBS1111	CCS09T3	KSS1111	**3.5**	LH035K	LT15K
PSC50 SCLC R/L 35060-09	★	★	35	60	50	1						

*Wrench for shim is sold separately from the main body.

External | D 55° | 93° | Internal Coolant

External Turning
Screw-on

SDJC

External/Profiling

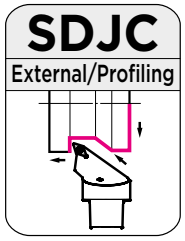
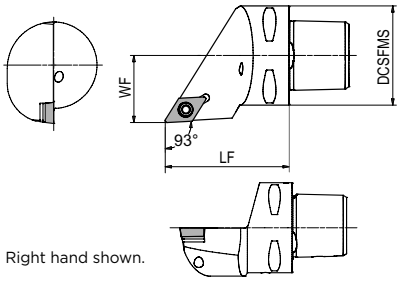


Fig. 1

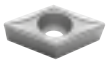


Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
DC□□11T3○○	B82 ~

(Representative example)



DCMT11T308N-MU

Holder **Parts**

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench
PSC40 SDJC R/L 27050-11	★	★	27	50	40	1	KGBS1111	DCS11T3	KSS1111	**3.5**	LH035K	LT15K
PSC50 SDJC R/L 35060-11	★		35	60	50	1						

*Wrench for shim is sold separately from the main body.

External | D 55° | 107.5° | Internal Coolant

External Turning
Screw-on

SDHC

External/Profiling

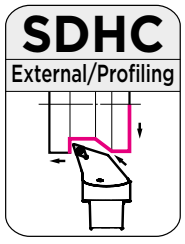
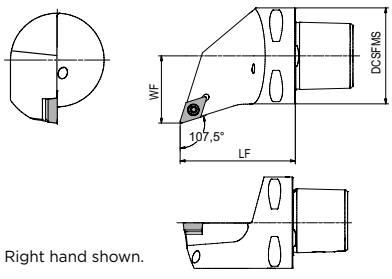


Fig. 1

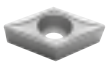


Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
DC□□11T3○○	B82 ~

(Representative example)



DCMT11T308N-MU

Holder **Parts**

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench
PSC40 SDHC R/L 27050-11	★	★	27	50	40	1	KGBS1111	DCS11T3	KSS1111	**3.5**	LH035K	LT15K
PSC50 SDHC R/L 35060-11	★	★	35	60	50	1						

*Wrench for shim is sold separately from the main body.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | 90° | 75° | Internal Coolant

External Turning
Screw-on

SSBC
External/Profiling

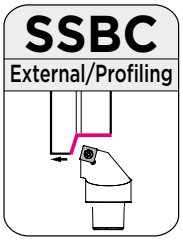
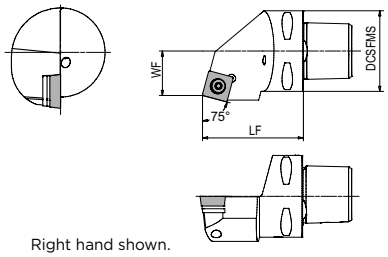


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
SC□□1204○○	B90

(Representative example)



SCMT120408N-SU

Holder **Parts**

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench
PSC40 SSBC R/L 22050-12			22	50	40	1	KGBS1221	SCS1204	KSS1221	3.5	LH045K	LT15K
PSC50 SSBC R/L 27060-12	★		27	60	50	1						

*Wrench for shim is sold separately from the main body.

External | 60° | 93° | Internal Coolant

External Turning
Screw-on

STJC
External Turning

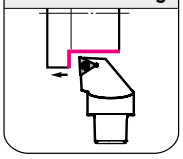
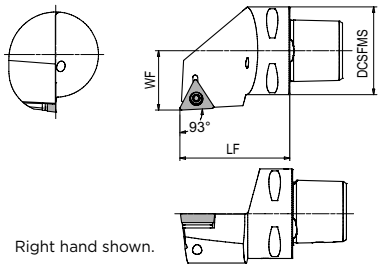


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
TC□□16T3○○	B102

(Representative example)



TCMT16T308N-SU

Holder **Parts**

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench
PSC40 STJC R/L 27050-16			27	50	40	1	KGBS1111	TCS16T3	KSS1111	3.5	LH035K	LT15K
PSC50 STJC R/L 35060-16	★		35	60	50	1						

*Wrench for shim is sold separately from the main body.

External | 35° | 93° | Internal Coolant

External Turning
Screw-on

SVJB
External/Profiling

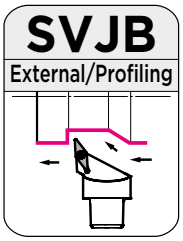
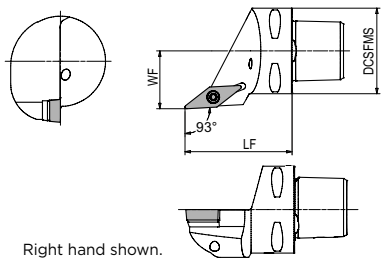


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
VB□□1604○○	B118

(Representative example)



VCMT160408N-SU

Holder **Parts**

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim Screw	Shim	Flat Insert Screw	N·m	Wrench for Shim	Wrench
PSC40 SVJB R/L 27050-16	★	★	27	50	40	1	KGBS1111	VCS1604	KSS1111	3.5	LH035K	LT15K
PSC50 SVJB R/L 35060-16		★	35	60	50	1						

*Wrench for shim is sold separately from the main body.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

External | 35° | 72.5° | Internal Coolant

External Turning
Screw-on

SVVB
External/Profiling

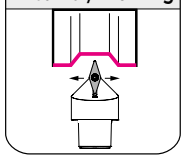
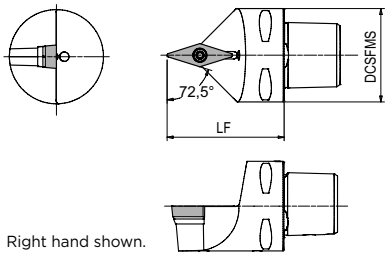


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
VB□□1604○○	B118

(Representative example)



VCMT160408N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Cutting Edge	Overhang	Mounting	Fig	Shim Screw	Shim	Flat Insert Screw		Wrench for Shim	Wrench
	N	WF	LF	DCSFMS					N·m		
PSC40 SVVB N 00050-16	★		50	40	1	KGBS1111	VCS1604	KSS1111	3.5	LH035K	LT15K
PSC50 SVVB N 00060-16			60	50	1						

*Wrench for shim is sold separately from the main body.

External | 35° | 107.5° | Internal Coolant

External Turning
Screw-on

SVHB
External/Profiling

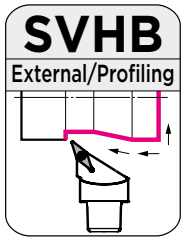
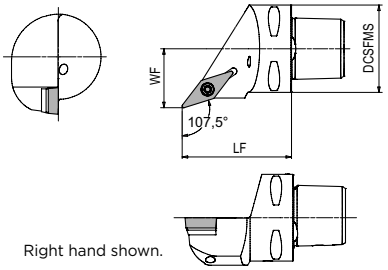


Fig. 1



Right hand shown.

Insert

Applicable Insert Cat. No.	Ref. Page
VB□□1604○○	B118

(Representative example)



VCMT160408N-SU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Cutting Edge	Overhang	Mounting	Fig	Shim Screw	Shim	Flat Insert Screw		Wrench for Shim	Wrench
	R	L	WF	LF	DCSFMS					N·m		
PSC40 SVHB R/L 27050-16	★	★	27	50	40	1	KGBS1111	VCS1604	KSS1111	3.5	LH035K	LT15K
PSC50 SVHB R/L 35060-16	★		35	60	50	1						

*Wrench for shim is sold separately from the main body.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

Internal | C 80° | 95° | Internal Coolant

Internal Boring
Lever Lock

PCLN
Bottom Facing

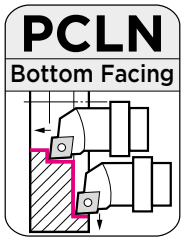


Fig 1

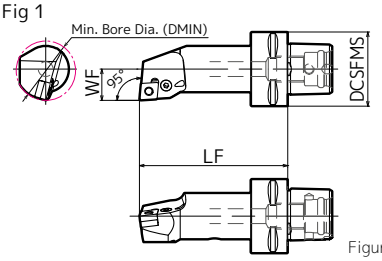


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
CN□□0903○○	B12

(Representative example)



CNMG090308N-GU

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
PSC40 PCLN R/L 17080-09-NP	★	★	32	17	80	40	1	LCL3	LCS3	LSC32	LSP3	LH025

Internal | D 55° | 93° | Internal Coolant

Internal Boring
Double Clamp

DDUN
Profiling

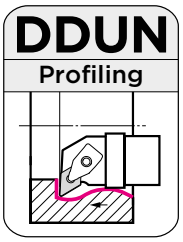


Fig 1

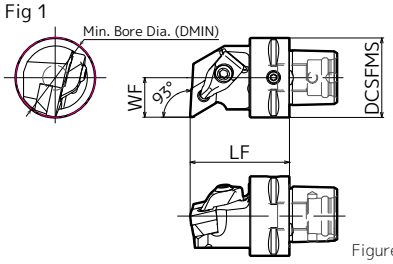


Figure shows right-handed (R) t

Insert

Applicable Insert Cat. No.	Ref. Page
DN□□1504○○	B24 ~
DN□□1506○○	B28 ~

(Representative example)



DNMG150408N-GE
DNMG150608N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Clamp Set		Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
PSC40 DDUN R/L 20050-15-NP	★	★	40	20	50	40	1	SCP-2	5.0	DNS1504B/ DNS1506B	BFTX0409N	TRX15 (*)	LH040	LH025
PSC40 DDUN R/L 20070-15-NP	★	★	40	20	70	40	1							
PSC40 DDUN R/L 27090-15-NP	★	★	54	27	90	40	1							

*Wrench for shim is sold separately from the main body.

Clamp Set Parts E82

Internal | D 55° | 93° | Internal Coolant

Internal Boring
Lever Lock

PDUN
Profiling

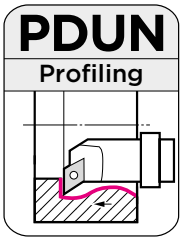


Fig 1

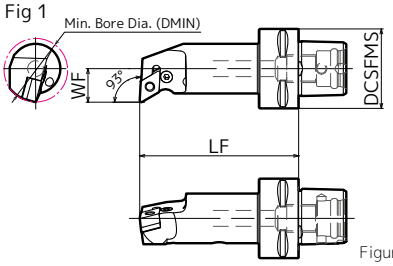


Figure shows right-handed (R) toc

Insert

Applicable Insert Cat. No.	Ref. Page
DN□□1104○○	B23 ~

(Representative example)



DNMG110408N-GE

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
PSC40 PDUN R/L 17080-11-NP	★	★	32	17	80	40	1	LCL3	LCS3	LSD317	LSP3	LH025

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SumiPolygon

Internal | 60° | 91° | Internal Coolant

Internal Boring
Lever Lock

PTFN
Stop Boring

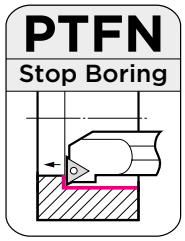


Fig 1

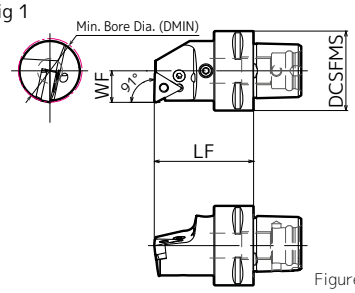


Figure shows right-handed (R) tool.

Insert

Applicable Insert Cat. No.	Ref. Page
TN□□1604○○	B48 ~

(Representative example)



TNMG160404N-GU

Holder

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Lever Pin	Bolt	Shim	Shim Retainer	Wrench
PSC40 PTFN R/L 16050-16-NP	★	★	32	16	50	40	1	LCL3	LCS3	LST317CA	LSP3	LH025

External | Internal Coolant | External

External Threading
Screw-on

SSTE
External Threading

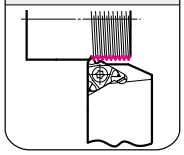
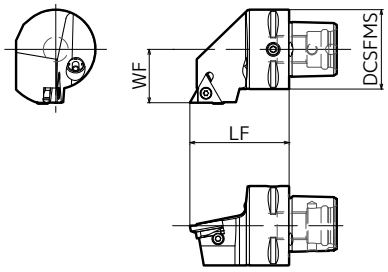


Fig 1



Insert

Applicable Insert Cat. No.	Ref. Page
16ER□□○○CB	F114

(Representative example)



16ERA60-CB

Holder

Dimensions (mm)

ISO Cat. No.	Stock R	Cutting Edge WF	Overhang LF	Mounting DCSFMS	Fig	Shim	Shim Screw	Flat Insert Screw	N·m	Wrench for Shim	Wrench	Flat Washer	Coolant Nozzle
PSC40 SSTE R 27050-16ER	★	27	50	40	1	YE3	BX0304	BFTX0312N	2.0	LH025 (*)	TRX10	PW3	C4-CNZ
PSC50 SSTE R 35060-16ER	★	35	60	50	1								
PSC63 SSTE R 45065-16ER	★	45	65	63	1								

*Wrench for shim is sold separately from the main body.

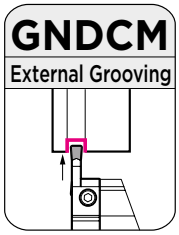
Clamp Set Parts

Applicable Clamp Set Cat. No.	Spring	Stock	Cap Screw	Stock	N·m
SCP-1	CSP08	★	CP-M5-20-1	★	5.0
SCP-2	CSP08	★	CP-M5-20-1	★	

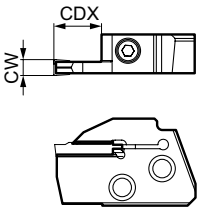
CP-M5-20-1 can also be fastened from the other end of the screw.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GND Grooving System











General Features

New grades and chipbreakers have been added to the already established GND grooving system with polygon shank and a flexible and economical cassette system for inserts. An array of chipbreakers improves the efficiency in chip control in various applications such as grooving, turning, profiling and cut-off.

Advantages

- GND inserts for soft grooving from 2,0 - 6,0 mm width
- Expanded grade selection with 9 different chipbreakers for a wide application range
- Provides excellent chip control
- Achieves stable long tool life

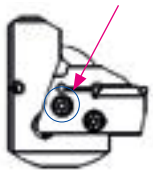
Cassette

ISO Cat. No.	R	L	CW (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCM R/L 212	★	★	2	12	GCM□ 200O-□□	BX0512	**5.0**	LH040
GNDCM R/L 312	★	★	3		GCM□ 300O-□□			
GNDCM R/L 418	★	★	4	18	GCM□ 400O-□□		**6.0**	
GNDCM R/L 518	★	★	5		GCM□ 500O-□□			
GNDCM R/L 618	★	★	6		GCM□ 600O-□□			

Handling

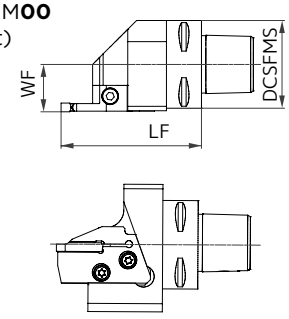
ATTENTION

To fix the cassette on the holder, please clamp the cassette at first with the inner torx screw.

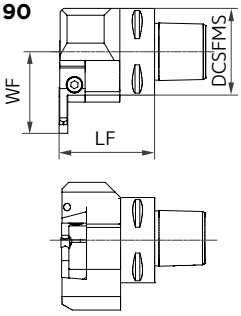


Holder

PSC__GM**00** (straight)



PSC__GM**90** (L-style)



Note:
The **right** handed PSC40/50/63GM90R holder needs a **left** cassette.
The **left** handed PSC40/50/63GM90L holder needs a **right** cassette.

Style	ISO Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner
Straight	**PSC40GM00 R/L**	★	★	40	22	80*	BFTX0619N	**7.5**	LT25
	PSC50GM00 R/L	★	★	50	27				
	PSC63GM00 R/L	★	★	63	33				
L-Style	**PSC40GM90 R/L**	★	★	40	42*	52,5			
	PSC50GM90 R/L	★	★	50	47*	55,0			
	PSC63GM90 R/L	★	★	63	54*	57,0			

* Dimension when using radial grooving cassettes.

Identification Details - Polygon-Toolholder

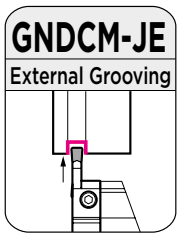
PSC	40	-	G	M	00	R
Polygonshank	Shank Diameter (DCSFMS)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left

Identification Details - Cassette

GND	C	M	L	3	12
Series Symbol GND	Cassette	Application External Multi-Purpose	Holder Design R = Right L = Left	Grooving Width	Max. Grooving Depth

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

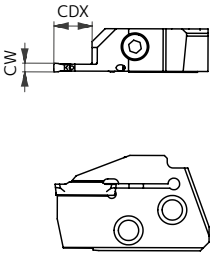
GND Grooving System

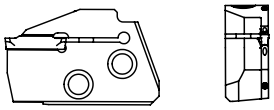


External

Internal Coolant

PSC









General Features

The already established GND grooving system with polygon shank and a flexible cassette system for grooving inserts, has been extended by a version with internal coolant supply. The direct cooling at the cutting edge ensures excellent chip breaking and improves chip control during external grooving.

Advantages

- External grooving cassettes with internal coolant supply
- PSC Polygon holders straight and 90° with internal coolant supply
- GND inserts for soft grooving from 2,0-6,0 mm grooving width
- Provides excellent chip control
- Depending on the coolant pressure, the tool life of the cutting edge will increase significantly.

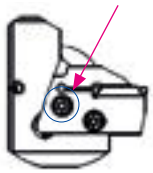
Cassette with Internal Coolant

ISO Cat. No.	R	L	CW (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCM R/L 212-JE	★	★	2	12	GCM□ 200-□□	BX0512	**5.0**	LH040
GNDCM R/L 312-JE	★	★	3		GCM□ 300-□□			
GNDCM R/L 418-JE	★	★	4	18	GCM□ 400-□□		**6.0**	
GNDCM R/L 518-JE	★	★	5		GCM□ 500-□□			
GNDCM R/L 618-JE	★	★	6		GCM□ 600-□□			

Handling

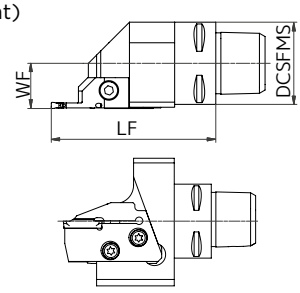
ATTENTION

To fix the cassette on the holder, please clamp the cassette at first with the inner torx screw.

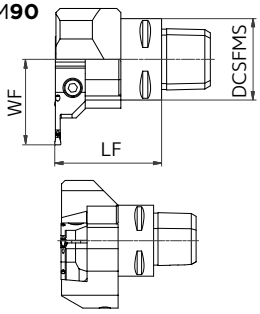


Holder

PSC__GM**00**
(straight)



PSC__GM**90**
(L-style)



Note:
The **right** handed PSC40/50/63GM90R holder needs a **left** cassette.
The **left** handed PSC40/50/63GM90L holder needs a **right** cassette.

Style	ISO Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner	Sealing Set (4xOring)
Straight	**PSC40GM00 R/L-JE**	★	★	40	22	80*	BFTX0619N	**7.5**	LT25	ARC SET
	PSC50GM00 R/L-JE	★	★	50	27					
	PSC63GM00 R/L-JE	★	★	63	33					
L-Style	**PSC40GM90 R/L-JE**	★	★	40	42*	52,5				
	PSC50GM90 R/L-JE	★	★	50	47*	55,0				
	PSC63GM90 R/L-JE	★	★	63	54*	57,0				

* Dimension when using radial grooving cassettes.

Identification Details - Polygon-Toolholder

PSC	40	-	G	M	00	R	JE
Polygonshank	Shank Diameter (DCSFMS)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left	Internal Coolant (European Design)

Identification Details - Cassette

GND	C	M	L	3	12	JE
Series Symbol GND	Cassette	Application External Multi-Purpose	Holder Design R = Right L = Left	Grooving Width	Max. Grooving Depth	Internal Coolant (European Design)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GND Grooving System

Inserts for GNDCM-JE

(Coated Carbide / Cermet / Cemented Carbide)

Fig. 1

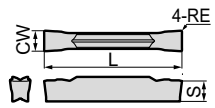


Fig. 2

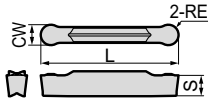


Fig. 3

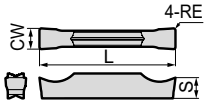
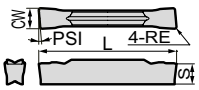


Fig. 4



Grooving / Traversing

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 MG	★	★		★	★	★		★	—	3,0	±0,03	0,2	21,1	3,8	1
GCM N3004 MG	★	★	★	★	★	★	★	★	—		±0,03	0,4	21,1	3,8	
GCM N4002 MG	★	★		★	★	★		★	—	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 MG	★	★		★	★	★		★	—		±0,03	0,4	26,4	4,0	
GCM N4008 MG	★	★	★	★	★	★	★	★	—		±0,03	0,8	26,4	4,0	
GCM N5004 MG	★	★		★	★	★		★	—	5,0	±0,03	0,4	26,4	4,1	
GCM N5008 MG	★	★	★	★	★	★	★	★	—		±0,03	0,8	26,4	4,1	
GCM N6004 MG	★	★		★	★	★		★	—	6,0	±0,03	0,4	26,4	4,5	
GCM N6008 MG	★	★	★	★	★	★	★	★	—		±0,03	0,8	26,4	4,5	
GCM N2002 ML	—	—	—	—	★	★	★	★	—	2,0	±0,03	0,2	21,1	3,6	1
GCM N3002 ML	★	★	★	★	★	★	★	★	★	3,0	±0,03	0,2	21,1	3,8	
GCM N3004 ML	★	★		★	★	★		★	★		±0,03	0,4	21,1	3,8	
GCM N4002 ML	★	★		★	★	★		★	★	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 ML	★	★	★	★	★	★	★	★	★		±0,03	0,4	26,4	4,0	
GCM N4008 ML	★	★		★	★	★		★	★		±0,03	0,8	26,4	4,0	
GCM N5004 ML	★	★	★	★	★	★	★	★	—	5,0	±0,03	0,4	26,4	4,1	
GCM N5008 ML	★	★		★	★	★		★	—		±0,03	0,8	26,4	4,1	
GCM N6004 ML	★	★	★	★	★	★	★	★	—	6,0	±0,03	0,4	26,4	4,5	
GCM N6008 ML	★	★		★	★	★		★	—		±0,03	0,8	26,4	4,5	

External Profiling / External Radius Grooving

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3015 RG	★	★	★	★	★	★	★	★	★	3,0	±0,03	1,5	21,1	3,8	2
GCM N4020 RG	★	★	★	★	★	★	★	★	★	4,0	±0,03	2,0	26,4	4,0	
GCM N5025 RG	★	★	★	★	★	★	★	★	—	5,0	±0,03	2,5	27,2	4,1	
GCM N6030 RG	★	★	★	★	★	★	★	★	—	6,0	±0,03	3,0	27,5	4,5	

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N2010 RN	—	—	—	—	★	★	★	★	—	2,0	±0,03	1,0	21,7	3,6	2
GCM N3015 RN	★	★	★	★	★	★	★	★	—	3,0	±0,03	1,5	22,6	3,8	
GCM N4020 RN	★	★	★	★	★	★	★	★	—	4,0	±0,03	2,0	28,2	4,0	
GCM N5025 RN	★	★	★	★	★	★	★	★	—	5,0	±0,03	2,5	28,3	4,1	
GCM N6030 RN	★	★	★	★	★	★	★	★	—	6,0	±0,03	3,0	28,3	4,5	

Non-Ferrous Metals

Dimensions (mm)

ISO Cat. No.	H1	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCG N2002 GA	★	2,0	±0,025	0,2	21,1	3,6	3
GCG N3002 GA	★	3,0	±0,025	0,2	21,1	3,8	
GCG N4004 GA	★	4,0	±0,025	0,4	26,4	4,0	
GCG N5004 GA	★	5,0	±0,025	0,4	26,4	4,1	
GCG N6004 GA	★	6,0	±0,025	0,4	26,4	4,5	

Grooving / Cut-Off Machining

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N2002 GG	★	★	★	★	★	★	—	2,0	±0,03	0,2	21,1	3,6	1
GCM N3002 GG	★	★	★	★	★	★	—	3,0	±0,03	0,2	21,1	3,8	
GCM N3004 GG	★	★	★	★	★	★	—		±0,03	0,4	21,1	3,8	
GCM N4002 GG	★	★	★	★	★	★	—	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 GG	★	★	★	★	★	★	—		±0,03	0,4	26,4	4,0	
GCM N5002 GG	★	★	★	★	★	★	—	5,0	±0,03	0,2	26,4	4,1	
GCM N5004 GG	★	★	★	★	★	★	—		±0,03	0,4	26,4	4,1	
GCM N6002 GG	★	★	★	★	★	★	—	6,0	±0,03	0,2	26,4	4,5	
GCM N6004 GG	★	★	★	★	★	★	—		±0,03	0,4	26,4	4,5	
GCM N2002 GL	★	★	★	★	★	★	—	2,0	±0,03	0,2	21,1	3,6	1
GCM N2004 GL	★		★	★		★	—		±0,03	0,4	21,1	3,6	
GCM N3002 GL	★	★	★	★	★	★	—	3,0	±0,03	0,2	21,1	3,8	
GCM N3004 GL	★		★	★		★	—		±0,03	0,4	21,1	3,8	
GCM N4002 GL	★	★	★	★	★	★	—	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 GL	★		★	★		★	—		±0,03	0,4	26,4	4,0	
GCM N5002 GL	★	★	★	★	★	★	—	5,0	±0,03	0,2	26,4	4,1	
GCM N5004 GL	★		★	★		★	—		±0,03	0,4	26,4	4,1	
GCM N6002 GL	★	★	★	★	★	★	—	6,0	±0,03	0,2	26,4	4,5	
GCM N6004 GL	★		★	★		★	—		±0,03	0,4	26,4	4,5	
GCM N2002 GF	—	—	★	★		★	★	2,0	±0,03	0,2	21,1	3,6	1
GCM N2004 GF	—	—	★	★		★	★		±0,03	0,4	21,1	3,6	
GCM N3002 GF	★	★	★	★	★	★	★	3,0	±0,03	0,2	21,1	3,8	
GCM N3004 GF	★		★	★		★	★		±0,03	0,4	21,1	3,8	
GCM N4002 GF	★	★	★	★	★	★	★	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 GF	★		★	★		★	★		±0,03	0,4	26,4	4,0	
GCM N5002 GF	★	★	★	★	★	★	—	5,0	±0,03	0,2	26,4	4,1	
GCM N5004 GF	★		★	★		★	—		±0,03	0,4	26,4	4,1	
GCM N6002 GF	★	★	★	★	★	★	—	6,0	±0,03	0,2	26,4	4,5	
GCM N6004 GF	★		★	★		★	—		±0,03	0,4	26,4	4,5	

Cut-Off Machining (Handed Edge)

Dimensions (mm)

ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U		CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM R2002 CG 05	★	★	★	★	★	★	—	5°	2,0	±0,03	0,2	21,1	3,6	4
GCM L2002 CG 05	★	★	★	★	★	★	—	5°	2,0	±0,03	0,2	21,1	3,6	
GCM R3002 CG 05	★	★	★	★	★	★	—	5°	3,0	±0,03	0,2	21,3	3,8	
GCM L3002 CG 05	★	★	★	★	★	★	—	5°	3,0	±0,03	0,2	21,3	3,8	
GCM R4002 CG 05	★	★	★	★	★	★	—	5°	4,0	±0,04	0,2	26,7	4,0	
GCM L4002 CG 05	★	★	★	★	★	★	—	5°	4,0	±0,04	0,2	26,7	4,0	
GCM R20003 CF 10	—	—	★	★	—	—	★	10°	2,0	±0,08	0,03	22,4	3,6	4
GCM L20003 CF 10	—	—	★	★	—	—	★	10°	2,0	±0,08	0,03	22,4	3,6	
GCM R30003 CF 10	—	—	★	★	—	—	★	10°	3,0	±0,08	0,03	22,4	3,8	
GCM L30003 CF 10	—	—	★	★	—	—	★	10°	3,0	±0,08	0,03	22,4	3,8	
GCM R20003 CF 15	—	—	★	★	—	—	★	15°	2,0	±0,08	0,03	22,4	3,6	
GCM L20003 CF 15	—	—	★	★	—	—	★	15°	2,0	±0,08	0,03	22,4	3,6	
GCM R30003 CF 15	—	—	★	★	—	—	★	15°	3,0	±0,08	0,03	22,4	3,8	
GCM L30003 CF 15	—	—	★	★	—	—	★	15°	3,0	±0,08	0,03	22,4	3,8	

GCM R: Right hand GCM L: Left hand

Combine the insert with a holder such that the width of cut (CW) matches.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

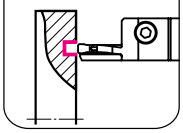
— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

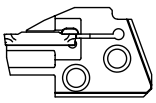
MEMO

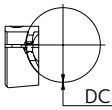
GND Grooving System

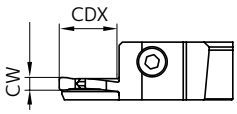
GNDCF
Face Grooving





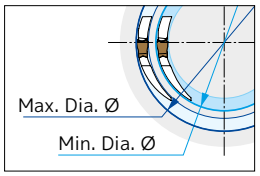






Above figures show right hand tools.





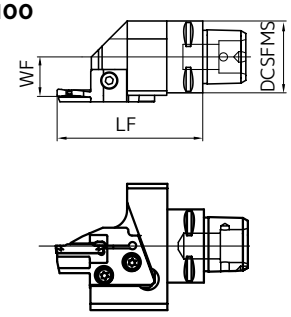
Work diameters in the stock indicate external diameters of face grooving.

Cassette

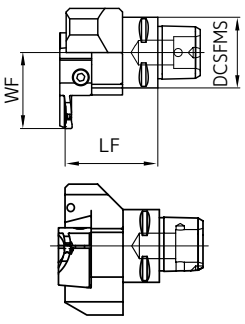
ISO Cat. No.	R	L	CW (mm)	Diameter Range (mm)	DC (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCF R/L 312-040	★	★	3	40–200	40–55	12	GC□ N300-□□	BX0512	**5.0**	LH040
GNDCF R/L 315-050	★	★			50–70	15				
GNDCF R/L 315-065	★	★			65–100	15				
GNDCF R/L 318-090	★				90–150	18				
GNDCF R/L 318-140	★				140–200	18				
GNDCF R/L 418-040	★	★	4	40–300	40–55	18	GC□ N400-□□		**6.0**	
GNDCF R/L 418-050	★				50–70	18				
GNDCF R/L 418-065	★	★			65–90	18				
GNDCF R/L 418-085	★				85–130	18				
GNDCF R/L 418-125					125–200	18				
GNDCF R/L 418-180	★				180–300	18				
GNDCF R/L 518-050			5	50–300	50–70	18	GC□ N500-□□			
GNDCF R/L 518-065					65–90	18				
GNDCF R/L 518-085					85–130	18				
GNDCF R/L 518-125	★				125–200	18				
GNDCF R/L 518-180					180–300	18				
GNDCF R/L 618-050			6	50–1000	50–75	18	GC□ N600-□□			
GNDCF R/L 618-070					70–110	18				
GNDCF R/L 618-100					100–200	18				
GNDCF R/L 618-180					180–300	18				
GNDCF R/L 618-280					280–1000	18				

Holder

PSC__GM**00**
(straight)



PSC__GM**90**
(L-style)



Note:
The **right** handed PSC40/50/63GM90R holder needs a **left** cassette.
The **left** handed PSC40/50/63GM90L holder needs a **right** cassette.

Style	ISO Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner
Straight	**PSC40GM00 R/L**	★	★	40	22	80*	BFTX0619N	**7.5**	LT25
	PSC50GM00 R/L	★	★	50	27				
	PSC63GM00 R/L	★	★	63	33				
L-Style	**PSC40GM90 R/L**	★	★	40	42*	52,5			
	PSC50GM90 R/L	★	★	50	47*	55,0			
	PSC63GM90 R/L	★	★	63	54*	57,0			

* Dimension when using face grooving cassettes.

Identification Details - Polygon-Toolholder

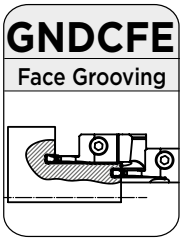
PSC	**40**	-	**G**	**M**	**00**	**R**
Polygonshank	Shank Diameter (DCSFMS)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left

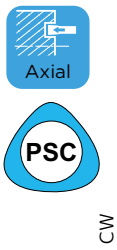
Identification Details - Cassette

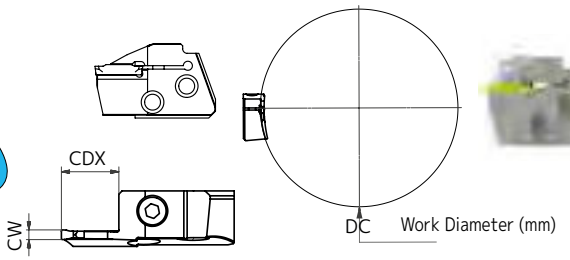
GND	**C**	**F**	**L**	**3**	**12**
Series Symbol GND	Cassette	Application Face Grooving	Holder Design R = Right L = Left	Grooving Width	Max. Grooving Depth

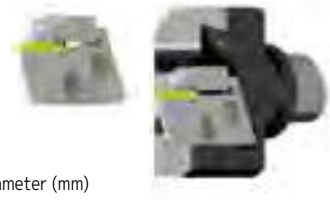
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

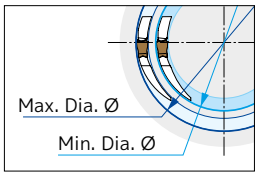
GND Grooving System











Work diameters in the stock indicate external diameters of face grooving.

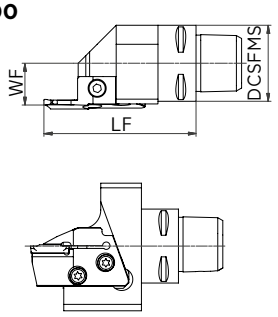
Above figures show right hand tools.

Cassette

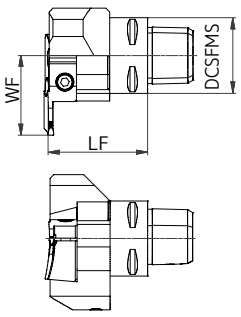
ISO Cat. No.	R	L	CW (mm)	Diameter Range (mm)	DC (mm)	CDX (mm)	Inserts	Cap Screw	Tightening Torque (N·m)	Spanner
GNDCFE R/L 312-040	★	★	3	40–200	40–55	12	GC□ N300O-□□	BX0512	**5.0**	LH040
GNDCFE R/L 315-050	★	★			50–70	15				
GNDCFE R/L 317-065	★	★			65–100	15				
GNDCFE R/L 317-090	★	★			90–150	17				
GNDCFE R/L 317-140	★	★			140–200	17				
GNDCFE R/L 417-040	★	★	4	40–300	40–55	17	GC□ N400O-□□		**6.0**	
GNDCFE R/L 417-050	★	★			50–70	17				
GNDCFE R/L 417-065	★	★			65–90	17				
GNDCFE R/L 417-085	★	★			85–130	17				
GNDCFE R/L 417-125	★	★			125–200	17				
GNDCFE R/L 417-180	★	★			180–300	17				
GNDCFE R/L 517-050			5	50–300	50–70	17	GC□ N500O-□□			
GNDCFE R/L 517-065					65–90	17				
GNDCFE R/L 517-085					85–130	17				
GNDCFE R/L 517-125					125–200	17				
GNDCFE R/L 517-180					180–300	17				
GNDCFE R/L 617-050			6	50–1000	50–75	17	GC□ N600O-□□			
GNDCFE R/L 617-070					70–110	17				
GNDCFE R/L 617-100					100–200	17				
GNDCFE R/L 617-180					180–300	17				
GNDCFE R/L 617-280					280–1000	17				

Holder

PSC__GM**00**
(straight)



PSC__GM**90**
(L-style)



Note:
The **right** handed PSC40/50/63GM90R holder needs a **left** cassette.
The **left** handed PSC40/50/63GM90L holder needs a **right** cassette.

Style	ISO Cat. No.	R	L	DCSFMS (mm)	WF (mm)	LF (mm)	Cap Screw	Tightening Torque (N·m)	Spanner
Straight	**PSC40GM00 R/L**	★	★	40	22	80*	BFTX0619N	**7.5**	LT25
	PSC50GM00 R/L	★	★	50	27				
	PSC63GM00 R/L	★	★	63	33				
L-Style	**PSC40GM90 R/L**	★	★	40	42*	52,5			
	PSC50GM90 R/L	★	★	50	47*	55,0			
	PSC63GM90 R/L	★	★	63	54*	57,0			

* Dimension when using face grooving cassettes.

Identification Details - Polygon-Toolholder

PSC	**40**	-	**G**	**M**	**00**	**R**	**JE**
Polygonshank	Shank Diameter (DCSFMS)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left	Internal Coolant (European Design)

Identification Details - Cassette

GND	**C**	**F**	**L**	**3**	**12**	**JE**
Series Symbol GND	Cassette	Application Face Grooving	Holder Design R = Right L = Left	Grooving Width	Max. Grooving Depth	Internal Coolant (European Design)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GND Grooving System

Inserts for GNDCF

(Coated Carbide / Cermet / Cemented Carbide)

Fig. 1

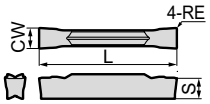


Fig. 2

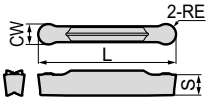
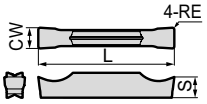


Fig. 3



Grooving / Traversing

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 MG	★	★		★	★	★		★	—	3,0	±0,03	0,2	21,1	3,8	1
GCM N3004 MG	★	★	★	★	★	★	★	★	—		±0,03	0,4	21,1	3,8	
GCM N4002 MG	★	★		★	★	★		★	—	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 MG	★	★		★	★	★		★	—		±0,03	0,4	26,4	4,0	
GCM N4008 MG	★	★	★	★	★	★	★	★	—		±0,03	0,8	26,4	4,0	
GCM N5004 MG	★	★		★	★	★		★	—	5,0	±0,03	0,4	26,4	4,1	
GCM N5008 MG	★	★	★	★	★	★	★	★	—		±0,03	0,8	26,4	4,1	
GCM N6004 MG	★	★		★	★	★		★	—	6,0	±0,03	0,4	26,4	4,5	
GCM N6008 MG	★	★	★	★	★	★	★	★	—		±0,03	0,8	26,4	4,5	
GCM N3002 ML	★	★	★	★	★	★	★	★	★	3,0	±0,03	0,2	21,1	3,8	1
GCM N3004 ML	★	★		★	★	★		★	★		±0,03	0,4	21,1	3,8	
GCM N4002 ML	★	★		★	★	★		★	★	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 ML	★	★	★	★	★	★	★	★	★		±0,03	0,4	26,4	4,0	
GCM N4008 ML	★	★		★	★	★		★	★		±0,03	0,8	26,4	4,0	
GCM N5004 ML	★	★	★	★	★	★	★	★	—	5,0	±0,03	0,4	26,4	4,1	
GCM N5008 ML	★	★		★	★	★		★	—		±0,03	0,8	26,4	4,1	
GCM N6004 ML	★	★	★	★	★	★	★	★	—	6,0	±0,03	0,4	26,4	4,5	
GCM N6008 ML	★	★		★	★	★		★	—		±0,03	0,8	26,4	4,5	

Profiling / Radius Grooving / Necking

Dimensions (mm)

ISO Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3015 RN	★	★	★	★	★	★	★	★	—	3,0	±0,03	1,5	22,6	3,8	2
GCM N4020 RN	★	★	★	★	★	★	★	★	—	4,0	±0,03	2,0	28,2	4,0	
GCM N5025 RN	★	★	★	★	★	★	★	★	—	5,0	±0,03	2,5	28,3	4,1	
GCM N6030 RN	★	★	★	★	★	★	★	★	—	6,0	±0,03	3,0	28,3	4,5	

Non-Ferrous Metals

Dimensions (mm)

ISO Cat. No.	H1	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 GA	★	3,0	±0,025	0,2	21,1	3,8	3
GCM N4004 GA	★	4,0	±0,025	0,4	26,4	4,0	
GCM N5004 GA	★	5,0	±0,025	0,4	26,4	4,1	
GCM N6004 GA	★	6,0	±0,025	0,4	26,4	4,5	

Grooving / Cut-Off Machining

Dimensions (mm)

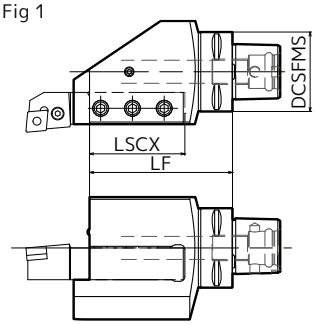
ISO Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	T2500A	CW Cutting Width	CW Tolerance	RE	L	S	Fig.
GCM N3002 GG	★	★	★	★	★	★	—	3,0	±0,03	0,2	21,1	3,8	1
GCM N3004 GG	★	★	★	★	★	★	—		±0,03	0,4	21,1	3,8	
GCM N4002 GG	★	★	★	★	★	★	—	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 GG	★	★	★	★	★	★	—		±0,03	0,4	26,4	4,0	
GCM N5002 GG	★	★	★	★	★	★	—	5,0	±0,03	0,2	26,4	4,1	
GCM N5004 GG	★	★	★	★	★	★	—		±0,03	0,4	26,4	4,1	
GCM N6002 GG	★	★	★	★	★	★	—	6,0	±0,03	0,2	26,4	4,5	
GCM N6004 GG	★	★	★	★	★	★	—		±0,03	0,4	26,4	4,5	
GCM N3002 GL	★	★	★	★	★	★	—	3,0	±0,03	0,2	21,1	3,8	1
GCM N3004 GL	★		★	★		★	—		±0,03	0,4	21,1	3,8	
GCM N4002 GL	★	★	★	★	★	★	—	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 GL	★		★	★		★	—		±0,03	0,4	26,4	4,0	
GCM N5002 GL	★	★	★	★	★	★	—	5,0	±0,03	0,2	26,4	4,1	
GCM N5004 GL	★		★	★		★	—		±0,03	0,4	26,4	4,1	
GCM N6002 GL	★	★	★	★	★	★	—	6,0	±0,03	0,2	26,4	4,5	
GCM N6004 GL	★		★	★		★	—		±0,03	0,4	26,4	4,5	
GCM N3002 GF	★	★	★	★	★	★	★	3,0	±0,03	0,2	21,1	3,8	1
GCM N3004 GF	★		★	★		★	★		±0,03	0,4	21,1	3,8	
GCM N4002 GF	★	★	★	★	★	★	★	4,0	±0,03	0,2	26,4	4,0	
GCM N4004 GF	★		★	★		★	★		±0,03	0,4	26,4	4,0	
GCM N5002 GF	★	★	★	★	★	★	—	5,0	±0,03	0,2	26,4	4,1	
GCM N5004 GF	★		★	★		★	—		±0,03	0,4	26,4	4,1	
GCM N6002 GF	★	★	★	★	★	★	—	6,0	±0,03	0,2	26,4	4,5	
GCM N6004 GF	★		★	★		★	—		±0,03	0,4	26,4	4,5	

Combine the insert with a holder such that the width of cut (CW) matches.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Adapter

Fig 1



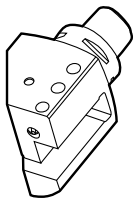


Figure shows right-handed (R) tool.

Holder for Square Shank (Adapter)

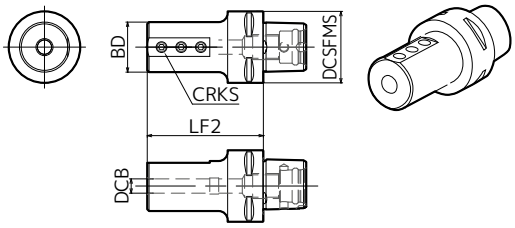
Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Cutting Edge LSCX	Overhang LF	Mounting DCSFMS	Fig	Set Screw	Wrench	Coolant Nozzle
PSC50 S2020 R/L -90	★	★	60	90	50	1	BTD1012	LH050	C4-CNZ
PSC63 S2525 R/L -100	★	★	70	100	63	1			

Adapter

Fig 1



Holder for Boring Bar (Adapter)

Parts

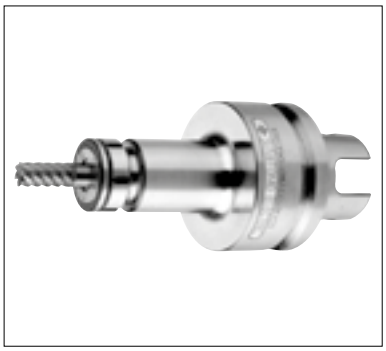
Dimensions (mm)

ISO Cat. No.	Stock N	Cutting Edge BD	Overhang LF2	Shank Dia. DCB	Screw CRKS	Mounting DCSFMS	Fig	Set Screw	Wrench
PSC40 C08-65	★	28	65	8	M6	40	1	BTD0609	LH030
PSC40 C10-70	★	35	70	10	M8	40	1	BTD0812	LH040
PSC40 C12-70	★	42	70	12	M10	40	1		
PSC40 C16-75	★	48	75	16	M10	40	1		
PSC40 C20-75	★	52	75	20	M10	40	1	BTD1012	LH050
PSC40 C25-83	★	62	83	25	M10	40	1		
PSC40 C32-87	★	62	87	32	M10	40	1		
PSC50 C08-65	★	28	65	8	M6	50	1	BTD0609	LH030
PSC50 C10-70	★	35	70	10	M8	50	1	BTD0812	LH040
PSC50 C12-70	★	42	70	12	M10	50	1		
PSC50 C16-75	★	48	75	16	M10	50	1		
PSC50 C20-75	★	52	75	20	M10	50	1		
PSC50 C25-83	★	62	83	25	M10	50	1	BTD1012	LH050
PSC50 C32-87	★	62	87	32	M10	50	1		
PSC63 C12-70	★	42	70	12	M10	63	1		
PSC63 C16-75	★	48	75	16	M10	63	1		
PSC63 C20-75	★	52	75	20	M10	63	1		

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Modular Taper Shank/HSK Tooling System

*Catalogue numbers have been changed due to the establishment of ISO standard ISO 26622-1:2008.



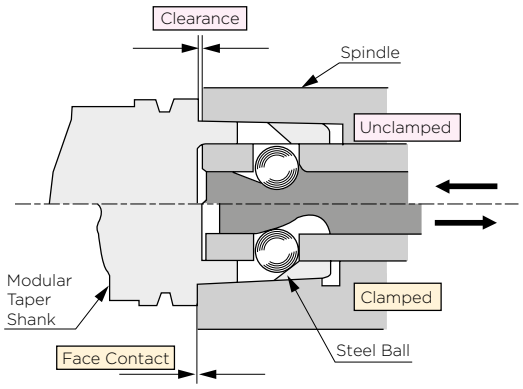
Modular Taper Shank

This has widespread use throughout Europe and the United States.

Features

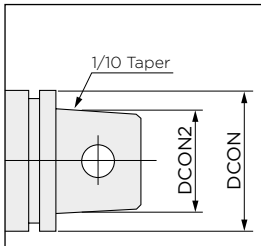
- Tool shape suitable for high-speed rotations.
- Achieving high-precision machining by increasing rigidity at high-speed rotations with two locating faces on the taper and flange, along with an excellent clamping mechanism.
- Hollow and short taper reduces weight and shortens ATC time when changing tools.

Mechanism



Size

Dimensions (mm)



Cat. No.	Mounting Dia. DCON	Mounting Dia. DCON2
TS32	32	24
TS40	40	30
TS50	50	40
TS63	63	50
TS80	80	64



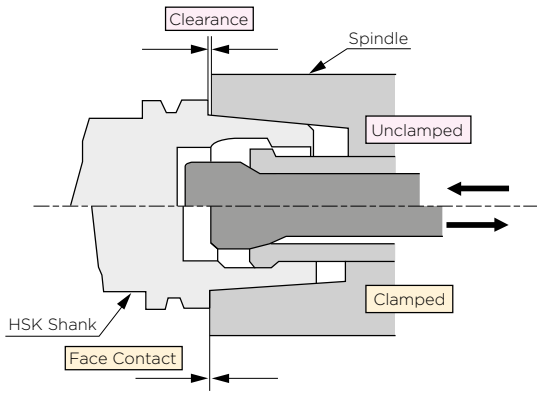
HSK Tooling System

This hollow shank was developed by RWTH Aachen University and the German Industry Association, and has been adopted as an ISO standard.

Features

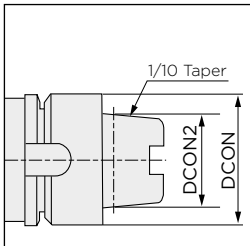
- DIN standard with 2 locating faces.
- Two locating faces on the taper and flange, for high precision and high rigidity machining.
- Hollow and short taper reduces weight and allows for high-speed ATC.

Mechanism



Size

Dimensions (mm)



Cat. No.	Mounting Dia. DCON	Mounting Dia. DCON2
HSK A32	32	24
HSK A40	40	30
HSK A50	50	38
HSK A63	63	48
HSK A80	80	60
HSK A100	100	75

MEMO

Smart Damper™



■ Features

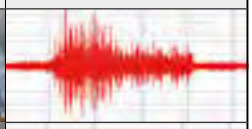
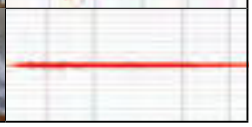
Smart Damper™ is arbors equipped with a special anti-vibration mechanism that has both counter damping and friction damping effects.
This suppresses chattering when machining with a large overhang, to prevent reduction of machined surface quality and tool life.

Expanded Internal Boring Lineup Smart Damper™ for Internal Boring E10



- Used in combination with a basic holder and damper head.
- Basic holder lineup supports **BBT50** (**BIG-PLUS™**) Arbor and **HSK-A100** arbors in different lengths.
- Through-centre coolant compatible.

Face Milling Example with 347mm Overhang

Arbor	Results	
	Machined Surface	Vibration
Competitor's Arbor No Anti-Vibration Mechanism		
Smart Damper™ With Anti-Vibration Mechanism		

Suppress chatter by using a Smart Damper™!!

Work Material: S50C
Tool: Tool Diameter ø63 (5-teeth)
Cutting Conditions: vc = 100m/min, fz = 1.0mm/t, ap = 1.4mm, ae = 30mm

■ Smart Damper™ Combination Example (**BBT50** type)

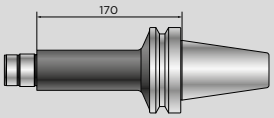
Damper Head

Basic Holder

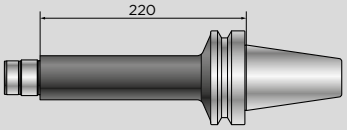
ø47 type



FMH22L



L170

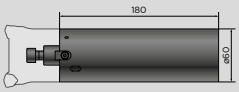


L220

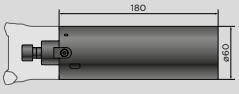
S-SDF36**47**FMH□□L180

S-SDF36**47**L□□□-BBT50

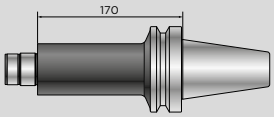
ø60 type



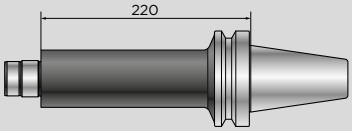
FMH22L



FMH27L



L170



L220

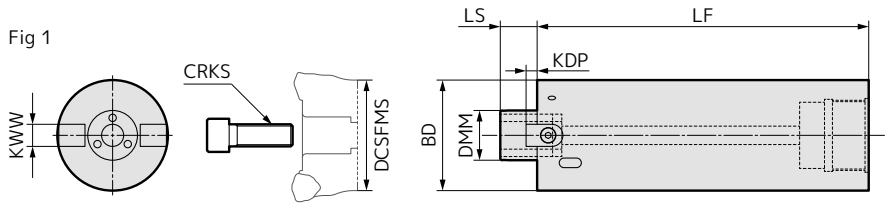
S-SDF36**60**FMH□□L180

S-SDF36**60**L□□□-BBT50

*Smart Damper™ and BIG-PLUS™ are registered trademarks of BIG DAISHOWA Co., Ltd.

Smart Damper™

Fig 1



Damper Head

Dimensions (mm)

ISO Cat. No.	Stock	Connecting Dia. DMM	Body Dia. BD	Overall Length LF	Connection Length LS	Keyway Width KWW	Keyway Depth KDP	Screw CRKS	Weight (kg)	Mounting DCSFMS	Fig
S-SDF3647FMH22L180	★	22	47	180	18	10	5	M10	3.0	36 up	1
S-SDF3660FMH22L180	★	22	60	180	18	10	5	M10	4.5	49 up	1
S-SDF3660FMH27L180	★	27	60	180	20	12	6	M12	4.5	46 up	1

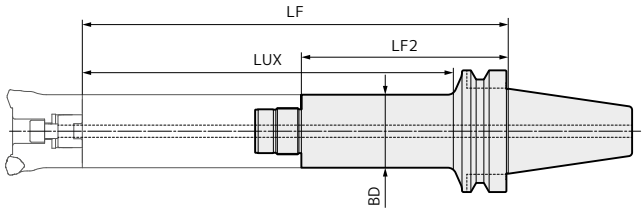
Refer to the user's manual for methods of mounting to basic tool holders.
The cutter is not included in the weight.
A hook wrench and clamp bolt for tightening the cutter are included.
DCSFMS shows the cutter mounting surface diameter. Take care if the mounting surface diameter is small relative to the cutter outer diameter.

Identification Code

S-SDF36 47 FMH 22 L180

S-SDF36: Connection Method
47: Body Dia.
FMH: Series Code
22: Connecting Dia.
L180: Overall Length

Fig 1

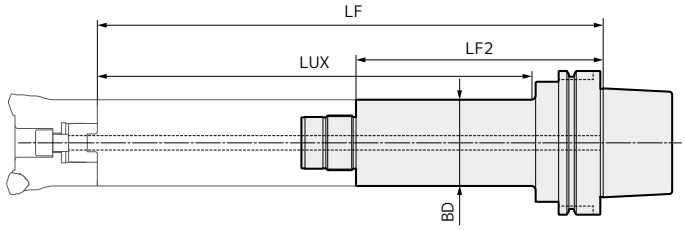


Basic Holder BBT50 type

Dimensions (mm)

ISO Cat. No.	Stock	Body Dia. BD	Overhang LF	Min. Clamping Length LF2	Effective Overhang LUX	Weight (kg)	Applicable Damper Head	Fig
S-SDF3647L170-BBT50	★	47	350	170	297	5.6	S-SDF3647FMHOOLOOO	1
S-SDF3647L220-BBT50	★	47	400	220	347	6.3	S-SDF3647FMHOOLOOO	1
S-SDF3660L170-BBT50	★	60	350	170	297	6.7	S-SDF3660FMHOOLOOO	1
S-SDF3660L220-BBT50	★	60	400	220	347	7.8	S-SDF3660FMHOOLOOO	1

Fig 1



Basic Holder HSK-A100 type

Dimensions (mm)

ISO Cat. No.	Stock	Body Dia. BD	Overhang LF	Min. Clamping Length LF2	Effective Overhang LUX	Weight (kg)	Applicable Damper Head	Fig
S-SDF3647L170-HSKA100	★	47	350	170	310	4.4	S-SDF3647FMHOOLOOO	1
S-SDF3647L220-HSKA100	★	47	400	220	360	5.0	S-SDF3647FMHOOLOOO	1
S-SDF3660L170-HSKA100	★	60	350	170	310	5.5	S-SDF3660FMHOOLOOO	1
S-SDF3660L220-HSKA100	★	60	400	220	360	6.0	S-SDF3660FMHOOLOOO	1

Identification Code

S-SDF36 47 L170 - BBT50

S-SDF36: Connection Method
47: Body Dia.
L170: Min. Clamping Length
BBT50: Shank type

*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ABS System



■ Features

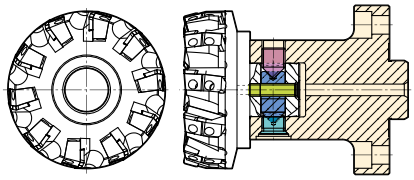
The IGETALLOY ABS system has received high acclamation worldwide for its strong clamping force, high rigidity and high precision. ABS is one of the quick change systems for round tools, which increases our customers' productivity in special tooling applications, while simplifying and standardising these special tools. The SBA system is also available. For details, please contact us.

■ Applications

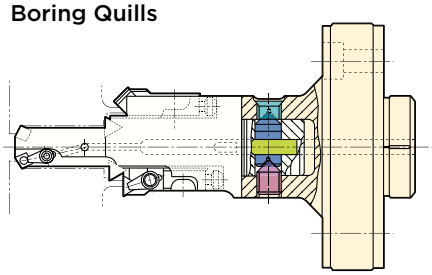
- The clamp screw, taper screw and slide pin act as a wedge for strong holding force.
- High rigidity, high precision. High indexing accuracy during tool changes.
- A wide array of sizes are available to cover a variety of tools.
- Easy handling allows short tool change times.
- Allows coolant supply from inside the spindle.
- Strong clamping force even with small diameters.

■ ABS System Design Examples

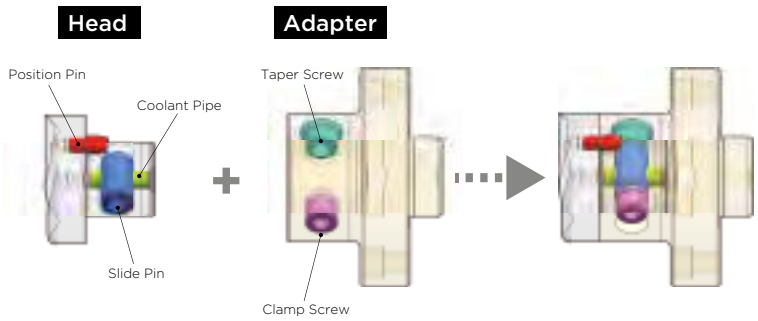
Indexable Cutters

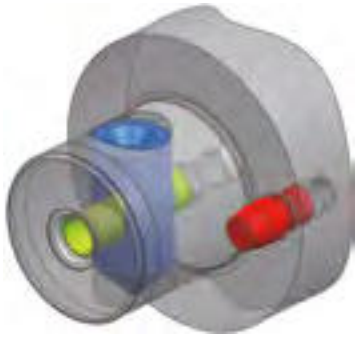


Boring Quills



■ Clamp Mechanism





■ ABS Standard (Head)

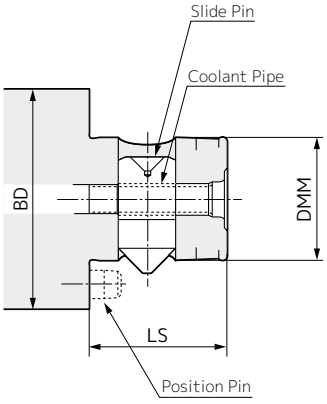
Head Dimensions

Dimensions (mm)

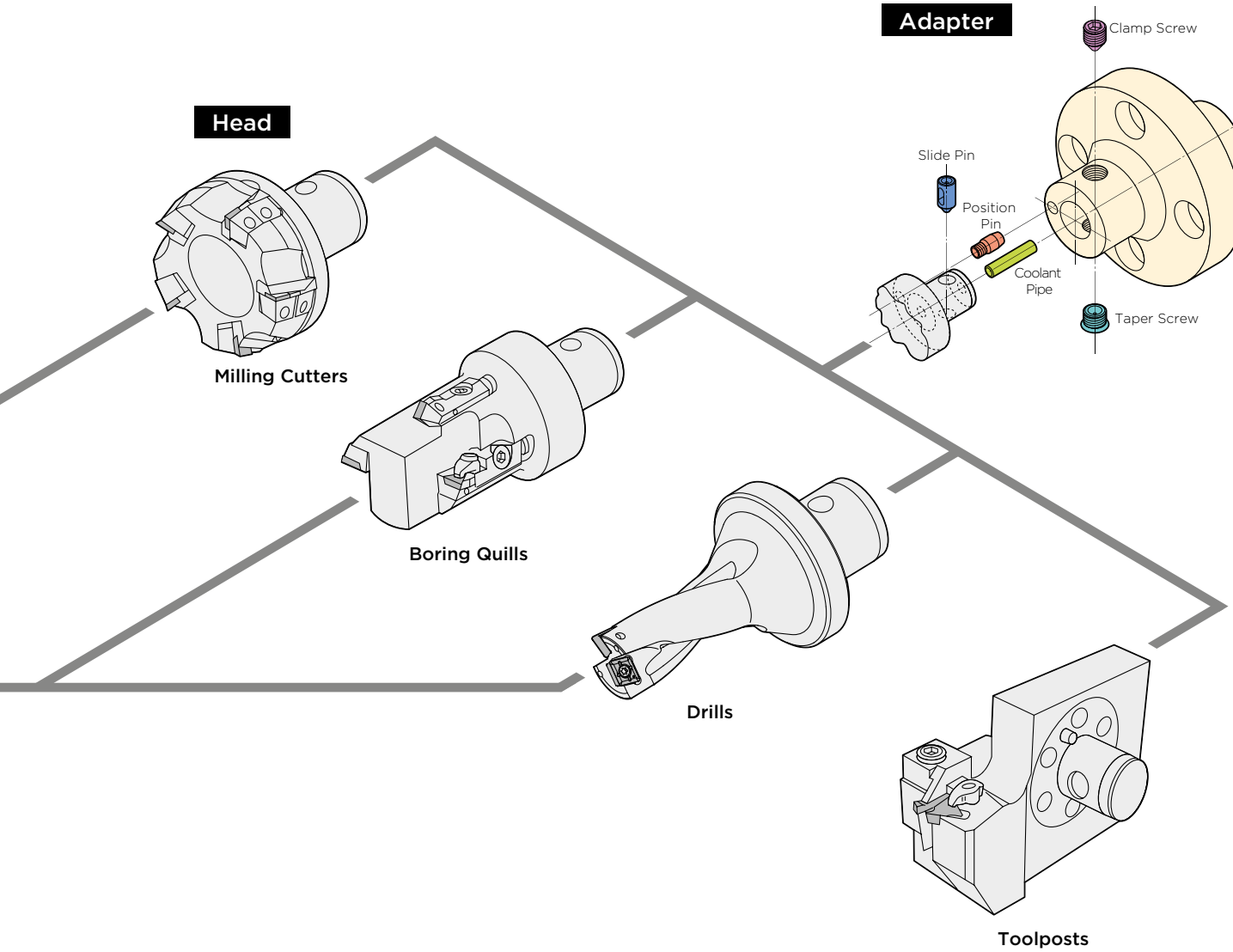
ISO Cat. No.	Body Dia. BD	Shank Dia. DMM	Shank Length LS
ABS 25M	25	13	20
ABS 32M	32	16	23
ABS 40M	40	20	26
ABS 50M	50	28	31
ABS 63M	63	34	38
ABS 80M	80	46	43

Parts

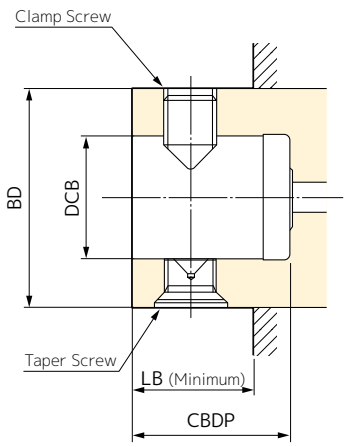
Set Cat. No.	Slide Pin	Position Pin	Coolant Pipe
ABS25-ES-M3	**ABS25-E3.2**	**ABS25-E4**	**ABS25-E6**
ABS32-ES-M3	**ABS32-E3.2**	**ABS32-E4**	**ABS32-E6**
ABS40-ES-M3	**ABS40-E3.2**	**ABS40-E4**	**ABS40-E6**
ABS50-ES-M3	**ABS50-E3.2**	**ABS50-E4**	**ABS50-E6**
ABS63-ES-M3	**ABS63-E3.2**	**ABS63-E4**	**ABS63-E6**
ABS80-ES-M3	**ABS80-E3.2**	**ABS80-E4**	**ABS80-E6**



ABS System



■ ABS Standard (Adapter)



Adapter Dimensions

Dimensions (mm)

ISO Cat. No.	Body Dia. BD	Shank Dia. DCB	Shank Length CBDP	Min. Clamping Length LB
ABS 25W	25	13	22	13.0
ABS 32W	32	16	25	16.0
ABS 40W	40	20	30	18.5
ABS 50W	50	28	34	22.0
ABS 63W	63	34	41	28.0
ABS 80W	80	46	48	34.0
ABS100W	100	56	58	40.5
ABS125W	125	70	76	51.0
ABS160W	160	90	96	53.0
ABS200W	200	112	116	82.0

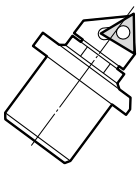
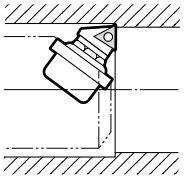
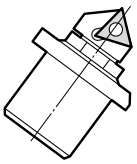
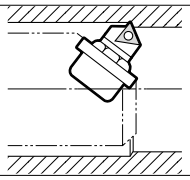
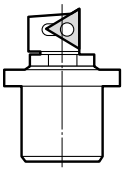
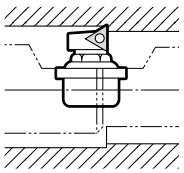
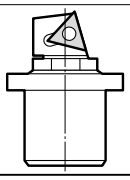
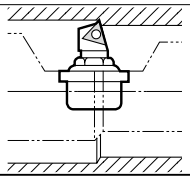
Parts

Set Cat. No.	Clamp Screw	Taper Screw
ABS25-FS-W	**ABS25-F1**	**ABS25-F2**
ABS32-FS-W	**ABS32-F1**	**ABS32-F2**
ABS40-FS-W	**ABS40-F1**	**ABS40-F2**
ABS50-FS-W	**ABS50-F1**	**ABS50-F2**
ABS63-FS-W	**ABS63-F1**	**ABS63-F2**
ABS80-FS-W	**ABS80-F1**	**ABS80-F2**
ABS100-FS-W	**ABS100-F1**	**ABS100-F2**
ABS125-FS-W	**ABS125-F1**	**ABS125-F2**
ABS160-FS-W	**ABS160-F1**	**ABS160-F2**
ABS200-FS-W	**ABS200-F1**	**ABS200-F2**

SEC-Micro Units

This section introduces an overview of the series.
Refer to the separate "SEC-Cartridge Unit/Micro Unit" catalogue for details on Micro Units (holders, inserts, parts) and quill unit seat machining.

■ Micro Unit Cat. No. by Model/Tooling type

		MUP series				MUN series			
									
Illustrations	Tooling	ISO Cat. No.	Min. Bore Dia. (mm)	Stock	LH	ISO Cat. No.	Min. Bore Dia. (mm)	Stock	LH
		MUP1-A0	25	★	★	MUN2-A0	36		
		MUP2-A0	36	★	★	MUN3-A0	47		
		MUP3-A0	47	★	★	MUN3L-A0	54		
		MUP4-A0	73	★		MUN4-A0	73		
						MUN4L-A0	78		
		MUP1-A15	25	★		MUN2-A15	36		
		MUP2-A15	36	★		MUN3-A15	47		
		MUP3-A15	47			MUN3L-A15	54		
		MUP4-A15	73			MUN4-A15	73		
						MUN4L-A15	78		
		MUP1-V0	25	★	★	MUN2-V0	36		
		MUP2-V0	36	★	★	MUN3-V0	47		
		MUP3-V0	47	★	★	MUN3L-V0	54		
		MUP4-V0	73	★		MUN4-V0	73		
						MUN4L-V0	78		
		MUP1-V15	25	★		MUN2-V15	36		
		MUP2-V15	36	★		MUN3-V15	47		
		MUP3-V15	47	★		MUN3L-V15	54		
		MUP4-V15	73	★		MUN4-V15	73		
						MUN4L-V15	78		

*If a left hand unit is required, include "LH" after the catalogue number. (Ex.: MUP1-A0-LH, MUP1-V0-LH)
*Inserts and wrenches are not included with Micro Units.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Cartridge Units

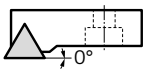
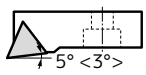
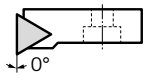
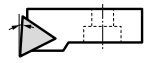
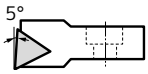
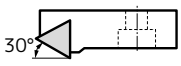
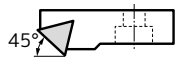
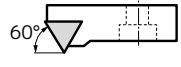
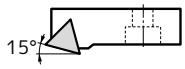
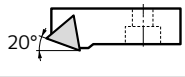
This section introduces an overview of the series.
Refer to the separate "SEC-Cartridge Unit/Micro Unit" catalogue for details on Micro Units (holders, inserts, parts) and quill unit seat machining.

■ Features of Each Model

Classification	Standard type	MINIT type		ISO type			
Cat. No. / Shape / Items	BU type	MINIT P24 type	MINIT N38 type	SP type / SX type / SC type	CP type	CE type	PN type
	The most common type of cartridge units 	Mini type with good edge sharpness and chip control 	Compact type for multi-tooling configurations 	Screw-on type positive cutting edge with excellent sharpness and chip evacuation 	Positive cutting edge type for low-rigidity work 	High rake cutting edge type for non-ferrous metal machining 	Negative cutting edge type with excellent compatibility and economy 
Clamp Mechanism	Pin Lock	Screw-on	Pin Lock	Screw-on	Clamp-on	Clamp-on	Pin Lock
Adjustability	Yes	Axial: No Radial: Yes	No (By using shims)	Yes	Yes	Yes	Yes
Rake Angle	Negative	Positive	Negative	Positive	Positive	Positive	Negative
Applicable Insert Relief Angle	0°	11°	0°	11° (SP type) 7° (SX type / SC type)	11°	20°	0°
Cutting Edge Position	Above Centre	Above Centre/On Centre	Above Centre	On Centre	On Centre	On Centre	On Centre
Min. Bore Dia. (mm)	ø24	ø24	ø38	ø30	ø30	ø30	ø38

■ Cartridge Unit Cat. No. (For Triangular Inserts) by Model/Tooling type

( ) shows the min. bore diameter (mm).

Configuration	BU type	Stock R	Stock L	MINIT P24 type	Stock R	Stock L	MINIT N38 type	Stock R	Stock L	SP type / SX type / SC type	Stock R	Stock L	CP type	Stock R	Stock L	CE type	Stock R	Stock L	PN type	Stock R	Stock L
 0°							MTGN3 R/L(38)	★	★	STGP R/L-10CA(38)	★	★	CTGP R/L10CA(38)	★	★	CTGE R/L10CA(38)			PTGN R/L10CA(38)	★	★
										STGP R/L-12CA(50)	★	★	CTGP R/L12CA(50)	★	★	CTGE R/L12CA(50)			PTGN R/L12CA(50)	★	★
										STGP R/L-16CA(60)	★	★	CTGP R/L16CA(60)	★	★				PTGN R/L16CA(60)	★	★
																			PTGN R/L20CA(70)		★
 5° <3°> < >: MINIT P24	BU224 R/L(48)	★		MTJP22 R/L(24)	★	★	MTJN3 R/L(38)	★		STJP R/L-10CA(38)	★	★	CTJP R/L10CA(38)	★		CTJE R/L10CA(38)	★				
	BU225 R/L(60)	★								STJP R/L-12CA(50)	★	★	CTJP R/L12CA(50)	★		CTJE R/L12CA(50)	★				
										STJP R/L-16CA(55)	★	★	CTJP R/L16CA(55)								
 0°	BU252 R/L(24)	★	★	MTFP22 R/L(24)	★	★	MTFN3 R/L(38)	★	★	STFP R/L- 8CA(30)	★	★	CTFP R/L 8CA(30)	★	★	CTFE R/L 8CA(30)	★	★	PTFN R/L10CA(38)	★	★
	BU253 R/L(30)	★								STFP R/L-10CA(38)	★	★	CTFP R/L10CA(38)	★	★	CTFE R/L10CA(38)	★	★	PTFN R/L12CA(50)	★	★
	BU254 R/L(38)	★								STFP R/L-12CA(50)	★	★	CTFP R/L12CA(50)	★	★	CTFE R/L12CA(50)	★	★	PTFN R/L16CA(55)	★	★
	BU255 R/L(48)	★	★							STFP R/L-16CA(55)	★	★	CTFP R/L16CA(55)	★	★	CTFE R/L16CA(55)	★		PTFN R/L20CA(70)	★	★
	BU256 R/L(55)	★											CTFP R/L20CA(70)	★	★	CTFE R/L20CA(70)	★				
5° <3°>  < >: MINIT P24 / N38	BU293 R/L(30)	★		MTUP22 R/L(24)	★	★	MTUN3 R/L(38)	★	★	STUP R/L-10CA(38)	★	★	CTUP R/L10CA(38)	★	★	CTUE R/L10CA(38)	★				
	BU294 R/L(38)	★								STUP R/L-12CA(50)	★	★	CTUP R/L12CA(50)	★		CTUE R/L12CA(50)					
	BU295 R/L(48)	★	★							STUP R/L-16CA(55)	★	★	CTUP R/L16CA(55)	★							
5° 	BU295ER/L(48)		★																		
30° 										STTP R/L- 8CA(30)	★	★	CTTP R/L 8CA(30)	★		CTTE R/L 8CA(30)	★		PTTN R/L10CA(38)	★	
										STTP R/L-10CA(38)	★	★	CTTP R/L10CA(38)	★	★	CTTE R/L10CA(38)	★		PTTN R/L12CA(50)	★	★
										STTP R/L-12CA(50)	★	★	CTTP R/L12CA(50)	★	★	CTTE R/L12CA(50)	★		PTTN R/L16CA(60)	★	
										STTP R/L-16CA(60)	★	★	CTTP R/L16CA(60)	★	▲	CTTE R/L16CA(60)					
45° 										STSP R/L-10CA(38)	★	★	CTSP R/L10CA(38)	★		CTSE R/L 8CA(30)	★				
										STSP R/L-12CA(50)	★	★	CTSP R/L12CA(50)	★		CTSE R/L10CA(38)	★				
										STSP R/L-16CA(55)	★	★	CTSP R/L16CA(55)	★		CTSE R/L12CA(50)	★				
																CTSE R/L16CA(55)					
60° 				MTWP22 R/L(24)	★	★	MTWN3 R/L(38)	★		STWP R/L- 8CA(30)	★	★	CTWP R/L 8CA(30)	★		CTWE R/L 8CA(30)	★				
										STWP R/L-10CA(38)	★	★	CTWP R/L10CA(38)	★	★	CTWE R/L10CA(38)	★				
										STWP R/L-12CA(50)	★	★	CTWP R/L12CA(50)	★	★	CTWE R/L12CA(50)	★				
										STWP R/L-16CA(55)	★	★	CTWP R/L16CA(55)			CTWE R/L16CA(55)					
15° 										STRP R/L 8CA(30)	★	★	CTRP R/L 8CA(30)	★		CTRE R/L 8CA(30)	★				
										STRP R/L 10CA(38)	★	★	CTRP R/L 10CA(38)	★	★	CTRE R/L 10CA(38)	★				
20° 										STXP R/L 8CA(30)	★	★	CTXP R/L 8CA(30)	★	★	CTXE R/L 8CA(30)	★	★			
										STXP R/L 10CA(38)	★	★	CTXP R/L 10CA(38)	★	★	CTXE R/L 10CA(38)	★	★			

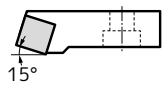
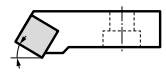
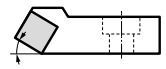
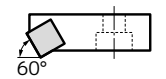
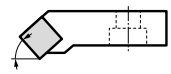
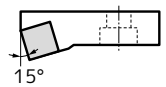
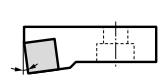
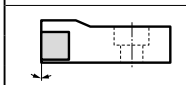
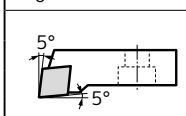
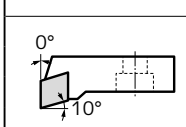
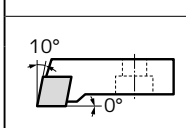
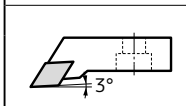
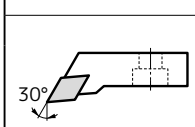
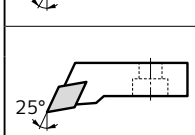
*Inserts and wrenches are not included with Cartridge Units.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Cartridge Units

■ Tool Holder Cat. No. (For Square Inserts, 80°, 55°, Diamond Inserts)

( ) shows the min. bore diameter (mm).

Configuration	BU type	Stock R	Stock L	MINIT P24 type	Stock R	Stock L	MINIT N38 type	Stock R	Stock L	SP type / SX type / SC type	Stock R	Stock L	CP type	Stock R	Stock L	CE type	Stock R	Stock L	PN type	Stock R	Stock L
 15°	BU113 R/L(30)	★					MSRN4 R/L(38)	★	★	SSRP R/L-10CA(38)	★	★	CSRP R/L10CA(38)	★		CSRE R/L10CA(38)	★				
	BU114 R/L(38)	★											CSRP R/L12CA(50)	★		CSRE R/L12CA(50)	★				
	BU115 R/L(48)	★											CSRP R/L16CA(55)	★							
 30°	BU133 R/L(30)	★		MSTP04 R/L(24)	★	★	MSTN4 R/L(38)	★	★	SSTP R/L 10CA(38)	★	★	CSTP R/L 8CA(30)	★	★	CSTE R/L 8CA(30)	★	★			
	BU134 R/L(38)	★	★										CSTP R/L 10CA(38)	★	★	CSTE R/L 10CA(38)	★	★			
	BU135 R/L(48)	★	★																		
 30°	BU134E R/L(30)		★																		
	BU135E R/L(38)		★																		
 60°										SSWP R/L 10CA(38)	★	★	CSWP R/L 8CA(30)	★	★	CSWE R/L 8CA(30)	★	★			
													CSWP R/L 10CA(38)	★	★	CSWE R/L 10CA(38)	★	★			
 45°	BU142 R/L(24)	★	★	MSSP04 R/L(24)	★	★	MSSN4 R/L(38)	★	★	SSSP R/L- 8CA(30)	★	★	CSSP R/L 8CA(30)	★		CSSE R/L 8CA(30)	★		PSSN R/L10CA(38)	★	★
	BU143 R/L(30)	★								SSSP R/L-10CA(38)	★	★	CSSP R/L10CA(38)	★	★	CSSE R/L10CA(38)	★	★	PSSN R/L12CA(50)	★	★
	BU144 R/L(38)	★	★										CSSP R/L12CA(50)	★	★	CSSE R/L12CA(50)			PSSN R/L16CA(55)	★	★
	BU145 R/L(48)	★	★										CSSP R/L16CA(55)	★		CSSE R/L16CA(55)					
 15°	BU152 R/L(24)	★	★				MSKN4 R/L(38)	★	★	SSKP R/L- 8CA(30)	★	★	CSKP R/L 8CA(30)	★		CSKE R/L 8CA(30)	★	★	PSKN R/L10CA(38)	★	
	BU153 R/L(30)	★	★							SSKP R/L-10CA(38)	★	★	CSKP R/L10CA(38)	★	★	CSKE R/L10CA(38)	★	★	PSKN R/L12CA(50)	★	★
	BU154 R/L(38)	★	★										CSKP R/L12CA(50)	★		CSKE R/L12CA(50)	★		PSKN R/L16CA(55)	★	
	BU155 R/L(48)	★	★										CSKP R/L16CA(55)	★		CSKE R/L16CA(55)	★		PSKN R/L20CA(70)	★	
 5°	BU183 R/L(30)	★		MSYP04 R/L(24)	★	★	MSYN4 R/L(38)	★	★	SSYP R/L- 8CA(30)	★	★	CSYP R/L 8CA(30)	★		CSYE R/L 8CA(30)	★		PSYN R/L10CA(38)	★	
	BU184 R/L(38)	★								SSYP R/L-10CA(38)	★	★	CSYP R/L10CA(38)	★		CSYE R/L10CA(38)	★		PSYN R/L12CA(50)	★	★
	BU185 R/L(48)	★											CSYP R/L12CA(50)	★		CSYE R/L12CA(50)	★		PSYN R/L16CA(55)	★	★
													CSYP R/L16CA(55)			CSYE R/L16CA(55)			PSYN R/L20CA(70)	★	
 0°	BU194 R/L(30)		★																		
	BU195 R/L(38)		★																		
 5° 5°							MCLN4 R/L(38)	★	★	SXLP R 8CA(30)	★	—							PCLN R/L12CA(50)	★	★
										SXLP R 10CA(38)	★	—							PCLN R/L16CA(55)	★	★
										SCLC R/L 10CA(56)	★	★							PCLN R/L20CA(70)	★	★
 0° 10°							MCFN4 R/L(38)	★	★	SXFP R 8CA(30)	★	—									
										SXFP R 10CA(38)	★	—									
										SCFC R/L 10CA(56)	★	★									
 10° 0°							MCGN4 R/L(38)	★	★												
 3°							MDJN4 R/L(38)	★	★												
 30°										SDAC R/L 10CA(56)	★	★									
 25°										SDBC R/L 10CA(56)	★	★									

*Inserts and wrenches are not included with Cartridge Units.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Boring Quills / Carbide Line Boring Bars

This section introduces an overview of the series.
Refer to the separate "SEC-Cartridge Unit/Micro Unit" catalogue for details on Micro Units (holders, inserts, spare parts) and quill unit seat machining.

Indexable Cartridges and Boring Quills







Carbide Line Boring Bar

Carbide Line Bar Equipped with Cartridges



Milling Cutters H

H1 to H288



Selection Guide for Milling Cutters H02
Selection Guide for Modular Tools H09
Selection Guide for Modular Tools / Cast Iron High-Feed and Milling Cutters (Special Purpose) H10
Selection Guide for Milling Cutters (Shank type) ... H11
Grades for Milling H14
ACS1000/ACS2500/ACS3000 ..... H16
Cutter Identification Code H18
Insert Identification Code H19

Face Milling	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal	SEC-WaveMill WGX series H20
	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal	SEC-WaveMill WGC series H26
	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal	SEC-Sumi Dual Mill DGC series H30
	For General Milling of Steel and Exotic Alloy	SEC-SUMI UFO MILL UFO series H36
	For General Milling of Steel and Exotic Alloy	SEC-ACE MILL FPG series H39
	For General Milling of Steel and Exotic Alloy	SEC-Multi Use Endmill FPE series H40
	For General Milling of Steel and Exotic Alloy	SEC-ACE MILL EHG series H41
	For High-efficiency Cast Iron/Cast Steel Milling	SEC-DNX(F) series / DNH series / DNHS series H42
	For General Milling of Steel and Cast Iron	SEC-ACE MILL DNF series H45
	For General Milling of Non-Ferrous Metal	SEC-ACE MILL APG series H46
	For General Milling of Steel, Cast Iron and Stainless Steel	SEC-ACE MILL DPG series / DPGF series H47
Shoulder Milling	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WEZ series .....
	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WEZR series H74
	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal	SEC-WaveMill WEX series H86
	For High-efficiency Deep-Step Shoulder Milling	SEC-Wave Repeater WRX series H96
	For Roughing of Stainless Steel and Exotic Alloy	SEC-WaveMill WSE series H102
	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, and Non-Ferrous Metal	SEC-WaveMill WFX series H108
	For General Milling of Steel and Cast Iron	SEC-Sumi Dual Mill DFC series H117
	For High-efficiency Milling of Steel, Cast Iron and Stainless Steel	SEC-Sumi Dual Mill TSX series H124
	For High-efficiency Cast Iron/Cast Steel Milling	SEC-Sumi Power Mill PWC(F) series H152
	For Milling of Steel, Cast Iron and Stainless Steel	SEC-Sumi Power Mill PWS(F) series / PWSR series H153
	For Milling of Steel, Cast Iron and Stainless Steel	SEC-ACE MILL CHG series H156
	For Milling of Steel, Cast Iron and Non-Ferrous Metal	SEC-Multi Use Endmill CHE series H157
	For Milling of Steel, Cast Iron and Stainless Steel	SEC-ACE MILL CPG series H160
	For Milling of Steel, Cast Iron and Stainless Steel	SEC-Light Endmill FMS type H161
Multi-purpose		SEC-WaveMulti WMM series H162
High-Feed	For High-feed Milling of Steel, Die Steel, Cast Iron, and Stainless Steel	SEC-Sumi Dual Mill DMSL series / DMSW series ... H166
	For High-speed, High-efficiency Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFXH series H178
	For High Feed Milling of Steel, Cast Iron and Stainless Steel	SEC-Metal Slash Mill MSX series H184
Radius	For Milling of Stainless Steel and Exotic Alloy	SEC-Wave Radius Mill RSE series H188
	For Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Exotic Alloy	SEC-Wave Radius Mill RSX series H194
	For Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-Wave Radius Mill WRCX series H202
R/3D Profiling	For Roughing	SEC-WaveBall WBMR series H207
	For Finishing	SEC-WaveBall WBMF series H210
Side Cutters / T-Slot Cutters	For Groove Milling	New SEC-Sumi Dual Mill TGC series H212
	For T-Slot Endmilling	SEC-T Slot Cutters TSE type H218
Chamfering	Chamfering	SEC-WaveMill WFXC series H219
Non-Ferrous Metal	For High-speed, High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	ALNEX ANX series H222
	For High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	HF series H232
	For High-speed Milling of Aluminum Alloy and Non-Ferrous Metal	RF series H238
	For Small Diameter Milling of Aluminum Alloy and Non-Ferrous Metal	SRF series H240
	For High-speed, High-efficiency Milling of Non-Ferrous Metal	SEC-WaveMill WAX series H242
Cast Iron, High-Speed	For High-speed Finishing of Cast Iron	SUMIBORON BN Finish Mill EASY (FMU/FMU-E type) ... H247
	For High-speed Finishing of Cast Iron	SUMIBORON BN Finish Mill (FM(F) type) H248
	For High-speed, High-efficiency Milling of Cast Iron	Cutter RM series for High-speed Milling of SUMIBORON Cast Iron H249

H Modular Tools ···H251

H Special Purpose Cutters ···H273

Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Selection Guide for Milling Cutters

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	6mm 45° *	ø40 to ø250	–	WGX →H22	**WGX**13000R/L(S) **WGXM**13000R/L(S) **WGXF**13000R/L(S)	(4)	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	6mm 45° *	ø32 to ø63	ø32	WGX-EW →H25	**WGX**13000EW		20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	4mm 45° *	ø32 to ø100	–	WGC →H26	**WGC**3000 **WGC**3000RS	(4)	20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	6mm 45° *	ø40 to ø200	–		**WGC(F)**4000 **WGC(F)**4000RS		20° to 22°	-20° to -24°																		
	4mm 45° *	ø20 to ø63	ø20 to ø32	WGC-EW →H28	**WGC**3000EW		20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	6mm 45° *	ø32 to ø63	ø32		**WGC**4000EW		20° to 22°	-20° to -24°																		
	6mm 45° * 3mm 45° *	ø40 to ø250	–	DGC →H32	**DGC**13000R(S) **DGCM**13000R(S) **DGCF**13000R(S)	(8)	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	6mm 45° * 3mm 45° *	ø40 to ø63	ø32	DGC-EW →H35	**DGC**13000EW	(16)	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	5.5mm 45° *	ø80 to ø315	–	UFO →H36	**UFO**4000	(4)	27°	-7°	○	○									○	○	○	○	○	○		
	7.5mm 45° *	ø80 to ø315	–		**UFO**5000		27°	-7°																		
	5.5mm 45° *	ø50 to ø100	ø32 to ø42	UFO-E →H38	**UFO**4000E	(4)	27°	-7°	○	○									○	○		○	○	○		
	6.5mm 45° *	ø80 to ø315	–	FPG →H39	**FPG**4000	(4)	15°	-4°	○										○	○	○	○	○	○		
	8.5mm 45° *	ø80 to ø315	–		**FPG**5000		15°	-4°																		
	6.5mm 45° *	ø50 to ø100	ø32 to ø42	FPE →H40	**FPE**4000	(4)	15°	-3°	○										○	○		○				
	5.5mm 45° *	ø80 to ø200	–	EHG →H41	**EHG**4000	(4)	20°	-3°	○										○	○	○	○				
	7.5mm 45° *	ø80 to ø200	–		**EHG**5000		20°	-3°																		

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Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	8mm 65°	ø80 to ø160	–	DNX →H43	**DNX**12000 **DNXF**12000	(8)	-5°	-6°	○	○									○			◎				
	3mm 24° 5mm 24°	ø80 to ø160	–	DNH(S) →H44	**DNH**12000 **DNHS**12000		-5°	-6°			○								○			◎				
	6.5mm 65°	ø80 to ø500	–	DNF →H45	**DNF**4000	(4)	-5°	-6°	○	○									○			◎	×	×	×	○
	7mm 65°	ø80 to ø500	–	APG →H46	**APG**4000	(4)	18°	-2°	○	○									○	○	○	○	◎	◎		×
	9.5mm 75°	ø80 to ø200	–	DPG →H47	**DPG**4000 **DPGF**4000	(4)	8°	0°	○	○									○	○	○	○				
	12mm 75°	ø82 to ø502	–		**DPG**5000		8°	0°																		
Shoulder Milling / Deep Shoulder Milling / Semi-Shoulder Milling	10mm 90°	ø40 to ø100	–	WEZ →H58	**WEZ**11000R(S)	(2)	14° to 15°	-7° to -11°	◎	◎		◎	◎	◎			○		◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø40 to ø160	–		**WEZ**17000R(S)		10° to 15°	-4° to -9°																		
	10mm 90°	ø14 to ø80	ø10 to ø32	WEZ-E →H62	**WEZ**11000E **WEZ**11000ES **WEZ**11000EL		6° to 15°	-7° to -18°	◎	◎		◎	◎	◎			○		◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø80	ø16 to ø42		**WEZ**17000E **WEZ**17000ES **WEZ**17000EL		6° to 15°	-6° to -12°																		
	44.53mm 90°	ø40 to ø50	–	WEZR →H76	**WEZR**11000RS	(2)	14° to 15°	-11° to -9°	○			◎	○						◎	◎	◎	◎	◎	◎	◎	
	29.84mm 90°	ø50 to ø80	–		**WEZR**17000RS		7° to 15°	-8° to -6°																		
	19.61mm 90°	ø20 to ø40	ø20 to ø32	WEZR-E →H80	**WEZR**11000E		8° to 14°	-15° to -11°																		
	29.84mm 90°	ø40 to ø50	ø32 to ø42		**WEZR**17000E		10° to 12°	-9° to -8°																		
	6mm 90°	ø32 to ø63	–	WEX-F/R →H90	**WEX**1000F	(2)	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø40 to ø63	–		**WEX**2000F		23° to 25°	16° to 18°																		
	14mm 90°	ø40 to ø125	–		**WEX**3000F **WEX**3000R **WEXF**3000R		19° to 24°	12° to 15°																		
	6mm 90°	ø10 to ø25	ø10 to ø20	WEX-E →H93	**WEX**1000E **WEX**1000EL		9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		**WEX**2000E **WEX**2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		**WEX**3000E(-C) **WEX**3000ES(-C) **WEX**3000EL		16° to 24°	8° to 15°																		

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Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling / Semi-Shoulder Milling	18-36mm 90°	ø40 to ø50	–	WRX-R →H98	**WRX**2000RS	(2)	24°	16° to 17°	○			◎	○	○					◎	◎	◎	◎	◎	◎	◎	
	27-53mm 90°	ø50 to ø100	–		**WRX**3000R(S)		22° to 24°	13° to 15°																		
	18-36mm 90°	ø20 to ø40	ø20 to ø42	WRX-E →H100	**WRX**2000E	(2)	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	27-53mm 90°	ø40 to ø50	ø32 to ø42		**WRX**3000E		20° to 22°	12° to 13°																		
	15mm 90°	ø50 to ø63	–	WSE →H104	**WSE**16000RS	(2)	8° to 14°	-9° to -6°	○			◎	○	◎							◎				◎	
	15mm 90°	ø32	ø32	WSE-E →H106	**WSE**16000E		8°	-9°																		
	6mm 90°	ø40 to ø100	–	WFX →H110	**WFX**08000R(S) **WFXM**08000R(S) **WFXF**08000R(S)	(4)	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø50 to ø250	–		**WFX**12000R(S) **WFXF**12000R(S)		8°	-8°																		
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX-E →H115	**WFX**08000E **WFXM**08000E		12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø40 to ø80	ø32		**WFX**12000E **WFXF**12000E		8°	-8°																		
	6mm 90°	ø50 to ø200	–	DFC →H120	**DFC**09000R(S) **DFCM**09000R(S) **DFCF**09000R(S)	(6)	-5°	-9°	◎	○		◎	○						◎	◎	○	◎			○	
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC-E →H123	**DFC**09000E **DFCM**09000E		-5°	-9°																		
	8mm 90°	ø40 to ø80	–	TSX →H128	**TSX**08000R/L(S) **TSXF**08000R/L(S)	(4)	-6°	-20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø40 to ø315	–		**TSX**13000R/L(S) **TSXM**13000R/L(S) **TSXF**13000R/L(S)			-23° to -15°																		
	8mm 90°	ø16 to ø80	ø16 to ø32	TSX-E →H136	**TSX**08000E **TSXF**08000E		-6°	-36° to -20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø25 to ø80	ø25 to ø32		**TSX**13000E **TSXM**13000E **TSXF**13000E			-31° to -15°																		
	34-60mm 90°	ø32 to ø63	–	TSXR →H140	**TSXR**08000RS		-6° to -3°	-20° to -15°	○			◎							◎	◎	◎	◎			◎	
	41-60mm 90°	ø40 to ø125			**TSXR**13000RS			-23° to -15°																		
	21-40mm 90°	ø20 to ø40	ø20 to ø32	TSXR-E →H144	**TSXR**08000E		-6° to -3°	-33° to -18°	○			◎							◎	◎	◎	◎			◎	
	41-60mm 90°	ø40 to ø50	ø32 to ø42		**TSXR**13000E			-23° to -18°																		

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Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material: P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling / Semi-Shoulder Milling	15mm 88°	ø80 to ø200	–	PWC →H152	**PWC**4000 **PWCF**4000	(4)	-5°	-15°	○			○	○						○	○		○				
	16mm 90° / 31mm 90°	ø80 to ø250	–	PWS →H154	**PWS**4000 **PWSF**4000 / **PWSR**4000	(4)	-6°	-15°	○			○	○						○	○	○	○				
	16mm 90°	ø80 to ø315	–	CHG →H156	**CHG**4000	(3)	15°	4°	○			○							○	○	○	○	○	○		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H157	**CHE**2000	(3)	6° to 15°	-3° to 0°	○			○	○						○	○	○	○	○	○		
	13mm 90°	ø30 to ø40	ø32		**CHE**3000		15°	-3° to 0°																		
	16mm 90°	ø50 to ø100	ø32 to ø42		**CHE**4000		15°	2° to 4°																		
	18mm 90°	ø80 to ø315	–	CPG →H160	**CPG**4000	(3)	6°	0°				○	○						○	○	○	○				
	8-19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H161	**FMS**	(3)	3° to 7°	-4° to -6°				○	○						○	○	○	○				
Multi-purpose	17-35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H163	**WMM**2000E/EL **WMM**2000ELH /EXLH	(2)	7° to 11°	15° to 16°	◎			◎	◎	◎		◎			◎	◎	◎	◎	◎	◎		
	39mm 90°	ø32 to ø40	ø32		**WMM**3000E/EL **WMM**3000ELH /EXLH		7° to 11°	17° to 19°																		
High-Feed	1.5mm 17°	ø40 to ø80	–	DMSL →H170	**DMSL**06000R(S)	(4)	-8°	-8° to -12.5°			◎	○	○	○					◎	◎	○	◎			○	○
	3mm 15°	ø50 to ø160	–	DMSW →H172	**DMSW**08000R(S)	(6)	-6°	-7° to -10°			◎	○	○	○					◎	◎	○	◎			○	○
	1.5mm 17°	ø16 to ø40	ø16 to ø32	DMSL-E →H174	**DMSL**06000E(L)	(4)	-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
	3mm 15°	ø35 to ø50	ø32 to ø42	DMSW-E →H176	**DMSW**08000E(L)	(6)	-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎			○	○

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High-Feed	1.5mm 15°	ø40 to ø63	–	WFXH →H181	**WFXH**08000RS	(4)	6°	-6°			◎	○	○	○					◎	◎	◎	◎			○	○
	2.5mm 15°	ø50 to ø63	–		**WFXH**12000RS		6°	-6°																		
	1.5-2.5mm 20°	ø40 to ø100	–	MSX →H186	**MSX**08000RS **MSX**12000RS **MSX**14000R(S)	(3)	8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
	1.0-2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX-E →H187	**MSX**06000E **MSX**08000E **MSX**12000E **MSX**14000E		8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
Radius	5mm 4-cornered 1.4mm 8-cornered	ø40 to ø50	–	RSE →H190	**RSE**10000RS	(4) (8)	4°	-5°	○		○			○			○				◎				◎	
	6mm 4-cornered 1.7mm 8-cornered	ø40 to ø80			**RSE**12000R(S)		4°	-5°	○		○			○			○				◎				◎	
	5mm 4-cornered 1.4mm 8-cornered	ø25 to ø32	ø25 to ø32	RSE-E →H192	**RSE**10000E		4°	0°	○		○			○			○				◎				◎	
	5mm	ø40 to ø52	–	RSX →H197	**RSX**10000 **RSXF**10000	(4)	10°	-5°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	6mm 4-cornered 1.6mm 8-cornered	ø40 to ø100			**RSX**12000 **RSXF**12000	(4) (8)	10°	-5°																		
	8mm 4-cornered 2.2mm 8-cornered	ø63 to ø160			**RSX**16000 **RSXF**16000		10°	-5°																		
	10mm 4-cornered 2.7mm 8-cornered	ø80 to ø160			**RSX**20000 **RSXF**20000		10°	-5°																		
	4mm	ø20 to ø25	ø20 to ø25	RSX-ES →H201	**RSX**08000ES **RSXF**08000ES	(4)	10°	-8°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	5mm	ø25 to ø32	ø25 to ø32		**RSX**10000ES **RSXF**10000ES		10°	-5°																		
	6mm 4-cornered 1.6mm 8-cornered	ø32	ø32		**RSX**12000ES **RSXF**12000ES	(4) (8)	10°	-5°																		

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Radius	6mm	ø40 to ø80	–	WRCX →H203	**WRCX**12000 **WRCXF**12000	(4) (8)	-3°	0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	8mm	ø63 to ø100	–		**WRCX**16000 **WRCXF**16000		-3°	0°																		
	10mm	ø125 to ø160	–		**WRCX**20000		-3°	0°																		
	4mm	ø20 to ø25	ø20 to ø25	WRCX-E →H206	**WRCX**08000E	(4) (8)	-3°	-3° to 0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	5mm	ø25 to ø32	ø25 to ø32		**WRCX**10000E		-3°	0°																		
	8mm	ø40 to ø50	ø32		**WRCX**16000E		-3°	0°																		
R/3D Profiling	20-47mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H208	**WBMR**2000	(2)	-10°	—					◎				◎		◎	◎	◎	◎				
	30-69mm				**WBMR**2000L																					
	0.1-0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H211	**WBMF**1000	(1)	0°	—					◎				◎	◎	◎	◎						
Side Cutters / T-Slot Cutters	17-24.6mm 90°	ø100 to ø200	–	TGC Standard Disc Shape →H215	**TGC**13000	(4)	10°	-11.5° to -9.5°	○			○	◎						◎	◎	○	◎				
	9-22mm 90°	ø21 to ø50	ø25 to ø32	TSE →H218	**TSE**	(2)	0°	0°					○						○	○		○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E →H220	**WFXC**08000E	(4)	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32		**WFXC**12000E																					
Non-Ferrous Metal	3mm 90°	ø80 to ø160	–	ANX →H226	**ANXA**16000R(S)	(1)	5°	5°																		
		ø40 to ø125			**ANXS**16000R(S)		5°	5°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
		ø25 to ø50	ø20 to ø32		**ANXS**16000E		5°	-2° to 0°																		
	3mm 90°	ø25 to ø50	ø20 to ø32	ANX-E →H230	**ANXS**16000E	(1)	5°	-2° to -0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
	3mm 90°	ø80 to ø125	–	HF →H234	**HFM**12000RS/R **HFF**12000RS/R	(1)	10°	4°	◎	◎									×	×	×	×	○	◎		×
					HFFH12000RS/R																					
					HFFH12000R-BBT30																					

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Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Non-Ferrous Metal	3mm 90° (SUMIDIA Insert) / 10mm 87° (Carbide Insert)	ø80 to ø315	–	RF →H239	**RF**4000	(1)	10°	4°	◎	◎									×	×	×	×	○	◎		×
Non-Ferrous Metal	5mm 90°	ø30 to ø63	–	SRF →H241	**SRF**	(1)	6°	-2° to 4°	◎	◎		○							×	×	×	×	○	◎		×
			ø20		**SRF-ST**																					
Non-Ferrous Metal	16-18mm 90°	ø50 to ø127	–	WAX →H243	**WAX**3000	(2)	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-Ferrous Metal	22-24mm 90°		–		**WAX**4000																					
Non-Ferrous Metal	16-18mm 90°	ø20 to ø40	ø20 to ø32	WAX-E →H244	**WAX**3000E **WAX**3000EL		19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-Ferrous Metal	22-24mm 90°	ø25 to ø40	ø25 to ø32		**WAX**4000E **WAX**4000EL																					
Cast Iron, High-Speed	0.5mm 45°	ø40 to ø315	–	FMU →H247, L162	**FMU** **FMU-E**	(1)	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
Cast Iron, High-Speed	0.5mm 45°	ø80 to ø315	–	FM →H248, L164	**FM** **FMF**	(1)	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
Cast Iron, High-Speed	3mm 75°	ø80 to ø160	–	RM →H249, L165	**RM**	(4)	-5° 45'	-6° 45'	○	◎									×	×	×	◎ (FC)	×	×	×	×

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G32 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Modular Tools

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling	10mm 90°	ø16 to ø40	ø15 to ø32	WEZ-M Modular →H254	**WEZ**11000M	(2)	6° to 15°	-7° to -18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø40	ø23 to ø32		**WEZ**17000M		6° to 15°	-6° to -12°																		
	27mm 90°	ø32	ø28 to ø32	WEZR-M Modular →H258	**WEZR**11000M	(2)	11°	-12°	○			◎	○						◎	◎	◎	◎	◎	◎	◎	
	29mm 90°	ø40	ø28 to ø32		**WEZR**17000M		10°	-9°																		
	10mm 90°	ø16 to ø40	ø15 to ø32	WEX-M Modular →H262	**WEX**2000M	(2)	14° to 25°	10° to 18°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	14mm 90°	ø25 to ø40	ø23 to ø32		**WEX**3000M		16° to 24°	8° to 15°																		
	6mm 90°	ø20 to ø40	ø18 to ø32	WFX-M Modular →H264	**WFX**08000M	(4)	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
High-Feed	1.5mm 17°	ø16 to ø42	ø15 to ø32	DMSL-M Modular →H265	**DMSL**06000M	(4)	-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
	3mm 15°	ø35 to ø40	ø28 to ø32	DMSW-M Modular →H266	**DMSW**08000M	(6)	-6°	-11° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.5mm 15°	ø25 to ø32	ø23 to ø32	WFXH-M Modular →H267	**WFXH**08000M	(4)	6°	-6°			◎	○	○	○					◎	◎	◎	◎			○	○
	2.5mm 15°	ø40	ø28 to ø32		**WFXH**12000M		6°	-6°																		
	1.0mm 20°	ø16 to ø25	ø15 to ø25	MSX-M Modular →H268	**MSX**06000M	(3)	8°	-3° to -6°			◎	○	○	○					◎	◎	◎	◎				○
	1.5mm 20°	ø25 to ø35	ø23 to ø32		**MSX**08000M																					
	2.0mm 20°	ø32 to ø40	ø28 to ø32		**MSX**12000M																					
Radius	4mm	ø20 to ø32	ø18 to ø32	RSX-M Modular →H269	**RSX**08000M	(4)	10°	-8°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	5mm	ø25 to ø32	ø23 to ø32		**RSX**10000M **RSXF**10000M		10°	-5°																		
	6mm 4-cornered 1.6mm 8-cornered	ø32 to ø40	ø28 to ø32		**RSX**12000M **RSXF**12000M	(4) (8)	10°	-5°																		

Shank diameters listed are sizes of corresponding arbors. Refer to page H253 for details.

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Selection Guide for Modular Tools / Cast Iron High-Feed and Milling Cutters (Special Purpose)

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Milling Cutters (Special Purpose) / Radius	4mm, 4-cornered	ø20 to ø25	ø18 to ø25	WRCX-M Modular →H270	**WRCX**08000M	(4) (8)	-3°	-3° to 0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	1.6mm, 8-cornered																									
	5mm	ø25 to ø32	ø23 to ø32		**WRCX**10000M			0°																		
	6mm	ø40	ø28 to ø32		**WRCX**12000M																					
Chamfering	45°	ø16	ø15 to ø16	WFXC-M Modular →H271	**WFXC**08000M	(4)	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
		ø25 to ø32	ø23 to ø32		**WFXC**12000M		0°	0°																		
Non-Ferrous Metal	3mm, 90°	ø25 to ø40	ø25 to ø32	ANXS-M Modular →H272	**ANXS**16000M	(1)	5°	-2° to 0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
High Feed Cast Iron Machining	1mm, 89°-89°30'	ø63 to ø315	–	GFX →H276	**GFX(C)**13000	(4)	-5°	-8°		◎	◎								×	×	×	◎	×	×	×	×
					GFX16000																					
	6mm, 60°	ø80 to ø315	–	GRHN →H278	**GRHNF**17000	(6)	-6°	-6° 30' to -5°			◎								×	×	×	◎	×	×	×	×
					GRHNM17000		-6°	-6° 30' to -5°																		
Milling Cutters (Special Purpose)	5.5mm, 45° *	ø100 to ø450	–	NRV →H282	**NRV**4000	(4)	-5°	-6°			◎								×	×	×	◎	×	×	×	×
	8.5mm, 45° *		–		**NRV**5000																					
	7mm, 65°	ø100 to ø450	–	DPV →H283	**DPV**4000	(4)	10°	5°		○	◎								×	×	×	◎	×	×	×	×
	7.5mm, 65°	ø100 to ø450	–		**DPV**5000		10°	5°																		
	0.5mm, 90°	ø100 to ø450	–	NFV →H284	**NFV**4000	(4)	-5°	-6°		◎	◎								×	×	×	◎	×	×	×	×
	0.5mm, 90°	ø100 to ø450	–		**NFV**5000		-5°	-6°		◎	◎								×	×	×	◎	×	×	×	×
	10mm, 65°	ø200 to ø450	–	APV →H285	**APV**5000	(4)	18°	-2°		◎	◎								○	○	×	○	◎	○		×

*Use a chamfering cutter for chamfering operations. * The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Milling Cutters (Shank type)

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	6mm 45° *	ø32 to ø63	ø32	WGX-EW →H25	**WGX**13000EW	(4)	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	4mm 45° *	ø20 to ø63	ø20 to ø32	WGC-EW →H28	**WGC**3000EW	(4)	20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	6mm 45° *	ø32 to ø63	ø32		**WGC**4000EW		20° to 22°	-20° to -24°																		
	6mm 45° * 3mm 45° *	ø40 to ø63	ø32	DGC-EW →H35	**DGC**13000EW	(4)	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	5.5mm 45° *	ø50 to ø100	ø32 to ø42	UFO-E →H38	**UFO**4000E	(4)	27°	-7°	○	○									○	○		○	○	○		
	6.5mm 45° *	ø50 to ø100	ø32 to ø42	FPE →H40	**FPE**4000	(4)	15°	-3°	○										○	○		○				
Shoulder Milling / Deep Shoulder Milling	10mm 90°	ø14 to ø80	ø10 to ø32	WEZ-E →H62	**WEZ**11000E **WEZ**11000ES **WEZ**11000EL	(2)	6° to 15°	-7° to -18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø80	ø16 to ø42		**WEZ**17000E **WEZ**17000ES **WEZ**17000EL		6° to 15°	-6° to -12°																		
	19-61mm 90°	ø20 to ø40	ø20 to ø32	WEZR-E →H80	**WEZR**11000E	(2)	8° to 14°	-15° to -11°	○			◎	○						◎	◎	◎	◎	◎	◎	◎	
	29-84mm 90°	ø40 to ø50	ø32 to ø42		**WEZR**17000E		10° to 12°	-9° to -8°																		
	6mm 90°	ø10 to ø25	ø10 to ø20	WEX-E →H93	**WEX**1000E **WEX**1000EL	(2)	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		**WEX**2000E **WEX**2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		**WEX**3000E(-C) **WEX**3000ES(-C) **WEX**3000EL		16° to 24°	8° to 15°																		
	18-36mm 90°	ø20 to ø40	ø20 to ø42	WRX-E →H100	**WRX**2000E	(2)	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	27-53mm 90°	ø40 to ø50	ø32 to ø42		**WRX**3000E		20° to 22°	12° to 13°																		
	15mm 90°	ø32	ø32	WSE-E →H106	**WSE**16000E	(2)	8°	-9°	○			◎	○	◎							◎				◎	
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX-E →H115	**WFX**08000E **WFXM**08000E	(4)	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø40 to ø80	ø32		**WFX**12000E **WFXF**12000E		8°	-8°																		
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC-E →H123	**DFC**09000E **DFCM**09000E	(6)	-5°	-9°	◎	○		◎	○						◎	◎	○	◎			○	

*Use a chamfering cutter for chamfering operations. * The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Selection Guide for Milling Cutters (Shank type)

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling	8mm 90°	ø16 to ø80	ø16 to ø32	TSX-E →H136	TSX08000E TSXF08000E	(4)	-6°	-36° to -20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø25 to ø80	ø25 to ø32		TSX13000E TSXM13000E TSXF13000E			-31° to -15°																		
	21-40mm 90°	ø20 to ø40	ø20 to ø32	TSXR-E →H144	TSXR08000E	(4)	-6° to -3°	-33° to -18°	○			◎							◎	◎	◎	◎			◎	
	41-60mm 90°	ø40 to ø50	ø32 to ø42		TSXR13000E			-23° to -18°																		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H157	CHE2000	(3)	6° to 15°	-3° to 0°																		
	13mm 90°	ø30 to ø40	ø32		CHE3000		15°	-3° to 0°				○	○						○	○	○	○	○	○		
	16mm 90°	ø50 to ø100	ø32 to ø42		CHE4000		15°	2° to 4°																		
	8-19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H161	FMS	(3)	3° to 7°	-4° to -6°	○			○	○						○	○	○	○				
Multi-purpose	17-35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H163	WMM2000E/EL WMM2000ELH /EXLH	(2)	7° to 11°	15° to 16°	◎			◎	◎	◎		◎	◎		◎	◎	◎	◎	◎	◎		
	39mm 90°	ø32 to ø40	ø32		WMM3000E/EL WMM3000ELH /EXLH		7° to 11°	17° to 19°																		
High-Feed	1.5mm 17°	ø8.4 to ø32.3	ø16 to ø32	DMSL-E →H174	DMSL06000E(L)	(4)	-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
	3mm 15°	ø35 to ø50	ø32 to ø42	DMSW-E →H176	DMSW08000E(L)	(6)	-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.0-2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX-E →H187	MSX06000E MSX08000E MSX12000E MSX14000E	(3)	8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
Radius	5mm 4-cornered 1.4mm 8-cornered	ø25 to ø32	ø25 to ø32	RSE-E →H192	RSE10000E	(4) (8)	4°	0°	○		○			○				○			◎				◎	
	4mm	ø20 to ø25	ø20 to ø25	RSX-ES →H201	RSX08000ES RSXF08000ES	(4)	10°	-8°																		
	5mm	ø25 to ø32	ø25 to ø32		RSX10000ES RSXF10000ES		10°	-5°	○		○	○	○	◎				◎	◎	◎	◎	◎			◎	
	6mm 4-cornered 1.6mm 8-cornered	ø32	ø32		RSX12000ES RSXF12000ES	(4) (8)	10°	-5°																		
	4mm	ø20 to ø25	ø20 to ø25	WRCX-E →H206	WRCX08000E	(4) (8)	-3°	-3° to 0°																		
	5mm	ø25 to ø32	ø25 to ø32		WRCX10000E		-3°	0°	○		○	○	○	◎				◎	◎	◎	◎	◎	◎	◎		
	8mm	ø40 to ø50	ø32		WRCX16000E		-3°	0°																		

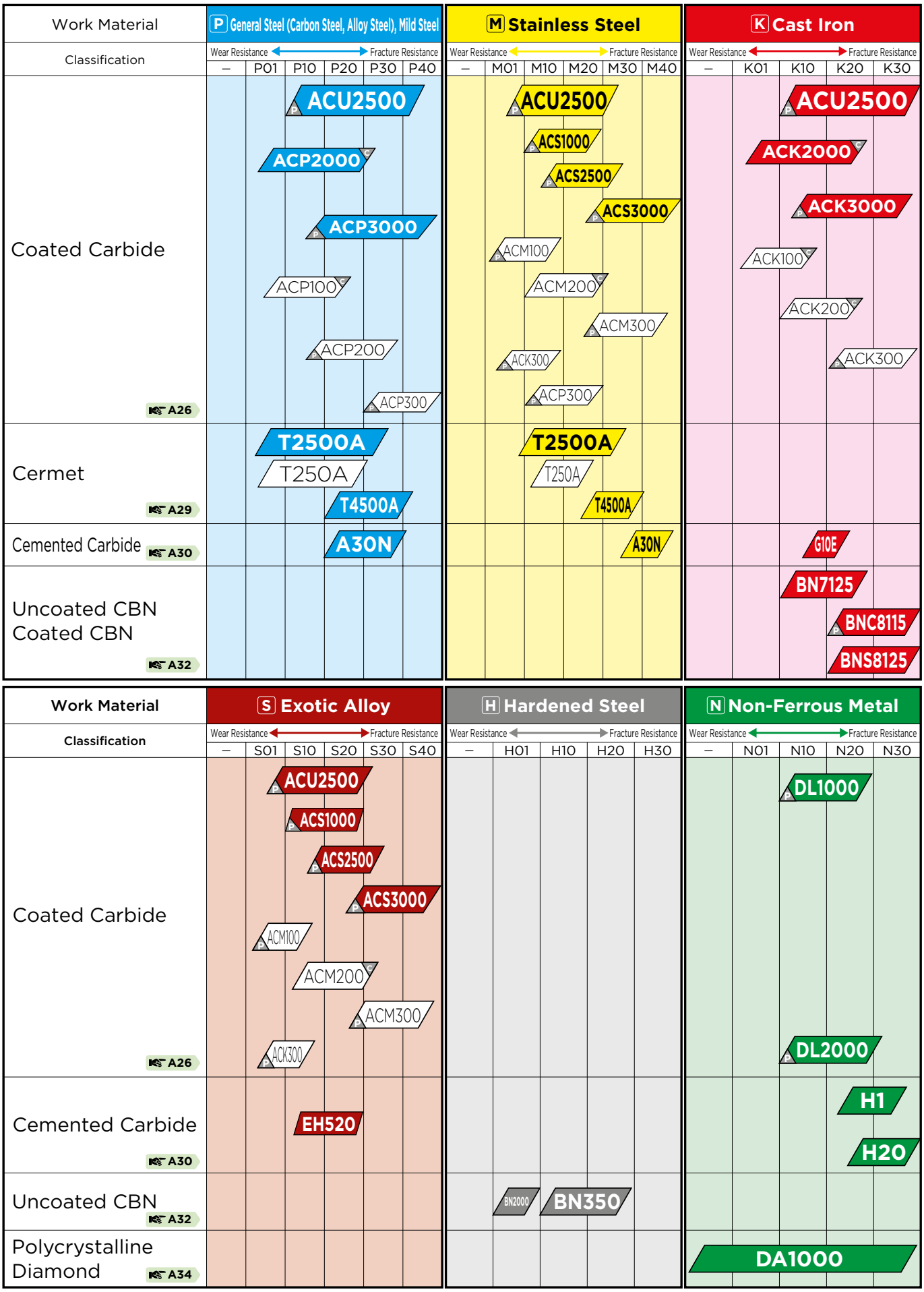
*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
R/3D Profiling	20-47mm / 30-69mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H208	**WBMR**2000 / **WBMR**2000L	(2)	-10°	—					◎				◎		◎	◎	◎	◎				
R/3D Profiling	0.1-0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H211	**WBMF**1000	(1)	0°	—					◎				◎	◎	◎	◎						
Side Cutters / T-Slot Cutters	9-22mm 90°	ø21 to ø50	ø25 to ø32	TSE →H218	**TSE**	(2)	0°	0°					○						○	○		○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E →H220	**WFXC**08000E	(4)	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
Chamfering	45°	ø25 to ø32	ø25 to ø32		**WFXC**12000E																					
Non-Ferrous Metal	3mm 90°	ø25 to ø50	ø20 to ø32	ANX-E →H230	**ANXS**16000E	(1)	5°	-2° to -0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
Non-Ferrous Metal	16-18mm 90°	ø20 to ø40	ø20 to ø32	WAX-E →H244	**WAX**3000E / **WAX**3000EL	(2)	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-Ferrous Metal	22-24mm 90°	ø25 to ø40	ø25 to ø32		**WAX**4000E / **WAX**4000EL																					

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Grades for Milling



1st Recommended Grade / 2nd Recommended Grade / CVD Coating / PVD Coating, Blank: Uncoated

Grades for Milling / Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACP100**	89.3	3.1	Super FF Coat	6	• For high-speed machining of steel • Grade emphasising wear resistance for high-speed cutting	AC230
	ACP2000	89.5	3.2	ABSOTECH	10	• For high-speed machining of steel • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	**ACM200**	89.8	3.4	Super FF Coat	6	• For machining high-hardness stainless steel • Adopts a newly developed high-strength carbide substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK100**	92.0	2.4	Super FF Coat	6	• For high-speed cast iron milling • Adopts a high-hardness substrate with high wear resistance	—
	ACK200	91.7	2.5	Super FF Coat	6	• For high-speed cast iron milling • Adopts a tough carbide substrate with excellent wear resistance and thermal crack resistance	AC211
	ACK2000	91.7	3.1	ABSOTECH	10	• For high-speed cast iron milling • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACU2500**	91.6	3.8	ABSOTECH	3	• General-purpose grade covering steel, stainless steel, and cast iron machining • Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials	—
	ACP200	89.5	3.2	(New) Super ZX Coat	3	• Our 1st recommended grade for steel applications • General-purpose grade with an excellent balance of wear and fracture resistance • Also suitable for machining stainless steel	ACZ330
	ACP300	89.3	3.1	(New) Super ZX Coat	3	• For interrupted machining of steel • Tough grade with an emphasis on fracture resistance • Also suitable for interrupted machining of stainless steel	ACZ350
	ACP3000	89.5	3.2	ABSOTECH	3	• Our 1st recommended grade for milling steel • Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM300**	89.8	3.4	(New) Super ZX Coat	3	• Our 1st recommended grade for milling stainless steel • Adopts a high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	—
K Cast Iron	**ACK300**	91.4	3.3	(New) Super ZX Coat	3	• General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
	ACK3000	91.7	3.1	ABSOTECH	3	• Our 1st recommended grade for milling cast iron • Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL1000**	92.9	2.1	AURORA Coat (DLC)	0.5	• For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	—
	DL2000	91.6	3.8	AURORA Coat (DLC)	0.5	• For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	—
S Exotic Alloy	**ACS1000**	91.6	3.8	ABSOTECH	3	• For high-efficiency milling of exotic alloys • High-hardness carbide substrate coupled with a chipping-resistant coating provides long, stable tool life in high-speed, high-efficiency machining applications	—
	ACS2500	90.8	4.2	ABSOTECH	3	• First recommendation for titanium alloy applications • Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance	ACM200
	ACS3000	89.8	3.4	ABSOTECH	3	• Suitable for a wide range of exotic alloy machining applications • Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating	ACM300

Cermet

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**T1500A**	92.0	2.2	—	—	• For finishing of steel and stainless steel • Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	• For finishing of steel and stainless steel • Tough grade with enhanced crack development resistance	—
M Stainless Steel	**T2500A**	91.8	2.4	—	—	• For finishing of steel and stainless steel • Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A
	T4500A	91.0	2.3	—	—	• For finishing of steel and stainless steel • Tough grade with excellent fracture resistance and reduced thermal cracking	—

CBN

Work Material	Grade	Binder	Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	TiAlN	Coating Thickness (μm)	Features
K Cast Iron Sintered Alloy	**BN7125**	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	General-purpose grade with excellent wear resistance, fracture resistance, and thermal shock resistance, suitable for machining of cast iron and exotic alloys
	BNS8125	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	—	—	Grade with 100% solid CBN structure that exhibits excellent wear and fracture resistance
	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure, using PVD coating with excellent wear resistance to enable roughing operations.
	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron cutting. Provides superior wear and fracture resistance.
H Hardened Steel	**BN350**	TiN	60 to 65	1	33 to 35	1.5 to 1.6	—	—	Grade with the highest cutting edge strength, suitable for heavy interrupted cutting.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	—	—	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.

Polycrystalline Diamond

Work Material	Grade	Binder	Content (%)	Grain Size (μm)	Hardness HK (GPa)	TRS (GPa)	Features
N Non-Ferrous Metal	**DA1000**	Co	90 to 95	up to 0.5	50 to 60	≈ 2.60	High-density sintered material made of ultra-fine grain diamond that exhibits optimum wear and fracture resistance as well as excellent edge sharpness.
	DA1090 New	Co	92 to 97	Up to 50	55 to 70	≈ 1.30	A polycrystalline diamond material with the highest diamond content, made by sintering coarse diamond particles at high density. High density and enhanced particle binding strength exhibit excellent wear and fracture resistance.

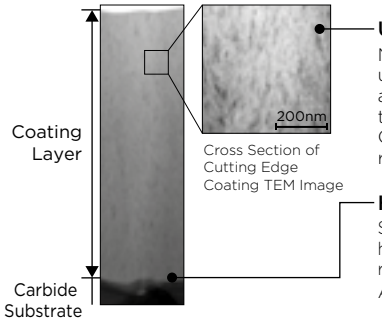
Cemented Carbide A30

ACS1000/ACS2500/ACS3000

■ Features of ACS1000/ACS2500/ACS3000

- Uses ABSOTECH, a new coating with excellent wear and chipping resistance.
- Its carbide substrate, with excellent fracture and wear resistance, achieves the ultimate in stable long tool life for milling of exotic alloys.

ABSOTECH PVD

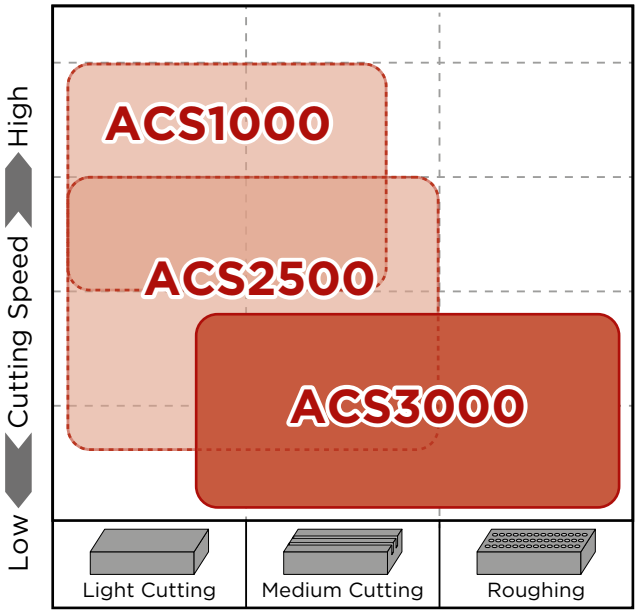


Ultra-fine Grained B Additive
New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness.
Outstanding chipping and wear resistance.

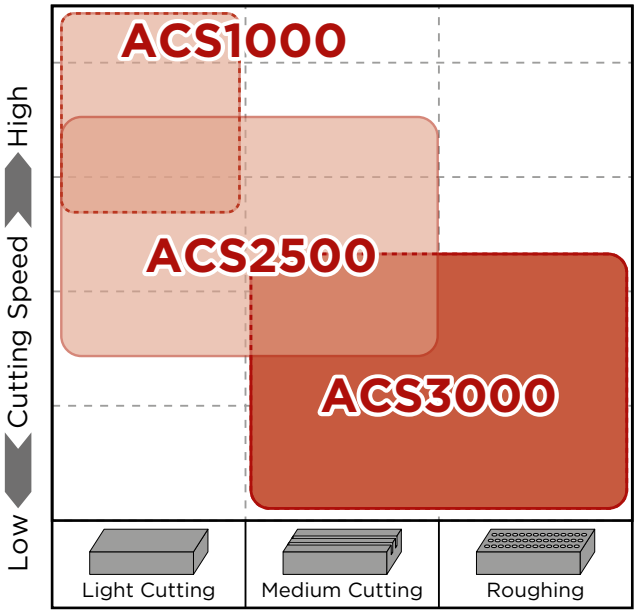
High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings.
Applicable Grades: ACS1000, ACS2500, ACS3000

■ Application Range

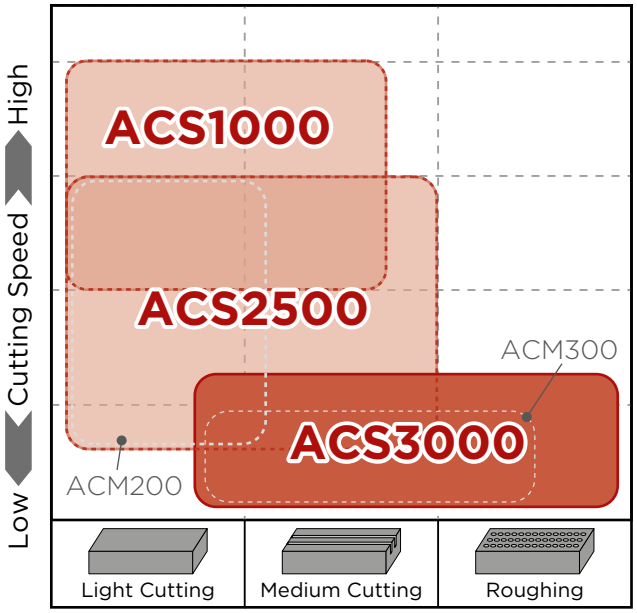
S Heat-Resistant Alloy



S Titanium Alloy



M Stainless Steel

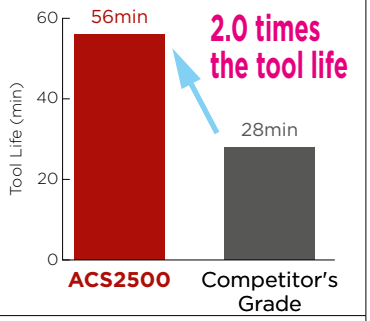


ACS1000/ACS2500/ACS3000

■ Application Examples (ACS1000/ACS2500/ACS3000)

Ti-6Al-4V Aerospace Component S

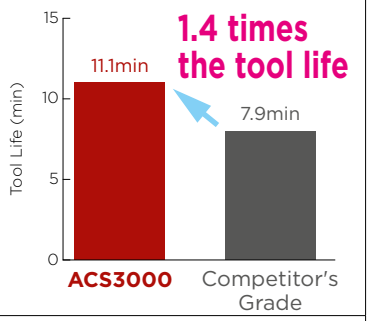




Tool: RSE 12050RS05 Insert: RPHT1204M0EN-G
Cutting Conditions: vc = 60m/min, fz = 0.30mm/t, ap = 3.0mm Wet

Inconel 718 (44HRC) Block Material S

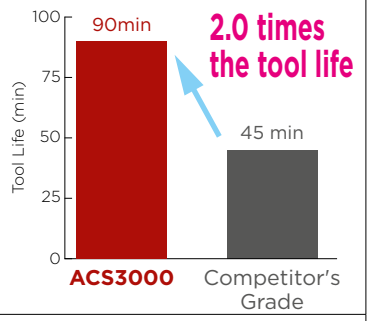




Tool: RSE 12050RS05 Insert: RPHT1204M0EN-G
Cutting Conditions: vc = 40m/min, fz = 0.25mm/t, ap = 2.0mm Wet

Ti-6Al-4V Aerospace Component S

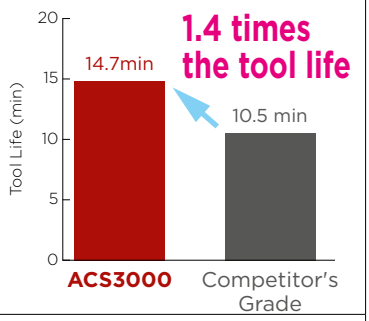




Tool: WSE 16050RS05L Insert: XOMT160540PEER-E
Cutting Conditions: vc = 50m/min, fz = 0.12mm/t, ap = 4.0mm Wet

Precipitation Hardened Stainless Steel (42HRC) Block Material M



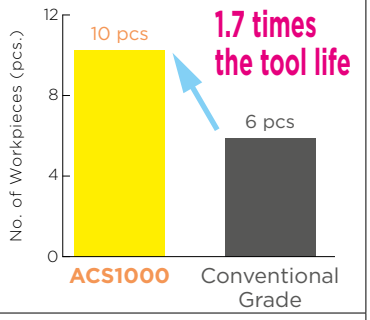


Tool: RSE 12050RS05 Insert: RPHT1204M0EN-G
Cutting Conditions: vc = 150m/min, fz = 0.30mm/t, ap = 2.0mm Wet

■ Application Examples (ACS1000)

Precipitation Hardened Stainless Steel Turbine Blade M





Tool: RSXF12050RS Insert: RDET1204M0EN-G / ACS1000
Cutting Conditions: vc = 107m/min, fz = 0.2mm/t, ap = 1.6mm, Dry

Cutter Identification Code

Standard Cutters

DFC (F) 09 050 R (S)

(1) (2) (3) (4) (5) (6)

- (1) Series Code — Refer to Table 1
- (2) Additional Symbol — Refer to Table 2
- (3) Insert Inscribed Circle Size — Refer to Table 3
- (4) Cutter Diameter — Refer to Table 4
- (5) Feed Direction — Refer to Table 5
- (6) Mounting — Refer to Table 6

Table 1: (1) Series Code

Representative example
DFC
DGC
WGX
WGC
UFO
FPG
EHG
DNX
APG
WRCX
MSX
PWC
PWS
WFX
WEX
TSX

Table 2: (2) Additional Symbol

Fine-pitch Design	
M	Fine Pitch
F	Extra Fine Pitch

Table 3: (3) Insert Inscribed Circle Size

Inch	Inscribed Circle Dimensions (mm)
3	9.525
4	12.70
5	15.875
6	20.0
Millimetre	**Inscribed Circle Dimensions (mm)**
12	12.7
13	13.5
14	14.0
16	16.0
20	20.0

Inscribed Circle Example



Table 4: (4) Cutter Diameter

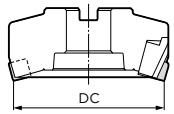


Table 5: (5) Feed Direction

Left Hand (L)	Right Hand (R)

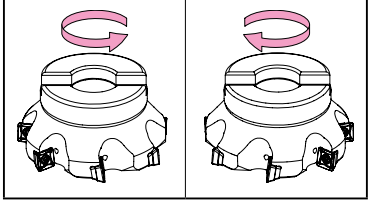


Table 6: (6) Mounting

Mounting	
S	Metric Bore

Milling Cutters (Special Purpose)

DPV (Z) 4 100 (Q) R

(1) (7) (3) (4) (8) (5)

(1) Series Code
DPV
GFX
NRV
NFV
APV
GRHNM
GRHNF

- (7) 2-piece system: Z
- (3) (4) (5): Same as above
- (8) Quick Change type: Q

Insert Identification Code

(Ex.) **S E M T 13 T3 A G S N-H**

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

- (1) Insert Shape — Refer to Table 1
- (2) Relief Angle — Refer to Table 2
- (3) Tolerance — Refer to Table 3
- (4) Insert Hole — Refer to Table 4
- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Cutting Edge Angle — Refer to Table 7
- (8) Wiper Edge Relief Angle — Refer to Table 8
- (9) Edge Treatment — Refer to Table 9
- (10) Feed Direction — Refer to Table 10
- (11) Additional Information — Refer to Table 11

Table 1: (1) Insert Shape

Symbol	Insert Shape	Apex Angle
A	Parallelogram type	85°
H	Hexagonal type	120°
L	Rectangular type	90°
O	Octagonal type	135°
P	Pentagonal type	108°
R	Round type	—
S	Square type	90°
T	Triangular type	60°
Q	Special	—
X	Special	—

Table 2: (2) Relief Angle

Symbol	Relief Angle
N	0°
A	3°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°
G	30°
O	Special

Table 3: (3) Tolerance

Symbol	Inscribed Circle (mm)	Thickness (mm)
A	±0.025	±0.025
C	±0.025	±0.025
E	±0.025	±0.025
G	±0.025	±0.13
K	±0.05 to ±0.15	±0.025
M	±0.05 to ±0.15	±0.13

Table 4: (4) Insert Hole

Symbol	Shape (Cross Section)
W	
M	
R	
N	
T	

Table 5: (5) Cutting Edge Length

Shape	Cutting Edge Length (ℓ)
S	
T	
R	
H	
A	
O	

Table 6: (6) Thickness

Symbol	Thickness (mm)
02	2.38
03	3.18
T3	3.97
04	4.76
06	6.35

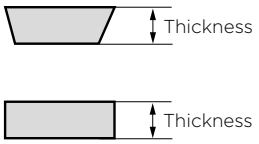


Table 7: (7) Cutting Edge Angle

Symbol	Cutting Edge Angle
A	45°
D	60°
E	75°
F	85°
H	87°
P	90°
Z	Special

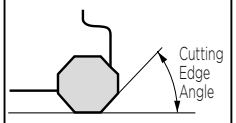


Table 8: (8) Wiper Edge Relief Angle

Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
Z	Special



Table 9: (9) Edge Treatment

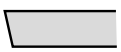
Symbol	Shape
F	 Sharp Edge
E	 Round Honing
T	 Negative Land
S	 Negative Land + Round Honing

Table 10 (10) Feed Direction

Symbol	Feed Direction
N	No
R	Right Hand
L	Left Hand

Table 11 (11) Additional Information (Ex.)

Symbol	Symbol Description
A	Sharp Edged
H	Strong Edged
W	Large Edge Treatment
S	For WBMR Insert Main Blade

* Exceptions

The above table does not apply to the following insert codes: SPCH42TR, SPCH42R, SPCH53TR, SPCH53R, SDKN42MT, SDKN42M, SDKN53MT, SDKN53M, SEKN42MT, SEKN42M, SEKN53MT and SEKN53M.

For example,

- although "H" and "K" indicate precision tolerances, the main cutting edges have general precision.
- "M" in this instance represents the Neutral Hand insert.
- "T" in this instance represents negative land edge treatment.
- "R" indicates the feed direction (right hand).



■ Features

SEC-WaveMill WGX series inserts employ a unique chipbreaker design to provide lower cutting force and higher-quality surface finish than conventional tools. Lineup of insert grades and chipbreakers has been significantly expanded, and the addition of the ACM series enables machining of stainless steel and exotic alloys. Furthermore, the general-purpose grade ACU2500 can be used for any work material.



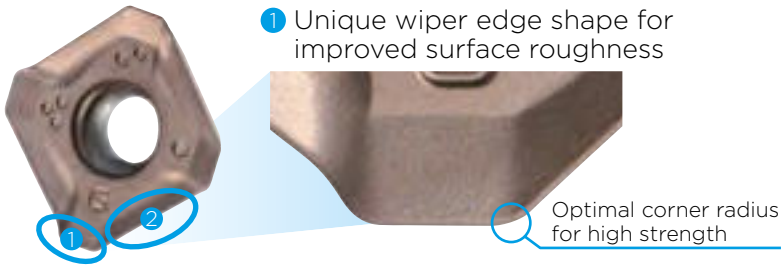
● Reduced Cutting Force
- High-rake chipbreaker designed for use with the WGX series achieves low cutting force

● High Quality
- Improved runout precision and unique wiper edge shape ensure excellent surface finish quality
- Additional edge chamfer reduces burrs and edge chipping

● Wide Ranging Product Lineup
- A wide selection of grades along with 4 types of chipbreakers and wiper inserts are available.
- Can be used for a wide variety of machining applications.

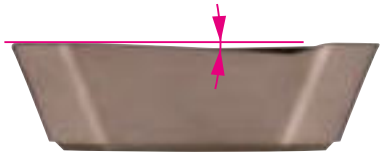
■ Insert Shape Features

● General-purpose G type Chipbreaker

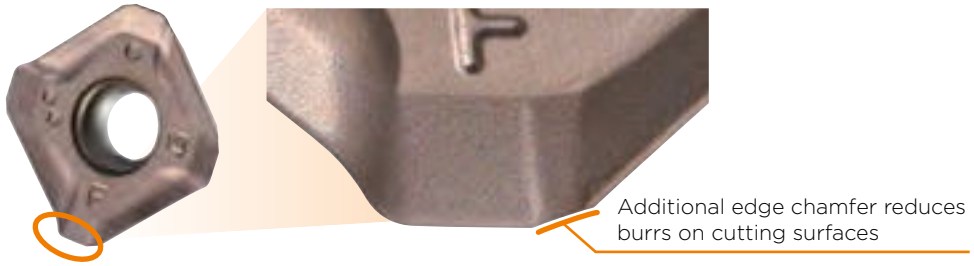


1 Unique wiper edge shape for improved surface roughness

2 Large rake angle and cutting edge rake angle for improved sharpness



● FG type Chipbreaker with Low-Burr Design



■ Product Range

Type	Cat. No.	Description	Dia. (mm)									
			ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
Shell	WGX13000R/L (inch)	Standard Pitch					4	5	6	7	8	10
	WGX13000RS/LS	Standard Pitch		3	3	4	4	5	6	7	8	10
	WGXM13000R/L (inch)	Fine Pitch					6	7	8	10	12	14
	WGXM13000RS/LS	Fine Pitch			4	5	6	7	8	10	12	14
	WGXF13000R/L (inch)	Extra Fine Pitch					8	10	12	16	20	24
	WGXF13000RS/LS	Extra Fine Pitch			5	6	8	10	12	16	20	24
Shank	WGX13000EW	Shank type	3	3	4	5						

Number in ●● shows the number of teeth (inch) Inch Bore
Sizes of ø125mm and below have coolant holes

For the shell type, left-handed tools can also be manufactured.



WGX 13000R(S)
Standard Pitch



WGXM 13000R(S)
Fine Pitch

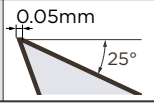
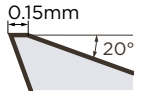
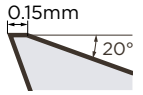
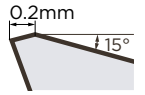


WGXF 13000R(S)
Extra Fine Pitch

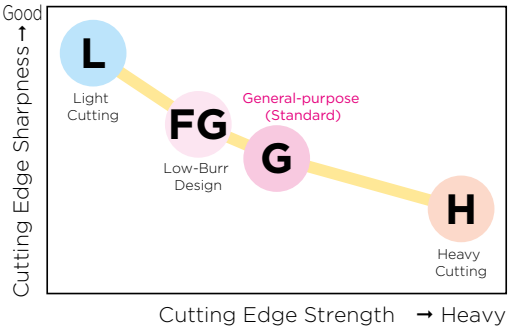


WGX 13000EW
Shank type

■ Chipbreaker Selection

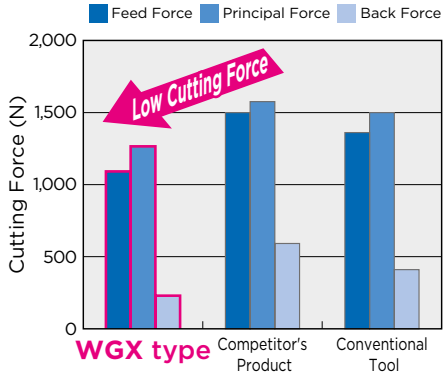
Work Material	P M K S N	P M K S			P K
Applications	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Surface Finish Emphasised
Features	Low Cutting Force	Standard/ With Chamfer	Standard	High Strength	Wiper
	L type	**FG type**	**G type**	**H type**	**WR type**
Chipbreaker					
Cutting Edge Cross Section					

■ Chipbreaker Selection Guide



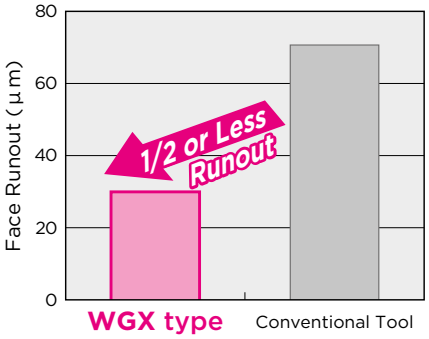
■ Cutting Performance

● Comparison of Cutting Force (G type)



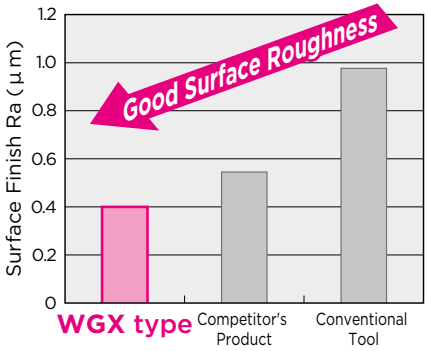
Work Material: S50C, Tool: ø100
Cutting Conditions: vc = 200m/min, fz = 0.2mm/t, ap = 3.0mm

● Runout with Insert Attached (G type)



Tool: WGXM13100R (ø100)
Number of Teeth: 7

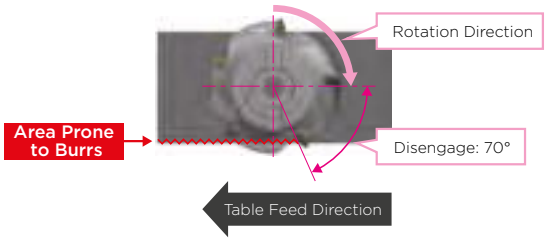
● Surface Finish Comparison (WR type)



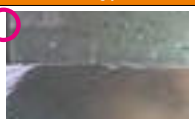
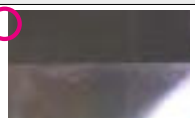
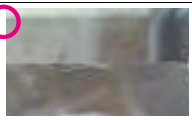
Work Material: S50C, Tool: ø100
Cutting Conditions: vc = 200m/min, fz = 0.2mm/t, ap = 3.0mm

● FG type Chipbreaker with Low-Burr Design





● Machined Surface Comparison

Work Material	FG type	G type	Conventional Tool	Competitor's Product
S50C	○ 	○ 	○ 	×  Burr Formation
SUS304	○ 	○ 	×  Burr Formation	×  Burr Formation
SCM440	○ 	×  Burr Formation	×  Burr Formation	×  Burr Formation

Machine: Machining Centre BT50
Tool: WGX13100R (ø100),
Insert Grade: ACP200
Cutting Conditions:
vc = 200m/min,
fz = 0.2mm/t,
ap = 3.0mm,
ae = 80mm, Dry

■ Precautions When Using Wiper Inserts with Holes

- **When mounting the wiper insert, attach it as shown in Fig 1.**
  When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.
- **The wiper insert has a single corner specification.**
- **Refer to page N25 of Technical Guidance for details about milling with wiper inserts.**

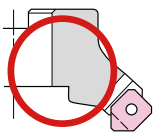
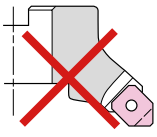
Fig 1 

Fig 2 

WGX 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-20° to -24°	
Axial	20° to 22°	

6mm 45°

Face Milling



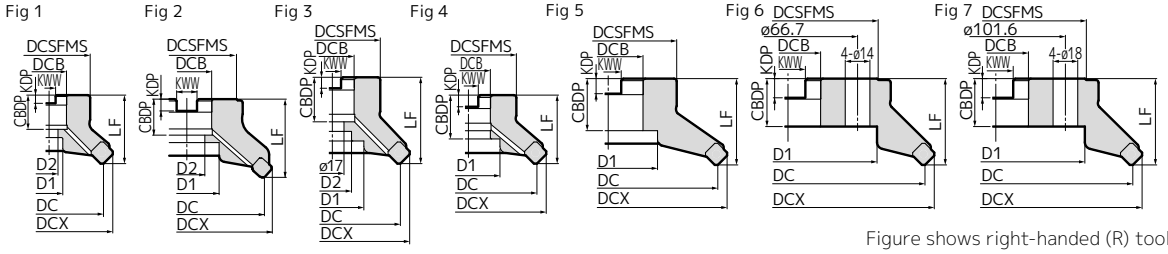


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGX 13040RS/LS	★		40	52	32	40	16	8.4	5.6	18	14	9	3	0.3	1
	13050RS/LS	★		50	62	40	40	22	10.4	6.3	20	18	11	3	0.4	1
	13063RS/LS	★		63	76	50	40	22	10.4	6.3	20	18	11	4	0.6	1
	13080RS/LS	★		*80	93	55	50	27	12.4	7	25	20	13.5	4	1.2	1
	13100RS/LS	★		100	113	70	50	32	14.4	8.5	32	46	—	5	1.6	4
	13125RS/LS	★		125	138	80	63	40	16.4	9.5	29	52	29	6	2.8	2
	13160RS/LS	★		160	173	100	63	40	16.4	9.5	29	88	—	7	4.5	6
	13200RS/LS	★		200	213	130	63	60	25.7	14	35	130	—	8	7.1	7
	13250RS/LS	★		250	263	130	63	60	25.7	14	35	160	—	10	9.8	7
Inch	WGX 13080R/L	★		*80	93	60	50	25.4	9.5	6	25	20	13	4	1.2	1
	13100R/L	★		*100	113	70	63	31.75	12.7	8	32.5	46	28	5	2.3	3
	13125R/L	★		125	138	80	63	38.1	15.9	10	35.5	55	30	6	2.9	1
	13160R/L	★		160	173	100	63	50.8	19.1	11	38	72	—	7	4.5	5
	13200R/L	★		200	213	130	63	47.625	25.4	14	35	130	—	8	7.1	7
	13250R/L	★		250	263	130	63	47.625	25.4	14	35	150	—	10	11.1	7

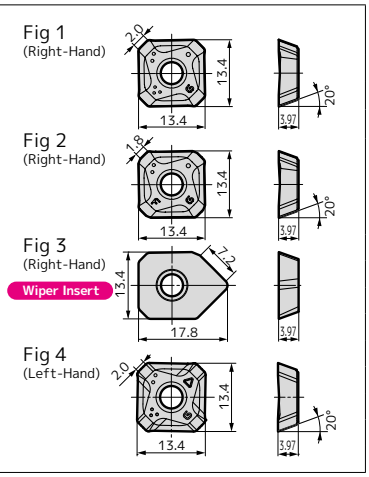
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

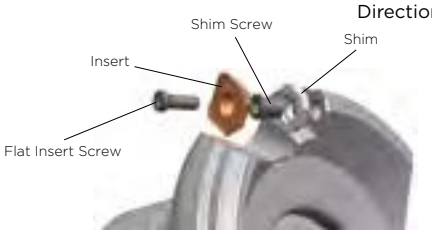
Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K			M S	M S		M S		N			
	Medium Cutting			P M	P M	K			M S	M S	M S	M S		N	P		
	Roughing			P M	P M		K			M S		M S					
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	★	★	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲			★	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	General-purpose	1
SEMT 13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Low-burr Design	2
13T3AGSL-G													—	—	—	General-purpose	4
XEEW 13T3AGER-WR		★		★			★								★	Wiper Insert	3



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX Series Code | **13** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150- **200** -250	0.10- **0.20** -0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180- **270** -350	0.10- **0.25** -0.40	
	Die Steel	200 to 220 HB	100- **150** -200	0.15- **0.20** -0.25	
M	Stainless Steel	—	160- **210** -250	0.15- **0.23** -0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100- **180** -250	0.15- **0.23** -0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500- **750** -1,000	0.15- **0.23** -0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10- **0.20** -0.30	ACU2500 ACS3000 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø40 to 125	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WGXM 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-20° to -24°
	Axial	20° to 22°

6mm 45°

Face Milling



Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6 Fig 7

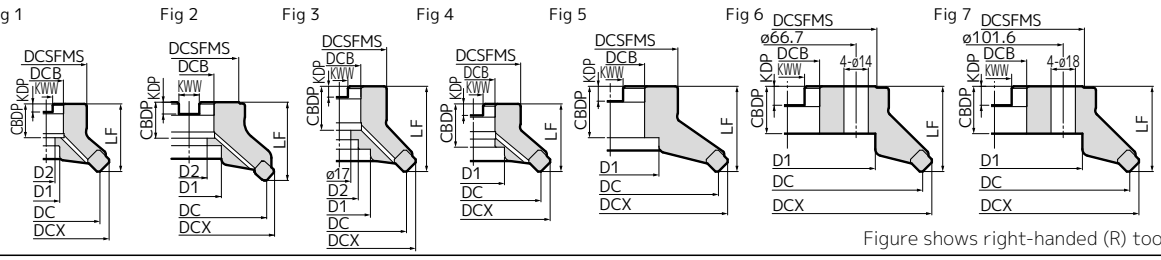


Figure shows right-handed (R) tool.

Body (Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGXM 13050RS/LS	★		50	62	40	40	22	10.4	6.3	20	18	11	4	0.4	1
	13063RS/LS	★		63	76	50	40	22	10.4	6.3	20	18	11	5	0.6	1
	13080RS/LS	★		*80	93	55	50	27	12.4	7	25	20	13.5	6	1.1	1
	13100RS/LS	★		100	113	70	50	32	14.4	8.5	32	46	—	7	1.6	4
	13125RS/LS	★		125	138	80	63	40	16.4	9.5	29	52	29	8	2.8	2
	13160RS/LS	★		160	173	100	63	40	16.4	9.5	29	88	—	10	4.5	6
	13200RS/LS	★		200	213	130	63	60	25.7	14	35	130	—	12	7.0	7
	13250RS/LS	★		250	263	130	63	60	25.7	14	35	160	—	14	9.6	7
Inch	WGXM 13080R/L	★		*80	93	60	50	25.4	9.5	6	25	20	13	6	1.1	1
	13100R/L	★		*100	113	70	63	31.75	12.7	8	32.5	46	28	7	2.2	3
	13125R/L	★		125	138	80	63	38.1	15.9	10	35.5	55	30	8	2.9	1
	13160R/L	★		160	173	100	63	50.8	19.1	11	38	72	—	10	4.5	5
	13200R/L	★		200	213	130	63	47.625	25.4	14	35	130	—	12	7.0	7
	13250R/L	★		250	263	130	63	47.625	25.4	14	35	150	—	14	10.8	7

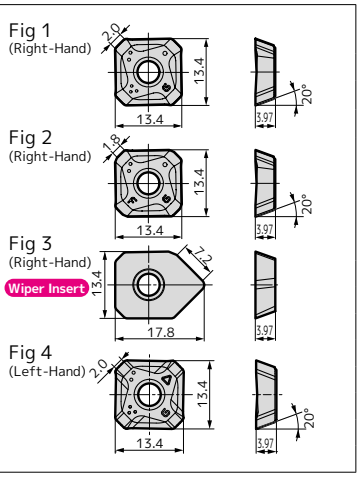
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	P M S N	P			K		M S	M S		M S		K N	N			
	Medium Cutting	P M S N		P M	P M	K			M S	M S	M S	M S		N	P		
	Roughing	P M S N		P M	P M		K			M S		M S					
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	★	★	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲			★	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	General-purpose	1
SEMT 13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Low-burr Design	2
13T3AGSL-G													—	—	—	General-purpose	4
XEEW 13T3AGER-WR		★		★			★								★	Wiper Insert	3



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX Series Code | **M** Fine Pitch | **13** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACS3000 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WGXF 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-20° to -24°
	Axial	20° to 22°

6mm 45°

Face Milling



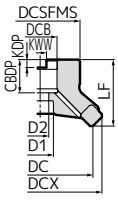
Fig 1 

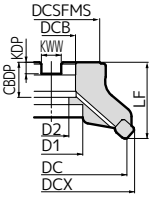
Fig 2 

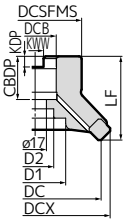
Fig 3 

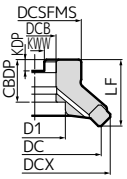
Fig 4 

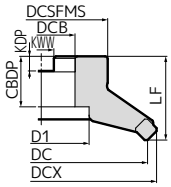
Fig 5 

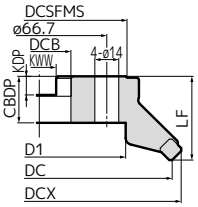
Fig 6 

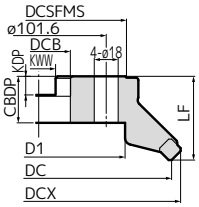
Fig 7 

Figure shows right-handed (R) tool.

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGXF 13050RS/LS	★		50	62	40	40	22	10.4	6.3	20	18	11	5	0.4	1
	13063RS/LS	★		63	76	50	40	22	10.4	6.3	20	18	11	6	0.6	1
	13080RS/LS	★		*80	93	55	50	27	12.4	7	25	20	13.5	8	1.1	1
	13100RS/LS	★		100	113	70	50	32	14.4	8.5	32	46	—	10	1.5	4
	13125RS/LS	★		125	138	80	63	40	16.4	9.5	29	52	29	12	2.7	2
	13160RS/LS	★		160	173	100	63	40	16.4	9.5	29	88	—	16	4.5	6
	13200RS/LS	★		200	213	130	63	60	25.7	14	35	130	—	20	6.9	7
	13250RS/LS	★		250	263	130	63	60	25.7	14	35	160	—	24	9.6	7
Inch	WGXF 13080R/L	★		*80	93	60	50	25.4	9.5	6	25	20	13	8	1.1	1
	13100R/L	★		*100	113	70	63	31.75	12.7	8	32.5	46	28	10	2.1	3
	13125R/L	★		125	138	80	63	38.1	15.9	10	35.5	55	30	12	2.8	1
	13160R/L	★		160	173	100	63	50.8	19.1	11	38	72	—	16	4.5	5
	13200R/L	★		200	213	130	63	47.625	25.4	14	35	130	—	20	6.9	7
	13250R/L	★		250	263	130	63	47.625	25.4	14	35	150	—	24	10.9	7

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K								N			
	Medium Cutting			P M	P M	K								N	P		
	Roughing			P M	P M		K										
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	★	★	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲			★	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	General-purpose	1
SEMT 13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Low-burr Design	2
13T3AGSL-G													—	—	—	General-purpose	4
XEEW 13T3AGER-WR		★		★			★								★	Wiper Insert	3

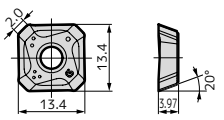
Fig 1 (Right-Hand) 

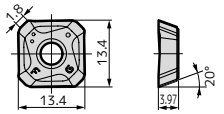
Fig 2 (Right-Hand) 

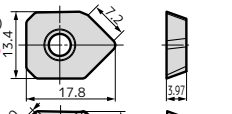
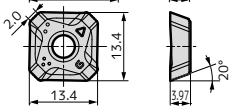
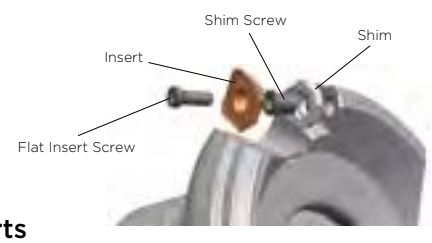
Fig 3 (Right-Hand) Wiper Insert 

Fig 4 (Left-Hand) 

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX Series Code | **F** Extra Fine Pitch | **13** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACS3000 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WGCS13R	BW0507F	LH035	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WGX 13000EW type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

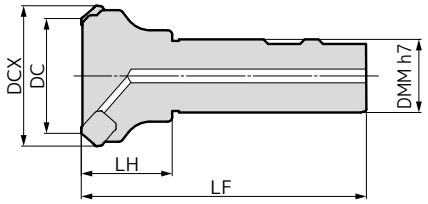
Rake Angle		
Radial	-20° to -24°	
Axial	20° to 22°	

6mm 45°

Face Milling

Fig 1





Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WGX 13032EW	★	**32**	44	32	40	125	3	1
13040EW	★	**40**	52	32	40	125	3	1
13050EW	★	**50**	62	32	40	125	4	1
13063EW	★	**63**	76	32	40	125	5	1

Inserts are sold separately. ø32mm size does not have shims.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	M S	P			K		M S	M S		M S		N			
	Medium Cutting	M S		P M	P M	K			M S	M S	M S	M S		N	P	
	Roughing	M S		P M	P M		K			M S		M S				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	★	★	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲			★	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	General-purpose	1
SEMT 13T3AGSR-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		★	★	★	★	★	★		★	★	▲	▲	—	—	—	Low-burr Design	2
XEEW 13T3AGER-WR		★		★			★								★	Wiper Insert	3

Fig 1

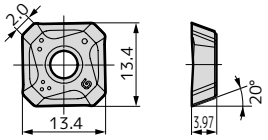


Fig 2

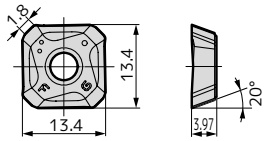
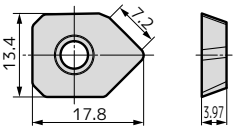


Fig 3

Wiper Insert



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX Series Code | **13** Insert Size | **032** Dia. | **EW** Shank type



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACS3000 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Wrench	Anti-seize Cream
WGX13032EW	—	—	—	BFTX03512IP	**3.0**	TRDR15IP	SUMI-P
Other than above	WGCS13R	BW0507F	LH035				

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WGC 3000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-10° to -19°
	Axial	20°

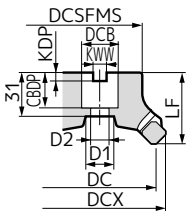
4mm 45°

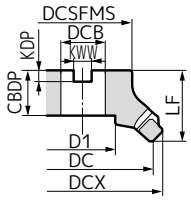
Face Milling

Fig 1



Fig 2





Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGC 3032RS**	★	**32**	41	32	40	**16**	8.4	5.6	18	14	9	4	—	1
	3040RS	★	**40**	49	32	40	**16**	8.4	5.6	18	14	9	4	—	1
	3050RS	★	**50**	59	40	40	**22**	10.4	6.3	20	18	11	5	—	1
	3063RS	★	**63**	72	50	40	**22**	10.4	6.3	20	18	11	6	—	1
Inch	**WGC 3080R**	★	*80	89	60	50	**25.4**	9.5	6	25	20	13	6	1.1	1
	3100R	★	**100**	109	70	50	**31.75**	12.7	8	32	46	—	7	1.5	2

Inserts are sold separately.

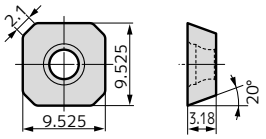
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

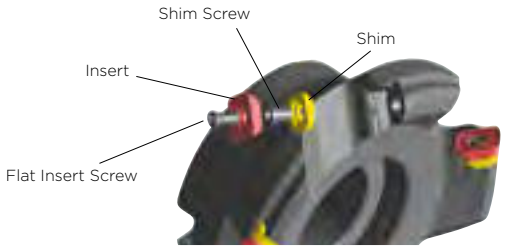
Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented Carbide			Cermet	SUMIDIA		
Process	High-speed/Light Cutting	P			K		N			K N		N	N	
	Medium Cutting		P M	P M	K		N	P	K S		P	N	N	
	Roughing		P M	P M		K						N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Fig
SEET 0903AGFN-L		★	★	★	★	★	★			★		—	—	1
0903AGSN-G		★	★	★	★	★			★		★	—	—	1
0903AGSN-N		★	★	★	★	★					★	—	—	1
SEMT 0903AGSN-L		★	★	★	★	★	—			—	—	—	—	1
0903AGSN-G		★	★	★	★	★	—	★		—	—	—	—	1

Fig 1



Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).



Recommended Cutting Conditions

WGC3000RS/WGC4000RS/WGF4000RS type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Flat Insert Screw		Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
				
BFTX0307IP	**2.0**	HPS1015	TRB10IP	SUMI-P

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WGC(M) 4000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-20° to -24°
	Axial	20° to 22°

6mm 45°

Face Milling



Fig 1

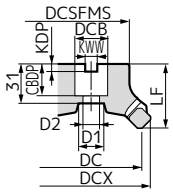


Fig 2

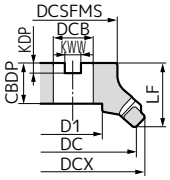
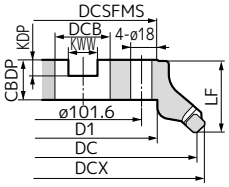


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGC 4040RS**	★	**40**	52	32	40	**16**	8.4	5.6	18	14	9	3	—	1
	4050RS	★	**50**	62	40	40	**22**	10.4	6.3	20	18	11	3	—	1
	4063RS	★	**63**	76	50	40	**22**	10.4	6.3	20	18	11	4	—	1
	4100RS	★	**100**	113	70	50	**32**	14.4	8.5	32	-	-	5	1.5	1
	4125RS	★	**125**	138	80	63	**40**	16,4	9.5	38	-	-	6	2.6	1
Inch	**WGC 4080R**	★	***80**	93	60	50	**25.4**	9.5	6	25	20	13	4	1	1
	4100R	★	**100**	113	70	50	**31.75**	12.7	8	32	46	—	5	1.5	2
	4125R	★	**125**	138	80	63	**38.1**	15.9	10	38	56	—	6	2.6	2
	4160R	★	**160**	173	100	63	**50.8**	19.1	11	38	72	—	7	4	2
	4200R	★	**200**	213	130	63	**47.625**	25.4	14	35	130	—	8	6.6	3

Body (Medium Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGCM 4050RS**	★	**50**	62	40	40	**22**	10.4	6.3	20	18	11	5	—	1
	4063RS	★	**63**	76	50	40	**22**	10.4	6.3	20	18	11	6	—	1
	4080RS	★	**80**	93	60	50	**27**	12.4	7.0	-	25	31	8	1.0	1
	4100RS	★	**100**	113	70	50	**32**	14.4	8.5	32	-	-	5	1.5	1
	4160RS	★	**160**	173	100	63	**40**	16.4	9.5	38	-	-	7	4.0	1

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Recommended Cutting Conditions

WGC3000EW type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WGC4000EW type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Wrench	Anti-seizure Cream
					N·m		
WGC 3000EW type	—	—	—	BFTX0307IP	**2.0**	TRDR10IP	SUMI-P
WGC 4032EW				BFTX03512IP	**3.0**	TRDR15IP	
WGC 4000EW type (Except WGC 4032EW)	WGCS13R	BW0507F	LH035	BFTX03512IP	**3.0**	TRDR15IP	

★mark: Global stocked item

▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WGCF 4000R(S) type

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGCF 4050RS**	★	**50**	62	40	40	**22**	10.4	6.3	20	18	11	5	—	1
	4063RS	★	**63**	76	50	40	**22**	10.4	6.3	20	18	11	6	—	1
	4080RS	★	**80**	93	60	50	**27**	12.4	7.0	-	25	31	8	1.0	
Inch	**WGCF 4080R**	★	***80**	93	60	50	**25.4**	9.5	6	25	20	13	8	1.0	1
	4100R	★	**100**	113	70	50	**31.75**	12.7	8	32	46	—	10	1.5	2
	4125R	★	**125**	138	80	63	**38.1**	15.9	10	38	56	—	12	2.6	2
	4160R	★	**160**	173	100	63	**50.8**	19.1	11	38	72	—	16	4.0	2
	4200R	★	**200**	213	130	63	**47.625**	25.4	14	35	130	—	20	6.6	3

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented Carbide			Cermet	SUMIDIA		
Process	High-speed/Light Cutting	P			K		N			K/N		N	N	
	Medium Cutting		P/M	P/M	K		N	P	K/S		P	N	N	
	Roughing		P/M	P/M		K						N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Fig
SEET 13T3AGFN-L		★	★	★	★	★	★		★	★		—	—	1
13T3AGSN-G		★	★	★	★	★			★		★	—	—	1
13T3AGSN-N		★	★	★	★	★		★			★	—	—	1
SEMT 13T3AGSN-L		★	★	★	★	★	—			—	—	—	—	1
13T3AGSN-G		★	★	★	★	★	—	★		—	—	—	—	1
13T3AGSN-H		★	★	★	★	★	—			—	—	—	—	1
NF-SECW 13T3AGTN-N		—	—	—	—	—	—	—	—	—	—	★	▲	1
NF-XEEW 13T3AGFR-W		—	—	—	—	—	—	—	—	—	—	★	▲	2
XEEW 13T3AGER-W						★					★	—	—	2

Fig 1

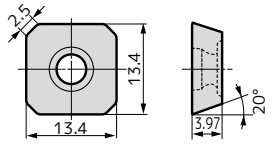
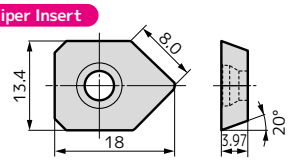


Fig 2

Wiper Insert



Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
							Handle Grip	Bit	
WGC(F) 4080R to WGC(F) 4125R	WGCS13R	BW0507F	LH035	BFTX03512IP	**3.0**	—	HPS1015	TRB15IP	SUMI-P
WGC(F) 4160R to WGC(F) 4200R	WGCS13R	BW0507F	LH035	BFTX03512IP	**3.0**	TRDR15IP	—	—	
WGC(F) 4000RS type	WGCS13R	BW0507F	LH035	BFTX03512IP	**3.0**	—	HPS1015	TRB15IP	

WGC 3000EW/4000EW type

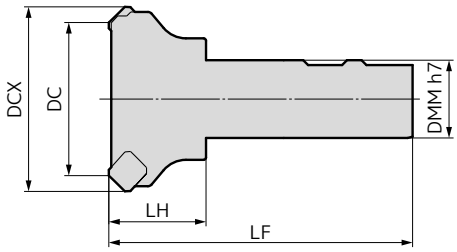
P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle	Radial	-10° to -19° (3000 type)	-20° to -24° (4000 type)
	Axial	20°	20° to 22°

4mm 45° (3000 type) 6mm 45° (4000 type) Face Milling



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WGC 3020EW	★	**20**	29	20	40	100	2	1
3025EW	★	**25**	34	20	40	100	3	1
3032EW	★	**32**	41	32	40	125	4	1
3040EW	★	**40**	49	32	40	125	4	1
3050EW	★	**50**	59	32	40	125	5	1
3063EW	★	**63**	72	32	40	125	6	1

Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WGC 4032EW	★	**32**	44	32	40	125	3	1
4040EW	★	**40**	52	32	40	125	3	1
4050EW	★	**50**	62	32	40	125	4	1
4063EW	★	**63**	76	32	40	125	5	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light Cutting	P			K		N			K N		N	N		
	Medium Cutting		P M	M	K		N	P	K S		P	N	N		
	Roughing		P M	P M		K						N	N		
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Applicable Cutter	Fig
SEET 0903AGFN-L		★	★	★	★	★	★			★		—	—	WGC3000 type	1
0903AGSN-G		★	★	★	★	★			★		★	—	—		1
0903AGSN-N		★	★	★	★	★					★	—	—		1
SEMT 0903AGSN-L		★	★	★	★	★	—			—	—	—	—		1
0903AGSN-G		★	★	★	★	★	—	★		—	—	—	—		1
SEET 13T3AGFN-L		★	★	★	★	★	★		★	★		—	—	WGC4000 type WGCF4000 type	2
13T3AGSN-G		★	★	★	★	★			★		★	—	—		2
13T3AGSN-N		★	★	★	★	★		★			★	—	—		2
SEMT 13T3AGSN-L		★	★	★	★	★	—			—	—	—	—		2
13T3AGSN-G		★	★	★	★	★	—	★		—	—	—	—		2
13T3AGSN-H		★	★	★	★	★	—			—	—	—	—		2
NF-SECW 13T3AGTN-N		—	—	—	—	—	—	—	—	—	—	★	▲		2
NF-XEEW 13T3AGFR-W		—	—	—	—	—	—	—	—	—	—	★	▲		3
XEEW 13T3AGER-W						★					★	—	—		3

Fig 1

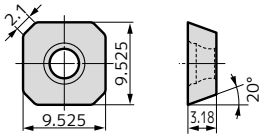


Fig 2

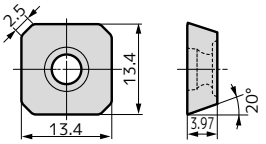
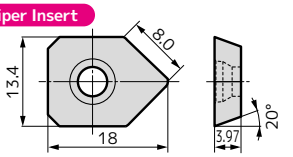


Fig 3

Wiper Insert



Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions

WGC3000EW type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WGC4000EW type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WGC 3000EW type	—	—	—	BFTX0307IP	**2.0**	TRDR10IP	SUMI-P
WGC 4032EW				BFTX03512IP	**3.0**	TRDR15IP	
WGC 4000EW type (Except WGC 4032EW)	WGCS13R	BW0507F	LH035	BFTX03512IP	**3.0**	TRDR15IP	

★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

DGC series

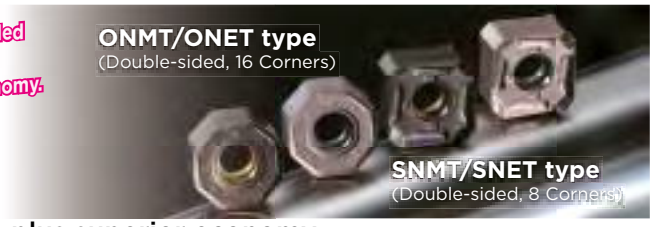
VIDEO OF CUTTING



■ Features

SEC-Sumi Dual Mill DGC series employs double-sided inserts with up to 16 corners for excellent economy. This is a general-purpose cutter featuring high cutting edge strength for high-efficiency milling and a low-burr chipbreaker design that provides high machined surface quality.

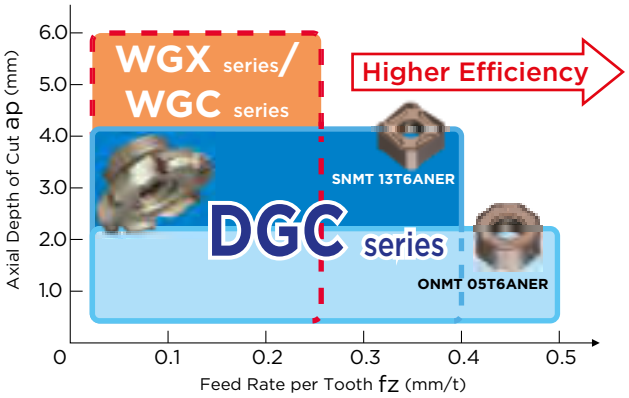
The DGC series insert lineup includes double-sided SNMT/SNET and ONMT/ONET types. Up to 16 corners can be used for improved economy.



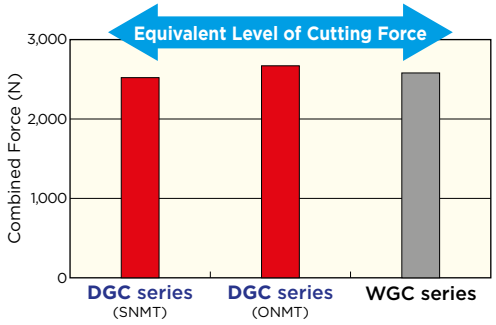
● Same cutting performance as single-sided inserts plus superior economy

Achieves levels of cutting edge sharpness and machined surface quality equivalent to single-sided cutters at a maximum depth of cut of ap = 3mm.

● Application Range for General Steel Machining



● Comparison of Cutting Force



Work Material: SCM435, Tool: ø100
Cutting Conditions: vc = 200m/min, fz = 0.3mm/t, ap = 3mm, ae = 85mm

● Dual-purpose body features

Two types of inserts can be used with a single body depending on the milling application, to help reduce tool costs.



Use two types of insert for different applications



● General-purpose grade applicable to any work material

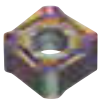
Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron.

■ Product Range

Type	Cat. No.	Dia. (mm)								
		ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
Shell	DGC 13000RS	3	3	4	4	5	6	7	8	10
	DGC 13000R (inch)				4	5	6	7	8	10
	DGCM 13000RS		4	5	6	7	8	10	12	14
	DGCM 13000R (inch)				6	7	8	10	12	14
	DGCF 13000RS		5	6	8	10	12	14	16	18
	DGCF 13000R (inch)				8	10	12	14	16	18
Shank	DGC 13000EW	3	3	4						

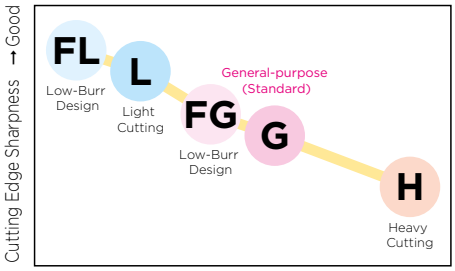
Number in ●● shows the number of teeth (inch) Inch Bore

■ Chipbreaker Selection

Work Material	P M K S					N	P K
Applications	Light Cutting/ Burr Prevention	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Non-Ferrous Metal	Surface Finish Emphasised
Features	Low Cutting Force/ With Chamfer	Low Cutting Force	Standard/ With Chamfer	Standard	High Strength	High Rake	Wiper
	FL type	**L type**	**FG type**	**G type**	**H type**	**S type**	**W type**
Chipbreaker							
Cutting Edge Cross Section	0.05mm 30°	0.05mm 30°	0.1mm 25°	0.1mm 25°	0.2mm 25°	0.05mm 30°	0.3mm 25°
8 / 16	Not Available	0.05mm 30°	Not Available	0.1mm 23°	Not Available	Not Available	Double-Sided, 2 Corners (*)

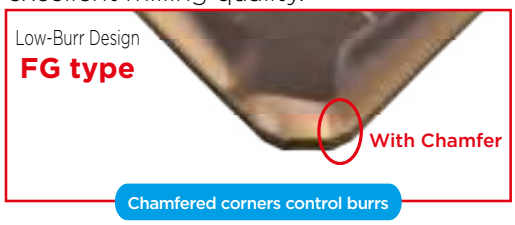
*Can only be used in conjunction with 8 corner inserts

■ Chipbreaker Selection Guide



● Improved machining quality

- FG type/FL type chipbreakers feature a chamfered corner to minimise burrs and provide excellent milling quality.



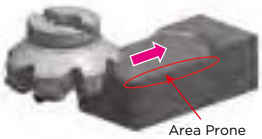
● FG type



● Competitor's Product

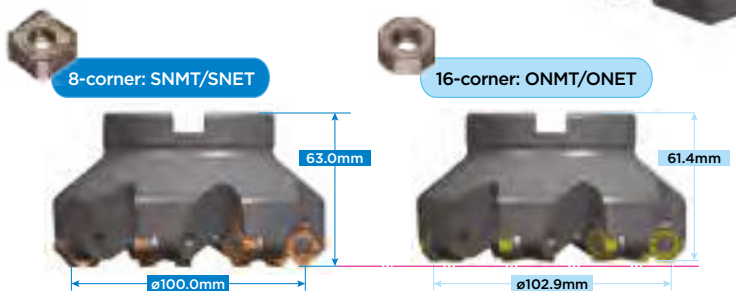


FG type chipbreaker with low-burr design enables high-quality milling with fewer burrs and minimal edge chipping

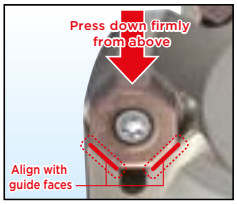


Work Material: SCM435
Tool: ø100
Cutting Conditions: VC = 200m/min, fz = 0.2mm/t
ap = 3mm, ae = 85mm

Cutter Dia. and Cutting Edge Height



16-corner Mounting Method



⚠ Firmly align insert with guide faces, press down in the direction of the arrow, and tighten the screw to fix the insert.

⚠ Note that while the 8-corner and 16-corner types can be used interchangeably on the same body, however they create different cutter diameters, cutting edge heights and maximum cutting depths.

Body Shape (Example: With Cutter Dia. of ø100mm)

Insert	Cutter Dia. DC (mm)	Cutting Edge Height LF (mm)	Max. Depth of Cut APMX (mm)
SNMT/SNET	100.0	63.0	6.0
ONMT/ONET	102.9	61.4	3.0

Recommended Cutting Conditions (SNMT/SNET)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.25**-0.40	< 4	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.30**-0.45	< 4	
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.25**-0.35	< 4	
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 3	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.25**-0.40	< 5	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	500-**750**-1,000	0.15-**0.23**-0.30	< 3	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	< 3	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Recommended Cutting Conditions (ONMT/ONET)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.30**-0.50	< 2	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.50**-0.50	< 2	
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.25**-0.30	< 2	
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 2	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.30**-0.50	< 2	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	< 2	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Precautions When Using Wiper Inserts with Holes

Fig 1

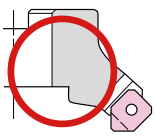
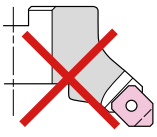


Fig 2



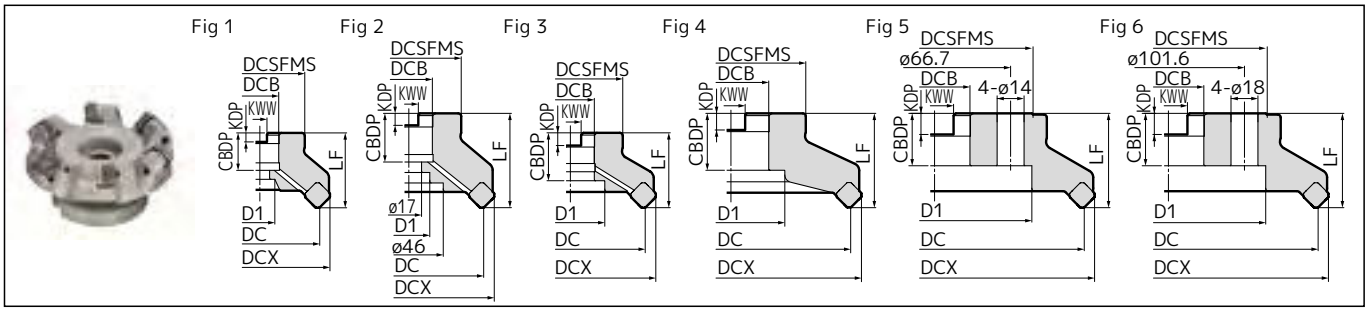
- **When mounting the wiper insert, attach it as shown in** Fig 1. **When mounted as shown in** Fig 2, **normal machined surface roughness cannot be obtained.**
- **The wiper insert has a single corner specification.**
- **Refer to page N25 of Technical Guidance for details about milling with wiper inserts.**

DGC 13000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-10°
	Axial	-5°

6mm 45° (SNMT/SNET) | 3mm 45° (ONMT/ONET) | Face Milling



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGC 13040RS**	★	**40(42.9)**	54(50.8)	36	40(38.44)	**16**	8.4	5.6	18	13.5	3	0.3	1
	13050RS	★	**50(52.9)**	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	3	0.4	1
	13063RS	★	**63(65.9)**	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	4	0.5	1
	13080RS	★	*80(82.9)	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	4	1.2	1
	13100RS	★	**100(102.9)**	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	5	1.6	3
	13125RS	★	**125(127.9)**	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	6	2.8	1
	13160RS	★	**160(162.9)**	174(170.8)	100	63(61.44)	**40**	16.4	9.5	29	88	7	4.5	5
	13200RS	★	**200(202.9)**	214(210.8)	130	63(61.44)	**60**	25.7	14	35	130	8	7.1	6
	13250RS	★	**250(252.9)**	264(260.8)	130	63(61.44)	**60**	25.7	14	35	160	10	10.6	6
Inch	**DGC 13080R**	★	*80(82.9)	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	4	1.2	1
	13100R	★	*100(102.9)	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	5	2.2	2
	13125R	★	**125(127.9)**	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	6	2.8	1
	13160R	★	**160(162.9)**	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	7	4.5	4
	13200R	★	**200(202.9)**	214(210.8)	130	63(61.44)	**47.625**	25.4	14	35	130	8	7.1	6
	13250R	★	**250(252.9)**	264(260.8)	130	63(61.44)	**47.625**	25.4	14	35	150	10	11.0	6

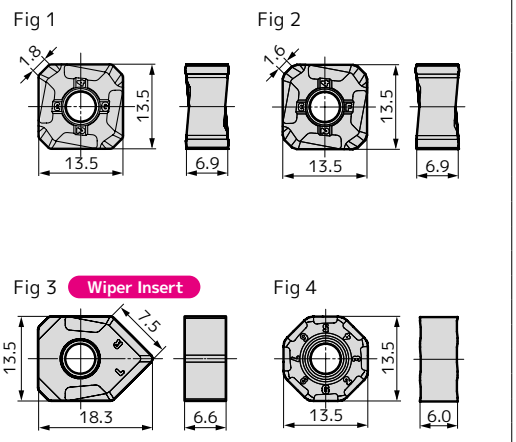
( ) indicates value for ONMT/ONET type inserts.
Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting															
	Medium Cutting															
	Roughing															
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		★	★	★	★	★	★						—		—	—	1
13T6ANER-G		★	★	★	★	★	★		★	★				★		★	1
13T6ANER-H		★	★	★	★	★	★						—		—	—	1
13T6ANER-FL		★	★	★	★	★	★						—		—	—	2
13T6ANER-FG		★	★	★	★	★	★		★	★			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									★	★	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													★		★		1
XNEU 13T6ANEN-W		★		★			★									★	3
ONMT 05T6ANER-L		★	★	★	★	★	★						—		—	—	4
05T6ANER-G		★	★	★	★	★	★		★	★			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4



Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC Series Code | **13** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore

Parts (Sold Separately)

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DC ø40 to 125	DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

DGCM 13000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-10°	
Axial	-5°	

6mm 45° (SNMT/SNET) | 3mm 45° (ONMT/ONET) | Face Milling



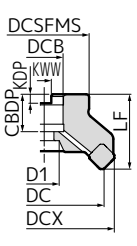
Fig 1


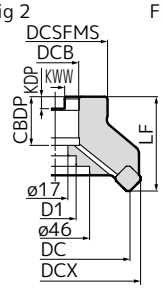
Fig 2


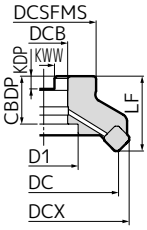
Fig 3


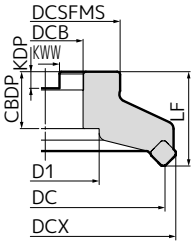
Fig 4


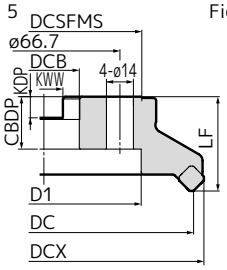
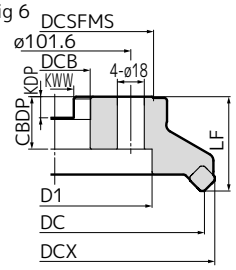
Fig 5


Fig 6


Body (Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCM 13050RS**	★	50(52.9)	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	4	0.3	1
	13063RS	★	63(65.9)	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	5	0.5	1
	13080RS	★	*80(82.9)	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	6	1.1	1
	13100RS	★	100(102.9)	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	7	1.5	3
	13125RS	★	125(127.9)	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	8	2.8	1
	13160RS	★	160(162.9)	174(170.8)	100	63(61.44)	**40**	16.4	9.5	29	88	10	4.6	5
	13200RS	★	200(202.9)	214(210.8)	130	63(61.44)	**60**	25.7	14	35	130	12	7	6
	13250RS	★	250(252.9)	264(260.8)	130	63(61.44)	**60**	25.7	14	35	160	14	10.5	6
Inch	**DGCM 13080R**	★	*80(82.9)	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	6	1.1	1
	13100R	★	*100(102.9)	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	7	2.2	2
	13125R	★	125(127.9)	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	8	2.8	1
	13160R	★	160(162.9)	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	10	4.6	4
	13200R	★	200(202.9)	214(210.8)	130	63(61.44)	**47.625**	25.4	14	35	130	12	7	6
	13250R	★	250(252.9)	264(260.8)	130	63(61.44)	**47.625**	25.4	14	35	150	14	11.0	6

( ) indicates value for ONMT/ONET type inserts. Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting		P			K		M S	M S		M S	K N		N	P M	
	Medium Cutting			P M	P M	K			M S	M S	M S		K S	N	P	
	Roughing			P M	P M		K			M S		M S				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		★	★	★	★	★	★						—		—	—	1
13T6ANER-G		★	★	★	★	★	★		★	★				★		★	1
13T6ANER-H		★	★	★	★	★	★						—		—	—	1
13T6ANER-FL		★	★	★	★	★	★						—		—	—	2
13T6ANER-FG		★	★	★	★	★	★		★	★			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									★	★	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													★		★		1
XNEU 13T6ANEN-W		★		★			★									★	3
ONMT 05T6ANER-L		★	★	★	★	★	★						—		—	—	4
05T6ANER-G		★	★	★	★	★	★		★	★			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

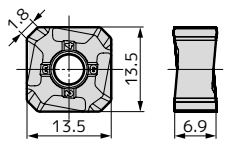
Fig 1


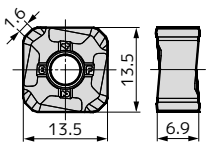
Fig 2


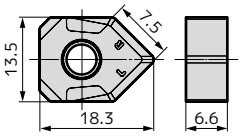
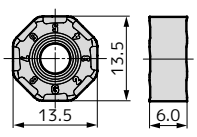
Fig 3 Wiper Insert


Fig 4


Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC Series Code | **M** Fine Pitch | **13** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore

Parts (Sold Separately)

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DC ø50 to 125 Other than above	DGCS13R	BW0609F	LH040	BFTX0412IP	3.0 N·m	—	HPS1015	TRB15IP	SUMI-P
						TRDR15IP	—	—	

Flat Insert Screw (*)	
BFTX0418IP	3.0 N·m

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

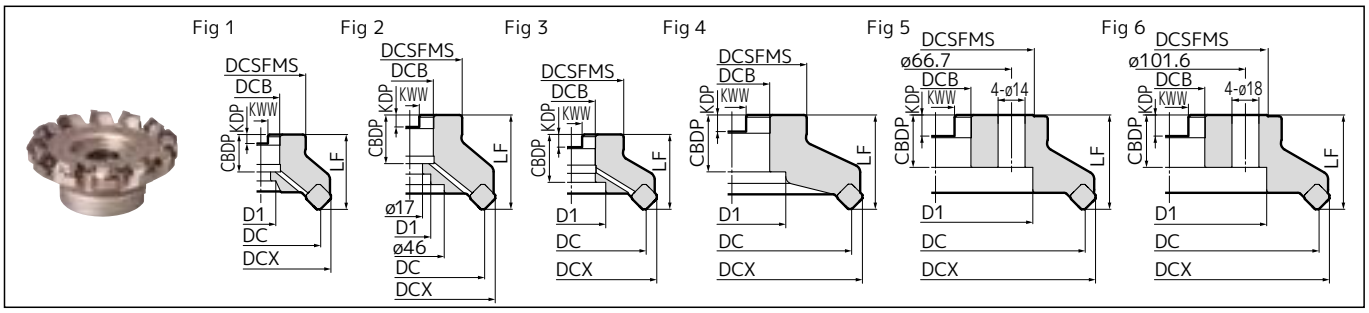
★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

DGCF 13000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle		
Radial	-10°	
Axial	-5°	

6mm 45° (SNMT/SNET) 3mm 45° (ONMT/ONET) Face Milling



Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCF 13050RS**	★	50(52.9)	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	5	0.3	1
	13063RS	★	63(65.9)	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	6	0.5	1
	13080RS	★	*80(82.9)	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	8	1.1	1
	13100RS	★	100(102.9)	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	10	1.4	3
	13125RS	★	125(127.9)	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	12	2.7	1
	13160RS	★	160(162.9)	174(170.8)	100	63(61.44)	**40**	16.4	9.5	29	88	14	4.4	5
	13200RS	★	200(202.9)	214(210.8)	130	63(61.44)	**60**	25.7	14	35	130	16	6.9	6
	13250RS	★	250(252.9)	264(260.8)	130	63(61.44)	**60**	25.7	14	35	160	18	10.4	6
Inch	**DGCF 13080R**	★	*80(82.9)	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	8	1.1	1
	13100R	★	*100(102.9)	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	10	2.1	2
	13125R	★	125(127.9)	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	12	2.7	1
	13160R	★	160(162.9)	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	14	4.4	4
	13200R	★	200(202.9)	214(210.8)	130	63(61.44)	**47.625**	25.4	14	35	130	16	6.9	6
	13250R	★	250(252.9)	264(260.8)	130	63(61.44)	**47.625**	25.4	14	35	150	18	10.9	6

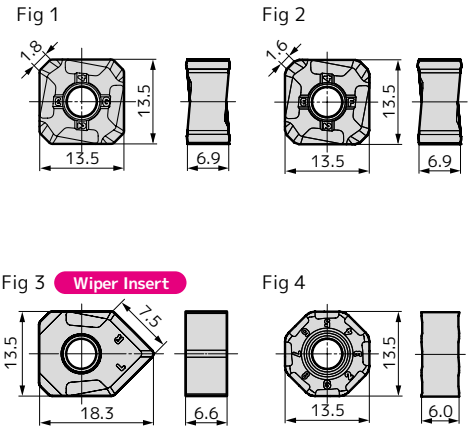
( ) indicates value for ONMT/ONET type inserts. Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting															
	Medium Cutting															
	Roughing															
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		★	★	★	★	★	★						—		—	—	1
13T6ANER-G		★	★	★	★	★	★		★	★				★		★	1
13T6ANER-H		★	★	★	★	★	★						—		—	—	1
13T6ANER-FL		★	★	★	★	★	★						—		—	—	2
13T6ANER-FG		★	★	★	★	★	★		★	★			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									★	★	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													★		★		1
XNEU 13T6ANEN-W		★		★			★									★	3
ONMT 05T6ANER-L		★	★	★	★	★	★						—		—	—	4
05T6ANER-G		★	★	★	★	★	★		★	★			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

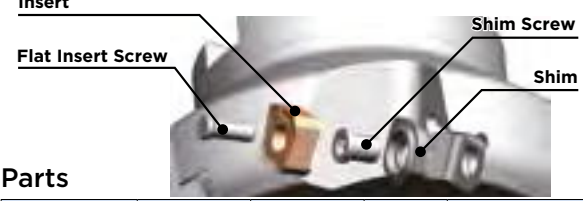


Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.

Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC	F	13	050	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DC ø50 to 125	DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

(Sold Separately)

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

DGC 13000EW type

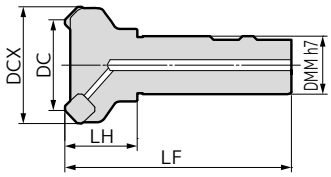
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT/SNET) | 3mm 45° (ONMT/ONET) | Face Milling

Fig 1





Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC 13040EW	★	**40(42.9)**	54(50.8)	32	40(38.44)	125	3	0.7	1
13050EW	★	**50(52.9)**	64(60.8)	32	40(38.44)	125	3	0.9	1
13063EW	★	**63(65.9)**	77(73.8)	32	40(38.44)	125	4	1.1	1

( ) indicates value for ONMT/ONET type inserts.
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting															
	Medium Cutting															
	Roughing															
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		★	★	★	★	★	★						—		—	—	1
13T6ANER-G		★	★	★	★	★	★		★	★				★		★	1
13T6ANER-H		★	★	★	★	★	★						—		—	—	1
13T6ANER-FL		★	★	★	★	★	★						—		—	—	2
13T6ANER-FG		★	★	★	★	★	★		★	★			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									★	★	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													★		★		1
XNEU 13T6ANEN-W		★		★			★									★	3
ONMT 05T6ANER-L		★	★	★	★	★	★						—		—	—	4
05T6ANER-G		★	★	★	★	★	★		★	★			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

Fig 1

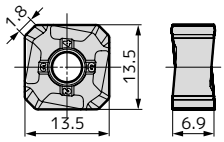


Fig 2

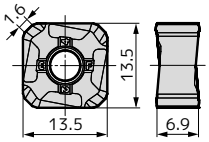


Fig 3 Wiper Insert

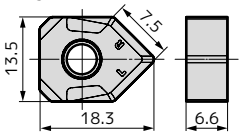
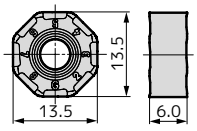


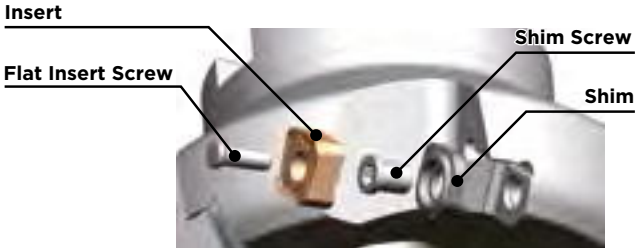
Fig 4



Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC Series Code | **13** Insert Size | **040** Dia. | **EW** Shank type

Parts

Shim	Shim Screw	Wrench	Flat Insert Screw		Wrench	Anti-seizure Cream
				N·m		
DGCS13R	BW0609F	LH040	BFTX0412IP	**3.0**	TRDR15IP	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

UFO 4000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	-7°
	Axial	27°

5.5mm 45°

Face Milling

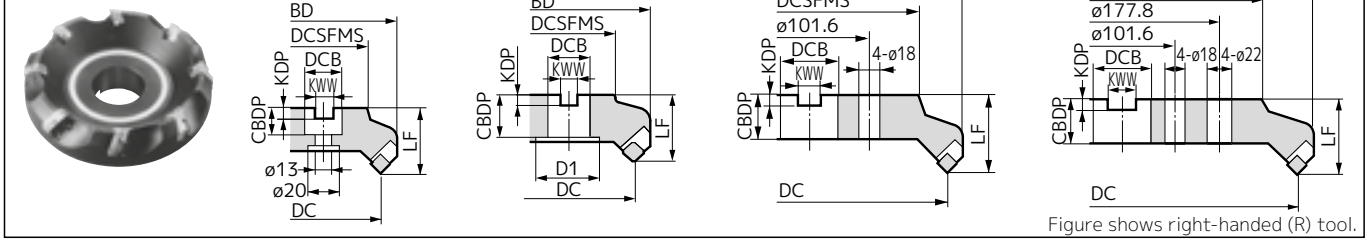


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**UFO 4125RS**	★		**125**	146	75	63	**40**	16.4	9.5	29	—	7	4.2	2
Metric	**4160RS**	★		**160**	180	100	63	**40**	16.4	9.5	29	—	9	6.6	3
Inch	**UFO 4080R/L**	★		***80**	102	60	50	**25.4**	9.5	6	25	—	4	2.1	1
Inch	**4100R/L**	★		**100**	122	70	50	**31.75**	12.7	8	32	46	5	2.9	2
Inch	**4125R/L**	★		**125**	146	75	63	**38.1**	15.9	10	38	56	6	4.2	2
Inch	**4160R/L**	★		**160**	180	100	63	**50.8**	19.1	11	38	83	8	6.6	2
Inch	**4200R/L**	★		**200**	220	130	63	**47.625**	25.4	14	35	—	10	9.5	3
Inch	**4250R/L**	★		**250**	270	130	63	**47.625**	25.4	14	35	—	12	14.8	3
Inch	**4315R/L**			**315**	335	240	80	**47.625**	25.4	14	35	—	14	26.6	4

Inserts are sold separately.

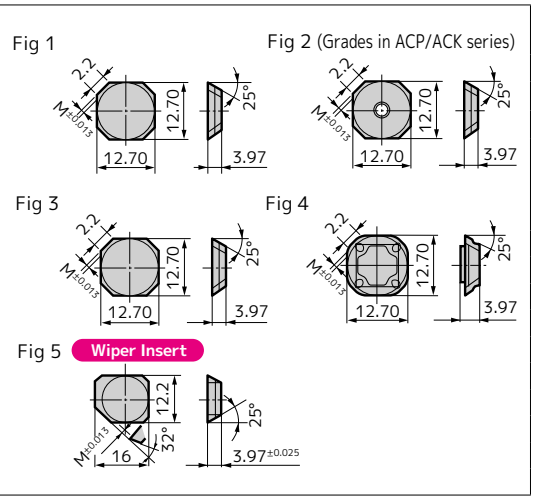
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

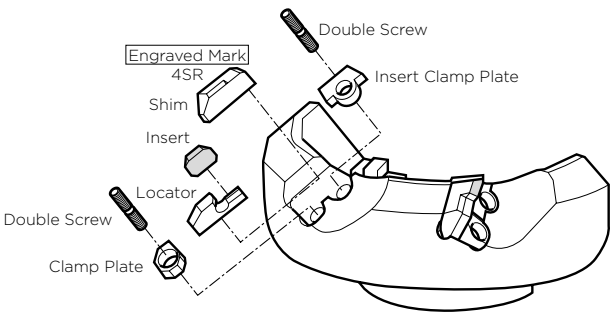
Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light Cutting	P			K		M			K N			
Process	Medium Cutting		PM	PM	K			P	K		K	P	
Process	Roughing		PM	PM		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 12T3AZTN		★	★					★				★	1
12T3AZTN-S								★					1
12T3AZTN-W													1
12T3AZFN										★			1
SFKN 12T3AZTN		★	★	★				★				★	2(3)
12T3AZTN-S								★					3
12T3AZTN-W												★	3
12T3AZFN					★	★	▲		★				2(3)
SFKR 12T3AZEN		★						★					4
UW 12500R											★		5

-S: Sharp Edged, -W: Strong Edged.





Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**175**-250	0.15-**0.23**-0.30	ACP200
P	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.23**-0.30	ACP200
P	Die Steel	200 to 220HB	80-**140**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**190**-220	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**550**-800	0.15-**0.23**-0.30	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Locator	Locator Clamp	Insert Clamp Plate	Double Screw	Size	N·m
UFO 4000R type	UF4SR	UF4KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**
UFO 4000L type	UF4SL	UF4KL	UFKWL	UFTWL	WB7-15T	**M7**	**8.0**

T-wrench (TT25) is included as a standard accessory.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

UFO 5000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

Rake Angle		
Radial	-7°	
Axial	27°	

7.5mm 45°

Face Milling



Fig 1

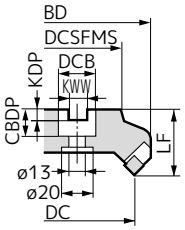


Fig 2

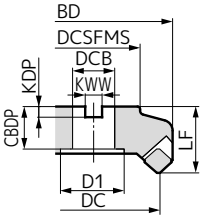


Fig 3

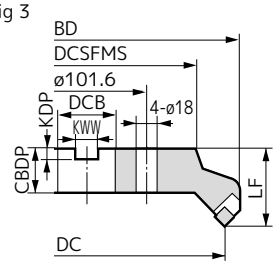


Fig 4

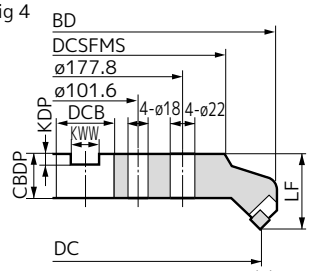


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**UFO 5080R/L**			**80**	102	60	50	**25.4**	9.5	6	25	—	4	2.0	1
	5100R/L	★		**100**	119	70	50	**31.75**	12.7	8	32	46	5	2.8	2
	5125R/L	★		**125**	143	75	63	**38.1**	15.9	10	38	56	6	4.0	2
	5160R/L	★		**160**	177	100	63	**50.8**	19.1	11	38	80	8	6.4	2
	5200R/L	★		**200**	217	130	63	**47.625**	25.4	14	35	—	10	9.2	3
	5250R/L			**250**	267	130	63	**47.625**	25.4	14	35	—	12	14.4	3
	5315R/L			**315**	332	240	80	**47.625**	25.4	14	35	—	14	26.1	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light Cutting	P			K		M			K N			
	Medium Cutting		P M	P M	K			P	K		K	P	
	Roughing		P M	P M		K							
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 1504AZTN		★	★					★				★	1
1504AZTN-S													1
1504AZTN-W													1
1504AZFN													1
SFKN 1504AZTN		★	★	★				★				★	2(3)
1504AZTN-S													3
1504AZTN-W													3
1504AZFN					★		▲		★				2(3)
UW 15500R											★		4

-S: Sharp Edged, -W: Strong Edged.

Fig 1

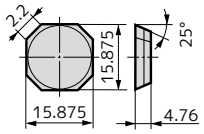


Fig 2 (Grades in ACP/ACK series)

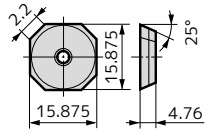


Fig 3

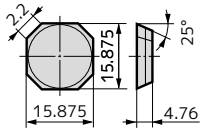
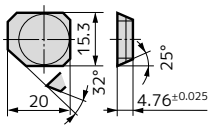
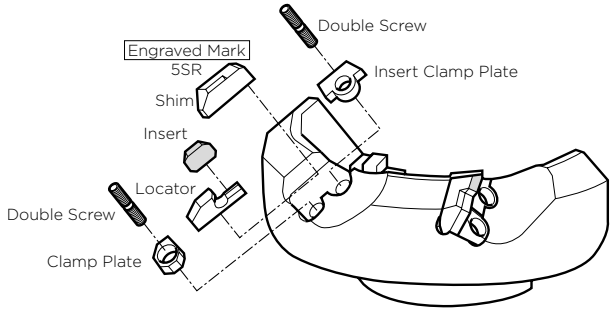


Fig 4 Wiper Insert





Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**175**-250	0.15-**0.23**-0.30	ACP200
	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.23**-0.30	ACP200
	Die Steel	200 to 220HB	80-**140**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**190**-220	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**550**-800	0.15-**0.23**-0.30	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Shim	Locator	Locator Clamp	Insert Clamp Plate	Double Screw		
						Size	N·m
UFO 5000R type	UF5SR	UF5KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**
UFO 5000L type	UF5SL	UF5KL	UFKWL	UFTWL	WB7-15T	**M7**	**8.0**

T-wrench (TT25) is included as a standard accessory.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

UFO 4000E type

P Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	-7°
	Axial	27°

5.5mm 45°

Face Milling

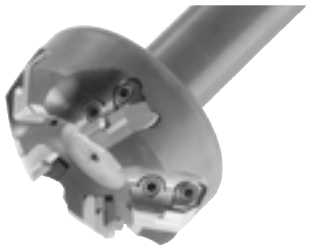
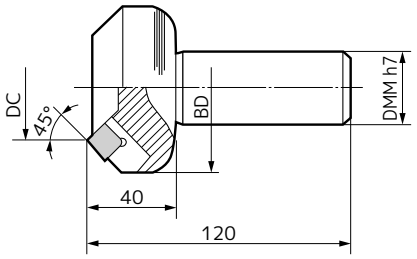


Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Shank DMM	Number of Teeth	Maximum Depth of Cut	Axial Rake	Radial Rake	Fig
UFO 4050ER	★	**50**	74	32	4	5.5	+27°	-7°	1
4050ERS42		**50**	74	42	4				1
4063ER	★	**63**	86	32	5				1
4063ERS42		**63**	86	42	5				1
4080ER	★	**80**	102	32	6				1
4080ERS42		**80**	102	42	6				1
4100ER		**100**	123	32	7				1
4100ERS42		**100**	123	42	7				1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light Cutting	P			K		M			K N			
	Medium Cutting		P M	P M	K			P	K		K	P	
	Roughing		P M	P M		K							
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 12T3AZTN		★	★					★				★	1
12T3AZTN-S								★					1
12T3AZTN-W													1
12T3AZFN										★			1
SFKN 12T3AZTN		★	★	★				★				★	2(3)
12T3AZTN-S								★					3
12T3AZTN-W												★	3
12T3AZFN					★	★	▲		★				2(3)
SFKR 12T3AZEN		★						★					4
UW 12500R											★		5

Fig 1

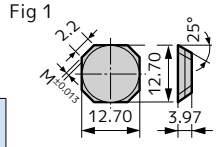


Fig 2 (For ACP/ACK series)

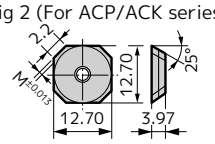


Fig 3

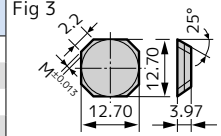


Fig 4

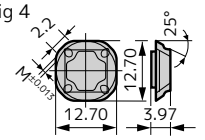
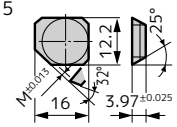
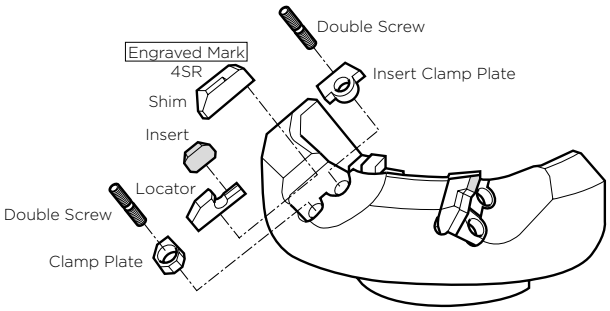


Fig 5



Wiper Insert



Parts

Shim	Locator	Locator Clamp Plate	Insert Clamp Plate	Double Screw			Wrench
					Size	N·m	
UF4SR	UF4KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**	TT25

T-wrench (TT25) is included as a standard accessory.

Recommended Cutting Conditions

Diameter ø50 to ø63mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	100-**125**-200	0.10-**0.20**-0.30	ACP200
P	Alloy Steel	180 to 280HB	80-**100**-180	0.10-**0.20**-0.30	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK200
N	Non-Ferrous Metal	—	80-**160**-250	0.05-**0.15**-0.20	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Diameter ø80 to ø100mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	100-**125**-200	0.10-**0.25**-0.40	ACP200
P	Alloy Steel	180 to 280HB	80-**100**-180	0.10-**0.25**-0.40	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.25**-0.40	ACK200
N	Non-Ferrous Metal	—	80-**160**-250	0.05-**0.25**-0.30	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

FPG 4000/5000 type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	-4°
	Axial	15°

6.5mm 45° (4000 type) 8.5mm 45° (5000 type) Face Milling



Fig 1

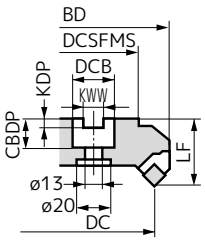


Fig 2

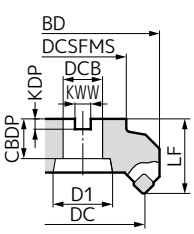


Fig 3

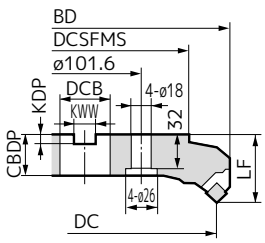


Fig 4

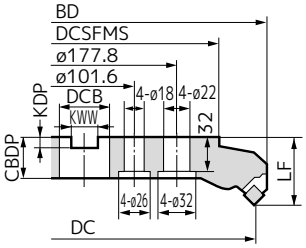


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**FPG 4080R/L**	★	★	*80	104	60	50	**25.4**	9.5	6	25	—	4	1.9	1
	4100R/L	★		**100**	124	70	60	**31.75**	12.7	8	32	44	5	3.0	2
	4125R/L	★	★	**125**	148	105	60	**38.1**	15.9	10	38	67	6	4.5	2
	4160R/L	★	★	**160**	182	135	60	**50.8**	19.1	11	38	98	8	6.7	2
	4200R/L	★		**200**	221	130	60	**47.625**	25.4	13.5	40	—	10	9.4	3
	4250R/L	★		**250**	271	130	70	**47.625**	25.4	13.5	40	—	12	16.2	3
	4315R/L	★		**315**	335	240	70	**47.625**	25.4	13.5	40	—	14	24.6	4
	FPG 5080R/L			*80	104	60	50	**25.4**	9.5	6	25	—	4	1.9	1
	5100R/L			**100**	124	70	60	**31.75**	12.7	8	32	44	5	3.0	2
	5125R/L			**125**	148	105	60	**38.1**	15.9	10	38	67	6	4.5	2
	5160R/L			**160**	182	135	60	**50.8**	19.1	11	38	98	8	6.7	2
	5200R/L			**200**	221	130	60	**47.625**	25.4	13.5	40	—	10	9.4	3
	5250R/L			**250**	271	130	70	**47.625**	25.4	13.5	40	—	12	16.2	3
	5315R/L			**315**	335	240	70	**47.625**	25.4	13.5	40	—	14	24.6	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet		SUMIDIA		
Process	High-speed/Light Cutting	P			K		M			P		N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	
	Roughing		P M	P M		K						N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T1500A	T250A	DA1000	DA2200	Fig
SDEX 42MT								★		★	★	—	—	2
SDKN 42M					★	★	▲		★			—	—	1(2)
NF-SDKN 42M		—	—	—	—	—	—	—	—		—	★	▲	2
SDKN 42MT		★	★	★				★		★	★	—	—	1(2)
42MT-W											★	—	—	2
SDNN 1203AETN*		★	★	—	—	—	—	★	—	—	★	—	—	2
SDMR 1203AEEN		★	★					★			—	—	—	3
1203AETN		—	—	—	—	—	—	—	—	—	★	—	—	3
SDEX 53MT								★			★	—	—	5
SDKN 53M					★	★	▲		★			—	—	4(5)
53MT		★	★	★				★			★	—	—	4(5)

Fig 1 (Grades in ACP/ACK series) Fig 2

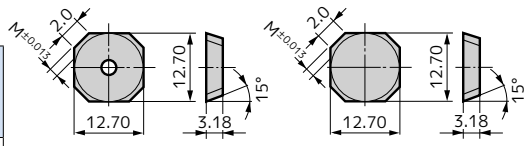


Fig 3

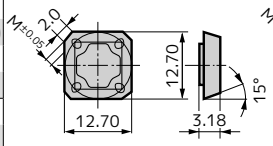


Fig 4 (Grades in ACP/ACK series)

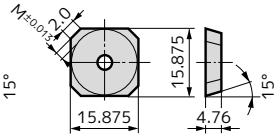
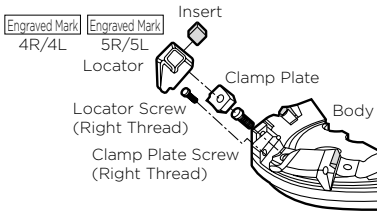


Fig 5: Same as Fig 4 without hole

Cat. No. marked *: M ± 0.08.

Insert Application Table

Body	Insert
FPG4000 type	SDOO42‥ SDOO12‥
FPG5000 type	SDOO53‥



Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw
FPG4000R type	LFP4R	FBH0512	M5	5.0	FPWR	FBX0817
FPG4000L type	LFP4L				FPWL	
FPG5000R type	LFP5R				FPWR	
FPG5000L type	LFP5L				FPWL	

T-wrenches used are TH030 (locator screw) and TH040 (clamp plate screw).

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**130**-160	0.15-**0.28**-0.40	ACP200
P	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.28**-0.40	ACP200
P	Die Steel	200 to 220HB	80-**100**-120	0.15-**0.23**-0.30	ACP200
M	Stainless Steel	—	150-**175**-200	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**650**-1,000	0.15-**0.23**-0.30	G10E

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item

Blank: Made-to-order item

N·m Recommended Tightening Torque (N·m)

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

FPE 4000 type

P Steel K Cast Iron

Rake Angle	Radial	-3°
	Axial	15°

6.5mm 45°

Face Milling

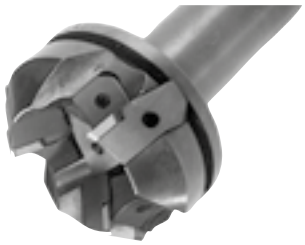
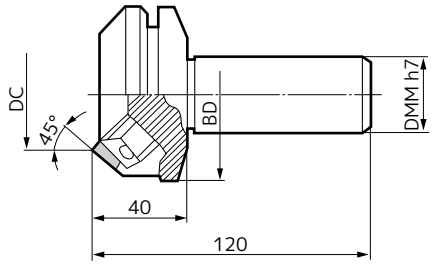


Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Shank DMM	Number of Teeth	Maximum Depth of Cut	Axial Rake	Radial Rake	Fig
FPE 4050R	★	**50**	73	32	3	6.5	+15°	-3°	1
4050RS42		**50**	73	42	3				1
4063R	★	**63**	84	32	4				1
4063RS42		**63**	84	42	4				1
4080R	★	**80**	100	32	4				1
4080RS42		**80**	100	42	4				1
4100R		**100**	118	32	5				1
4100RS42		**100**	118	42	5				1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet		SUMIDIA		
Process	High-speed/Light Cutting	P			K		M			P		N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	
	Roughing		P M	P M		K						N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T1500A	T250A	DA1000	DA2200	Fig
SDEX 42MT								★		★	★	—	—	2
SDKN 42M					★	★	▲		★			—	—	1(2)
NF-SDKN 42M		—	—	—	—	—	—	—	—		—	★	▲	2
SDKN 42MT		★	★	★				★		★	★	—	—	1(2)
42MT-W											★	—	—	2
SDNN 1203AETN*		★	★	—	—	—	—	★	—	—	★	—	—	2
SDMR 1203AEEN		★	★					★			—	—	—	3
1203AETN		—	—	—	—	—	—	—	—	—	★	—	—	3

Fig 1 (Grades in ACP/ACK series) Fig 2

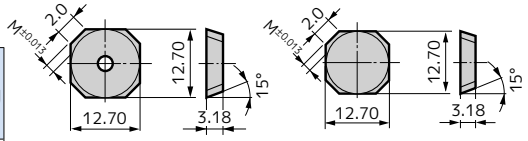
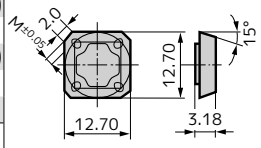


Fig 3



Cat. No. marked *: M ± 0.08.

Parts

Locator	Locator Screw	Clamp Plate	Clamp Plate Screw			Wrench
				Size	N·m	
LFE4R	FBH0512	FEWR	FBX0817	**M8**	**8.0**	TH040

Recommended Cutting Conditions

Diameter ø50 to ø63mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100-**125**-150	0.10-**0.20**-0.30	ACP200
P	Alloy Steel	180 to 280HB	80-**100**-120	0.10-**0.20**-0.30	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Diameter ø80 to ø100mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100-**125**-150	0.10-**0.25**-0.40	ACP200
P	Alloy Steel	180 to 280HB	80-**100**-120	0.10-**0.25**-0.40	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.25**-0.40	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

EHG 4000/5000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	-3°
	Axial	20°

5.5mm 45° (4000 type) 7.5mm 45° (5000 type) Face Milling



Fig 1

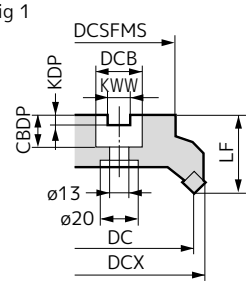


Fig 2

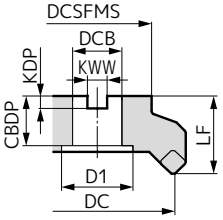
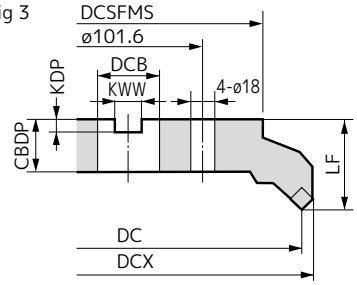


Fig 3



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**EHG 4080R**	★	*80	95	60	50	**25.4**	9.5	6	25	—	4	1.3	1
	4100R	★	**100**	114	70	50	**31.75**	12.7	8	32	46	5	2.0	2
	4125R	★	**125**	138	75	63	**38.1**	15.9	10	38	56	6	3.3	2
	4160R	★	**160**	173	100	63	**50.8**	19.1	11	38	82	8	4.8	2
	4200R	★	**200**	213	130	63	**47.625**	25.4	13.5	35	—	10	7.1	3
	EHG 5080R		*80	100	60	50	**25.4**	9.5	6	25	—	4	1.5	1
	5100R		**100**	118	70	50	**31.75**	12.7	8	32	46	5	2.2	2
	5125R		**125**	143	75	63	**38.1**	15.9	10	38	56	6	3.6	2
	5160R		**160**	178	100	63	**50.8**	19.1	11	38	82	8	5.2	2
	5200R		**200**	218	130	63	**47.625**	25.4	13.5	35	—	10	7.6	3

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet			
Process	High-speed/Light Cutting	P			K		M						
	Medium Cutting		P M	P M	K			P	K	P			
	Roughing		P M	P M		K							
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T250A	Inscribed Circle IC	Thickness S	Fig
SECN 42MT								★		★	12.70	3.18	1
42M											12.70	3.18	1
SEEN 42MT		★	★	★							12.70	3.18	3*
SEKN 42MT		★	★	★				★		★	12.70	3.18	2(3)
42MT-W										★	12.70	3.18	3
42M					★	★	▲		★		12.70	3.18	2(3)
SENN 1203AFTN*		★	—	—	—	—	—	★	—	★	12.70	3.18	3
SEMR 1203AFEN		★	—	—	—	—	—	★	—	—	12.70	3.18	4
SEER 1203AFEN**		★	—	—	—	—	—	★	—	—	12.70	3.18	4
SECN 53MT											15.875	4.76	1
53M											15.875	4.76	1
SEKN 53MT		★	★	★				★		★	15.875	4.76	3
53M					★	★					15.875	4.76	3

Fig 1

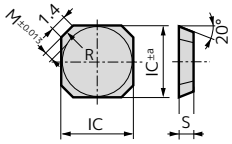


Fig 2 (Grades in ACP/ACK series)

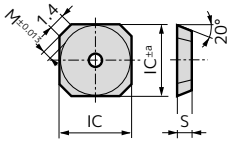


Fig 3

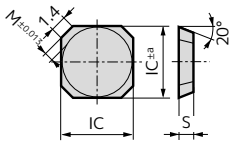
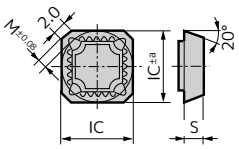


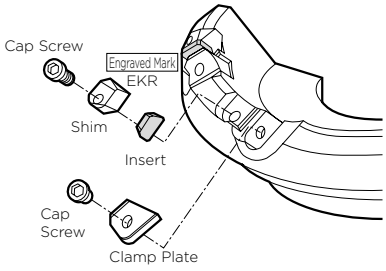
Fig 4



Cat. No. marked *: M ± 0.08 Chamfer 1.4 → 2.0.
Cat. No. marked **: M ± 0.025 Chamfer 2.0 → 2.2.
The shape of *-marked E class inserts differs slightly from the above figures.

Insert Application Table

Body	Insert
EHG4000 type	SEON42·· SEOO12··
EHG5000 type	SEON53··



Parts

Applicable Cutter	Shim	Clamp Plate	Cap Screw			Wrench
				Size	N·m	
EHG4000R type	EHK4R	EHW4R	EHBX0512	**M5**	**5.0**	TH040
EHG5000R type	EHK5R	EHW5R		**M5**		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	160-**205**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	160-**230**-300	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	80-**100**-120	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	—	160-**180**-200	0.10-**0.20**-0.30	ACP300
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK200

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DNX(F) series/DNH series/DNHS series

High-efficiency Face Milling Cutters for Cast Iron and Cast Steel



■ Features

- Achieves high-efficiency milling with a max. 8mm depth of cut
- Employs negative inserts with chipbreakers that have a strong cutting edge on the double negative type body. Economical design using 8 corners
- Supports general to high-efficiency high-feed milling with three body types
  Same inserts can be used with all types

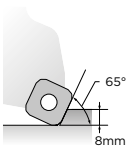


Negative inserts with a rake angle achieve low cutting force and high-feed milling

■ Product Range

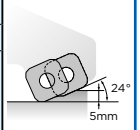
DNX(F) series — General-purpose type

Max. Depth of Cut		8mm
Cutting Edge Angle		65°
Dia.	DNX 12000R(S) Standard Pitch	ø80 to ø160mm
	DNXF 12000R(S) Extra Fine Pitch	ø80 to ø160mm



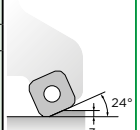
DNHS series — Medium Depth of Cut High Feed type

Max. Depth of Cut		5mm
Cutting Edge Angle		24°
Dia.	DNHS 12000R Medium Depth of Cut High Feed type	ø80 to ø160mm



DNH series — Small Depth of Cut High Feed type

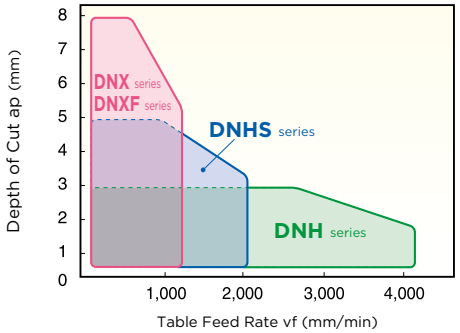
Max. Depth of Cut		3mm
Cutting Edge Angle		24°
Dia.	DNH 12000R Small Depth of Cut High Feed type	ø80 to ø160mm



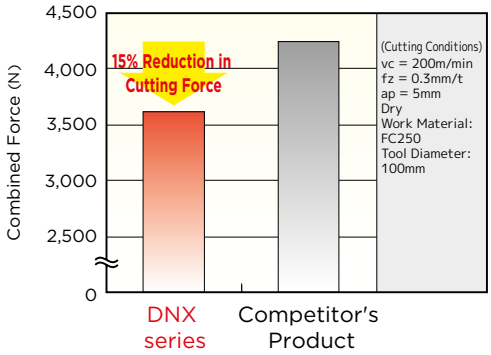
Large ◀ Depth of Cut — Feed Rate ▶ Large

■ Usage Region (Cutting Cast Iron) Cut carbon steel at 20 to 30% reduction.

* The following conditions are provided as a general guide. Actual conditions will need to be adjusted according to tool overhang, machine rigidity, depth of cut and other factors.



■ Comparison of Cutting Force



■ Recommended Cutting Conditions

DNX type/DNXF series

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	150-**225**-300	0.10-**0.20**-0.30	ACK200 ACK300
K	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.18**-0.25	ACK200 ACK300
P	Carbon Steel	180 to 280HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
P	Alloy Steel	180 to 280HB	150-**175**-200	0.10-**0.15**-0.20	ACP200

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

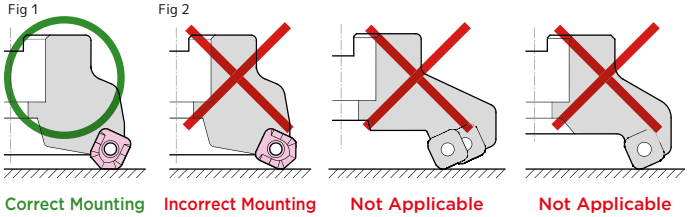
DNHS series/DNH series

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	150-**225**-300	0.10-**0.55**-1.00	ACK200 ACK300
K	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.55**-1.00	ACK200 ACK300
P	Carbon Steel	180 to 280HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
P	Alloy Steel	180 to 280HB	150-**175**-200	0.10-**0.35**-0.60	ACP200

Note For DNHS type, insert heights are alternatively placed, so the actual feed rate per tooth is double. fz = 0. 5mm/t (actual feed rate 1.0mm/t) as the upper limit.
The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Precautions When Using Wiper Inserts with Holes

- When mounting the wiper insert, attach it as shown in Fig 1.
  When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.
- Wiper inserts are single-cornered and double-sided.
- Refer to Technical Guidance on page N25 in the General Catalogue for details about wiper inserts.
- Do not use with DNHS and DNH series.



DNX(F)12000 type

P Steel K Cast Iron

Rake Angle	Radial	-6°
	Axial	-5°

8mm 65°

Face Milling



Fig 1

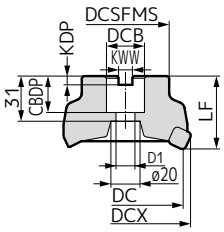


Fig 2

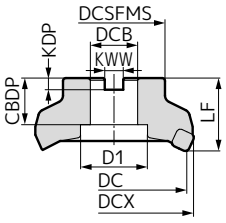
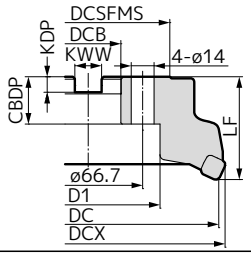


Fig 3



Body (Standard Pitch) Cutting Edge Angle 65°

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**DNX 12080RS**	★	*80	88	60	50	**27**	12.4	7	25	13.5	6	6	1.2	1
	12100RS	★	**100**	108	80	50	**32**	14.4	8.5	29	46	7	7	1.6	2
	12125RS	★	**125**	133	80	63	**40**	16.4	9.5	29	56	8	8	2.8	2
	12160RS	★	**160**	168	100	63	**40**	16.4	9.5	29	88	10	10	4.4	3
Inch	**DNX 12080R**	★	*80	88	60	50	**25.4**	9.5	6	25	13	6	6	1.2	1
	12100R	★	**100**	108	70	50	**31.75**	12.7	8	32	46	7	7	1.6	2
	12125R	★	**125**	133	80	63	**38.1**	15.9	10	38	56	8	8	2.8	2
	12160R	★	**160**	168	100	63	**50.8**	19.1	11	38	72	10	10	4.4	2

Body (Extra Fine Pitch) Cutting Edge Angle 65°

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**DNXF 12080RS**	★	*80	88	60	50	**27**	12.4	7	25	13.5	8	8	1.2	1
	12100RS	★	**100**	108	80	50	**32**	14.4	8.5	29	46	10	10	1.6	2
	12125RS	★	**125**	133	80	63	**40**	16.4	9.5	29	56	11	11	2.7	2
	12160RS	★	**160**	168	100	63	**40**	16.4	9.5	29	88	12	12	4.4	3
Inch	**DNXF 12080R**	★	*80	88	60	50	**25.4**	9.5	6	25	13	8	8	1.2	1
	12100R	★	**100**	108	70	50	**31.75**	12.7	8	32	46	10	10	1.6	2
	12125R	★	**125**	133	80	63	**38.1**	15.9	10	38	56	11	11	2.7	2
	12160R	★	**160**	168	100	63	**50.8**	19.1	11	38	72	12	12	4.4	2

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

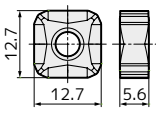
Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	K	K			
	Medium Cutting	K	K		P M	P M
	Roughing			K	P M	P M

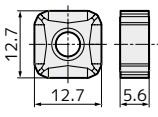
ISO Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Fig
SNMT 1205ZNEN-L		★	★	★		V-shaped Edge type	Light Cutting	1
1205ZNEN-G	★	★	★	★			General-purpose	1
1205ZNEN-H	★	★	★	★			Heavy Cutting	1
SNMT 1205ZNEN-SH	★	★	★	★	★	Straight Edge type	Improved Chip Control	2
XNGT 1205ZNEN-W		★	★			Wiper Insert	Improved Surface Roughness	3

Fig 1



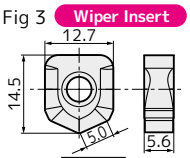
L type/G type/H type

Fig 2



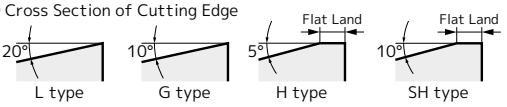
SH type

Fig 3 Wiper Insert



W type

● Cross Section of Cutting Edge



Refer to page H42 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H42

Identification Code

DNX	F	12	080	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

ISO Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DNX(F) 12080R(S) to DNX(F) 12100R(S)	BFTX0412IP	3.0	—	HPS1015	TRB15IP	SUMI-P
DNX(F) 12125R(S) to DNX(F) 12160R(S)			TRDR15IP	—	—	SUMI-P

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

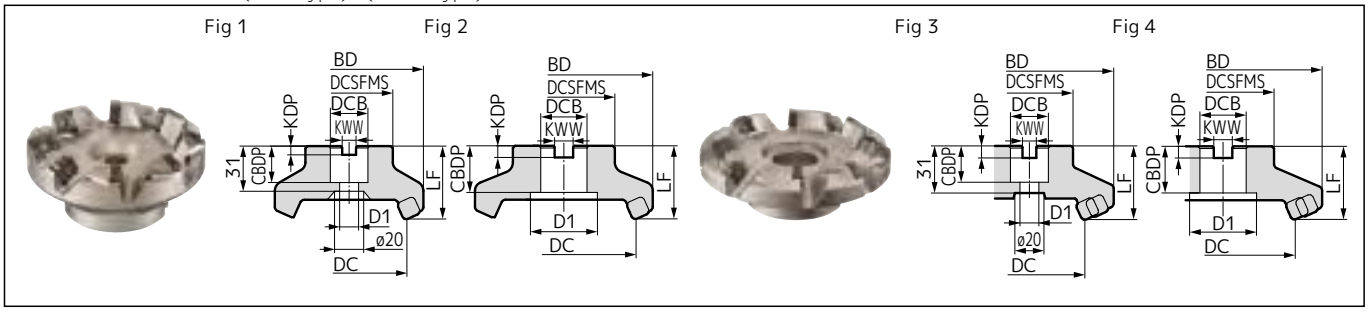
DNH(S)12000 type

P Steel K Cast Iron

Rake Angle		
Radial	-6°	
Axial	-5°	

3mm 24° (DNH type) 5mm 24° (DNHS type) Face Milling

Fig 1 Fig 2 Fig 3 Fig 4



Body Cutting Edge Angle 24° Small Depth of Cut High Feed type

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**DNH 12080R**	★	*80	104	60	50	**25.4**	9.5	6	25	13	6	6	1.5	1
	12100R	★	**100**	124	70	50	**31.75**	12.7	8	32	46	7	7	1.9	2
	12125R	★	**125**	149	80	63	**38.1**	15.9	10	38	56	8	8	3.2	2
	12160R	★	**160**	184	100	63	**50.8**	19.1	11	38	72	10	10	5.1	2

Body Cutting Edge Angle 24° Medium Depth of Cut High Feed type

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**DNHS 12080R**	★	*80	116	60	50	**25.4**	9.5	6	25	13	6	3	1.7	3
	12100R	★	**100**	136	70	50	**31.75**	12.7	8	32	46	8	4	2.3	4
	12125R	★	**125**	161	80	63	**38.1**	15.9	10	38	56	10	5	3.2	4
	12160R	★	**160**	196	100	63	**50.8**	19.1	11	38	72	12	6	6.2	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

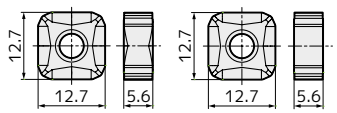
Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	K	K		P M	P M
	Medium Cutting	K	K		P M	P M
	Roughing			K	P M	P M

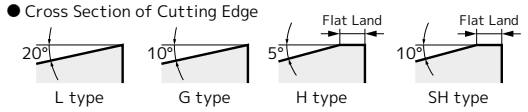
ISO Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Fig
SNMT 1205ZNEN-L		★	★	★		V-shaped Edge type	Light Cutting	1
1205ZNEN-G	★	★	★	★			General-purpose	1
1205ZNEN-H	★	★	★	★			Heavy Cutting	1
SNMT 1205ZNEN-SH	★	★	★	★	★	Straight Edge type	Improved Chip Control	2

Fig 1 Fig 2



L type/G type/H type SH type

● Cross Section of Cutting Edge



Recommended Cutting Conditions H42

Parts

ISO Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DNH(S) 12080R to DNH(S) 12100R	BFTX0412IP	3.0	—	HPS1015	TRB15IP	SUMI-P
DNH(S) 12125R to DNH(S) 12160R			TRDR15IP	—	—	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DNF 4000 type

P Steel K Cast Iron H Hardened Steel

Rake Angle	Radial	-6°
	Axial	-5°

6.5mm 65°

Face Milling



Fig 1

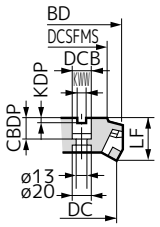


Fig 2

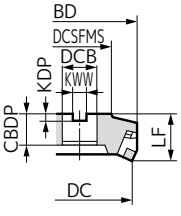


Fig 3

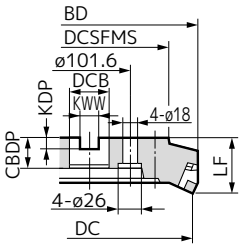


Fig 4

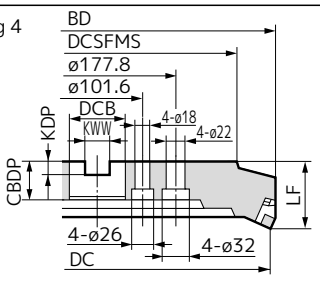


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DNF 4080R/L**	★		**80**	96	60	50	**25.4**	9.5	6	25	6	1.8	1
	4100R/L	★	★	**100**	116	75	60	**31.75**	12.7	8	32	8	3.0	2
	4125R/L	★		**125**	141	75	60	**38.1**	15.9	10	38	10	4.3	2
	4160R/L	★		**160**	176	100	60	**50.8**	19.1	11	38	12	6.8	2
	4200R/L	★		**200**	216	130	60	**47.625**	25.4	13.5	36	16	9.8	3
	4250R/L			**250**	266	200	70	**47.625**	25.4	13.5	40	20	18.1	3
	4315R/L			**315**	331	240	70	**47.625**	25.4	13.5	40	24	27.4	3
	4400R/L			**400**	416	300	80	**63.5**	25.4	13.5	45	32	49.6	4
	4500R/L			**500**	516	400	80	**63.5**	25.4	13.5	45	40	76.3	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		SUMIBORON	
Process	High-speed/Light Cutting	P			K							P		H	
	Medium Cutting		P M		K			P	P	K	K		P	H	
	Roughing		P M	P M		K									
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	BN2000	Fig
CSNH 43M					★	★		★		★	★			—	1
43MT												★	★	—	1
CSN 43M								★			★			—	2
43MT												★	★	★	2
CSNB 43M								★			★			—	3
43MT													★	—	3
SNC 433														—	—
434														—	—
SNMN 432									★		★	★		—	4
433						★			★		★		★	—	4
434														—	4
SNMN 432TN-S														—	—
433TN-S														—	—
434TN-S														—	—
NW 100										★		★		—	5

Fig 1

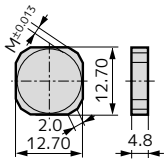


Fig 2

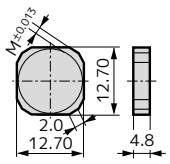


Fig 3

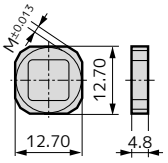


Fig 4

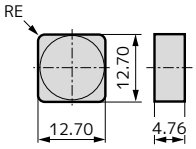
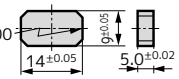
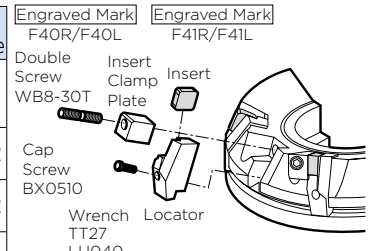


Fig 5 Wiper Insert



Parts

Applicable Cutter	Locator (*)	Insert Clamp Plate
DNF4080R DNF4100R	LNF40R	FTW40R
DNF4125R up to DNF4500R	LNF40R	FTW41R
DNF4080L up to DNF4100L	LNF40L	FTW40L
DNF4125L up to DNF4500L	LNF40L	FTW41L



Double Screw	Size	N·m
WB8-30T	**M8**	**8.0**

*: To use wiper inserts, change locators to LNFW40R(L).

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	80-**100**-120	0.10-**0.13**-0.15	T250A
P	Mild Steel	≤ 180	100-**130**-160	0.10-**0.18**-0.25	T250A
K	Cast Iron	250HB	150-**200**-250	0.10-**0.15**-0.20	ACK200

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

APG 4000 type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	-2°
	Axial	18°

7mm / 65°

Face Milling



Fig 1

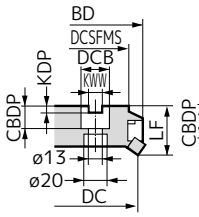


Fig 2

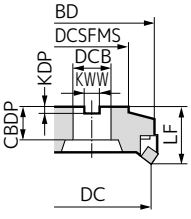


Fig 3

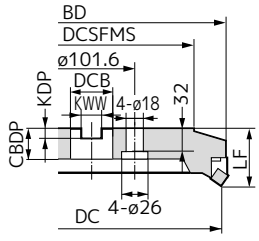


Fig 4

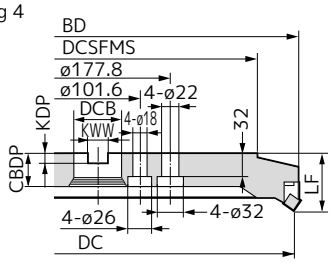


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**APG 4080R/L**	★		*80	90	60	50	**25.4**	9.5	6	25	5	1.6	1
	4100R/L	★		**100**	110	75	60	**31.75**	12.7	8	32	5	2.7	2
	4125R/L	★		**125**	134	75	60	**38.1**	15.9	10	38	6	4.0	2
	4160R/L	★		**160**	169	100	60	**50.8**	19.1	11	38	8	6.5	2
	4200R/L	★		**200**	208	130	60	**47.625**	25.4	13.5	38	10	9.1	3
	4250R/L	★		**250**	258	200	70	**47.625**	25.4	13.5	40	12	18.3	3
	4315R/L	★		**315**	323	240	70	**47.625**	25.4	13.5	40	16	27.6	3
	4400R/L			**400**	408	300	70	**63.5**	25.4	13.5	45	20	48.4	4
	4500R/L			**500**	508	400	70	**63.5**	25.4	13.5	45	24	68.1	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet		DLC	SUMIDIA		
Process	High-speed/Light Cutting	P			K		M		N	P		N	N	N	
	Medium Cutting		P M	P M	K			P			P	N	N	N	
	Roughing		P M	P M		K							N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	H1	T1500A	T250A	DL1000	DA1000	DA2200	Fig
SDCH 42TR								★				—	—	—	1
42TL												—	—	—	1
42TR-R											★	—	—	—	1
42TL-R												—	—	—	1
SDC 42R									★			★	—	—	2
NF-SDC 42R		—	—	—	—	—	—	—	—	—	—	—	★	▲	2
SDC 42L									★			—	—	—	2
42TR								★				—	—	—	2
42TL												—	—	—	2
42TR-R											★	—	—	—	2
42TL-R												—	—	—	2
APW 4R										★		—	★	▲	3

Fig 1

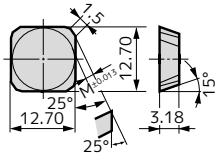


Fig 2

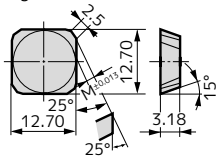
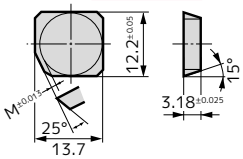
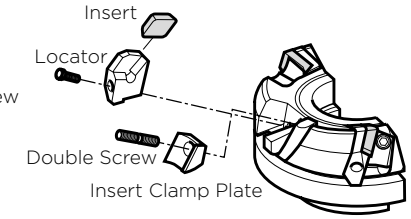


Fig 3 Wiper Insert



Double Screw (Common)	Size	N·m
	M8	**8.0**

Cap Screw	Size	N·m
	M5	**5.0**



Parts

Applicable Cutter	Locator	Cap Screw	Insert Clamp Plate	Double Screw	Wrench
APG4080R	LAP40R	BXF0520R	ATW45R	WB8-20	TH040
APG4100R up to APG4500R				WB8-22TL	TT27
APG4080L	LAP40L	BXF0520R	ATW45L	WB8-20	TH040
APG4100L up to APG4500L				WB8-22T	TT27

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**125**-150	0.10-**0.18**-0.25	A30N
P	Mild Steel	≤ 180HB	120-**150**-180	0.10-**0.18**-0.25	A30N
P	Die Steel	200 to 220HB	60- **80** -100	0.10-**0.18**-0.25	A30N
M	Stainless Steel	—	120-**150**-180	0.10-**0.18**-0.25	A30N
K	Cast Iron	250HB	60- **90** -120	0.15-**0.23**-0.30	H1
N	Non-Ferrous Alloy	—	300-**650**-1,000	0.10-**0.20**-0.30	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

DPG 4000 type/DPGF 4000 type

P Steel M Stainless Steel K Cast Iron

Rake Angle		
Radial	0°	
Axial	8°	

9.5mm / 75°

Face Milling



Fig 1

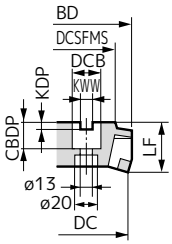


Fig 2

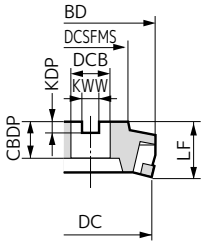


Fig 3

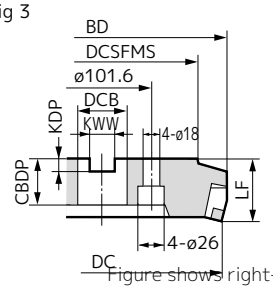


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DPG 4080R/L**	★		***80**	90	60	50	**25.4**	9.5	6	25	4	1.5	1
	4100R/L	★		**105**	115	75	60	**31.75**	12.7	8	32	5	3.0	2
	4125R/L	★		**125**	135	75	60	**38.1**	15.9	10	38	6	4.0	2
	4160R/L	★		**157**	167	100	60	**50.8**	19.1	11	38	8	6.1	2
	4200R/L	★		**200**	210	130	60	**47.625**	25.4	13.5	38	10	10.0	3
	DPGF 4080R/L	★		***80**	90	60	50	**25.4**	9.5	6	25	6	1.5	1
	4100R/L	★		**105**	115	75	60	**31.75**	12.7	8	32	8	3.0	2
	4125R/L	★		**125**	135	75	60	**38.1**	15.9	10	38	10	4.0	2
	4160R/L	★		**157**	167	100	60	**50.8**	19.1	11	38	12	6.1	2

Inserts are sold separately.

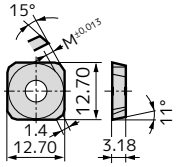
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		
Process	High-speed/Light Cutting	P			K		M					P		
	Medium Cutting		P M	P M	K			P	P	K	K		P	
	Roughing		P M	P M		K								
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	Fig
SPCH 42R					★	★	▲				★			1(2)
42L					★	★					★			2
42TR		★	★	★				★		★				1(2)
42TL			★					★						2
42TR-R												★	★	2
42TL-R													★	2
SPMN 422									★		★	★	★	3
423					★	★			★		★	★		3
SPG 422									★		★	★		3
423											★			3
DPW 500R										★		★		4
500L										★				4

Fig 1 (材種ACP/ACKシリーズの場合) Fig 2



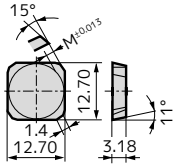


Fig 3

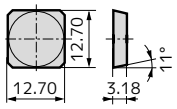
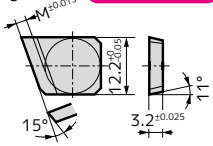
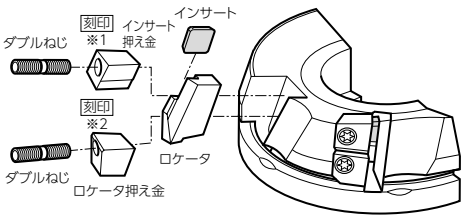


Fig 4 ワイパーインサート



Double Screw (Common)	Size	N·m
	M8	8.0



※1 刻印 T40R, T40L, T41R, T41L, T42R, T42L, TF80R, TF80L, TF41R, TF41L

※2 刻印 L40R, L40L, L41R, L41L, L42R, L42L, LF80R, LF80L, LF41R, LF41L

Parts

Applicable Cutter	Locator	Locator Clamp for DPG	Locator Clamp for DPGF	Insert Clamp for DPG	Insert Clamp for DPGF	Double Screw	Wrench
DPG(F)4080R	GL40R	GLW40R	GLWF80R	GTW40R	GTWF80R	WB8-22T	TT27
DPG(F)4100R Up to DPG(F)4160R		GLW41R	GLWF41R	GTW41R	GTWF41R	WB8-30T	
DPG4200R		GLW42R	—	GTW42R	—		
DPG(F)4080L	GL40L	GLW40L	GLWF80L	GTW40L	GTWF80L	WB8-22T	TT27
DPG(F)4100L Up to DPG(F)4160L		GLW41L	GLWF41L	GTW41L	GTWF41L	WB8-30T	
DPG4200L		GLW42L	—	GTW42L	—		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	80-**120**-160	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	80-**120**-160	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	80-**140**-200	0.10-**0.15**-0.20	ACK200

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item

Blank: Made-to-order item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

N·m Recommended Tightening Torque (N·m)

DPG 5000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	0°
	Axial	8°

12mm / 75° — Face Milling



Fig 1

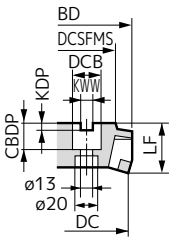


Fig 2

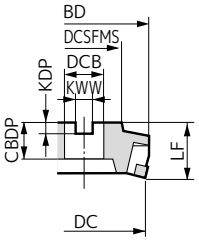


Fig 3

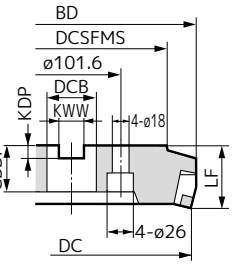


Fig 4

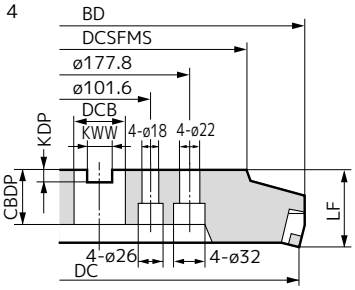


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DPG 5080R/L**			*82	90	60	50.5	**25.4**	9.5	6	25	4	1.5	1
	5100R/L			**107**	115	75	60.5	**31.75**	12.7	8	32	5	3.0	2
	5125R/L			**127**	135	75	60.5	**38.1**	15.9	10	38	6	4.0	2
	5160R/L			**159**	167	100	60.5	**50.8**	19.1	11	38	8	6.1	2
	5200R/L			**202**	210	130	60.5	**47.625**	25.4	13.5	38	10	10.0	3
	5250R/L			**252**	260	200	70.5	**47.625**	25.4	13.5	52	12	19.7	3
	5315R/L			**317**	325	240	70.5	**47.625**	25.4	13.5	52	14	33.0	3
	5400R/L			**402**	410	300	80.5	**63.5**	25.4	13.5	57	20	60.0	4
	5500R/L			**502**	509	400	80.5	**63.5**	25.4	13.5	57	24	92.0	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		
Process	High-speed/Light Cutting	P			K		M					P		
	Medium Cutting		PM	PM	K			P	P	K	K		P	
	Roughing		PM	PM		K								
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	Fig
SPCH 53R-R					★	★	▲				★			1
53L-R											★			1
53TR-R		★	★					★		★		★	★	1
53TL-R			★					★		★				1
SPMN 532									★		★			2
533									★		★			2
GW 500R										★		★		3
500L														3

Fig 1

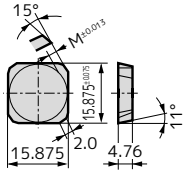


Fig 2

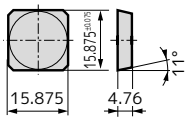
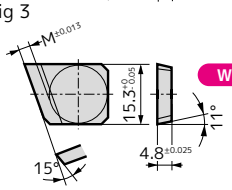
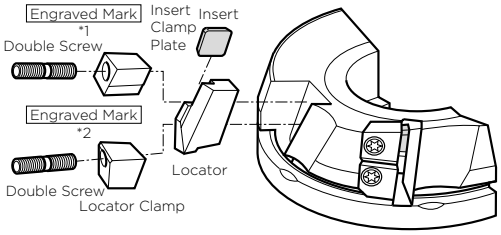


Fig 3



Wiper Insert

Double Screw (Common)	Size	N·m
	M8	8.0



*1 Engraved Mark: T5OR,T5OL,T51R,T51L,T52R,T52L

*2 Engraved Mark: L5OR,L5OL,L51R,L51L,L52R,L52L

Parts

Applicable Cutter	Locator	Locator Clamp	Insert Clamp Plate	Double Screw	Wrench
DPG5080R	GL50R	GLW50R	GTW50R	WB8-22T	TT27
DPG5100R up to DPG5160R		GLW51R	GTW51R	WB8-30T	
DPG5200R up to DPG5500R		GLW52R	GTW52R		
DPG5080L	GL50L	GLW50L	GTW50L	WB8-22T	TT27
DPG5100L up to DPG5160L		GLW51L	GTW51L	WB8-30T	
DPG5200L up to DPG5500L		GLW52L	GTW52L		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	80-**120**-160	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	80-**120**-160	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	80-**140**-200	0.10-**0.15**-0.20	ACK200

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

MEMO



■ Features

● Supports A Variety of Machining Operations

A lineup of cutter sizes from ø14 to ø160mm that are capable of large angle ramping. In addition to the shank and modular types, 28 items of the repeater type are also available.

● Excellent Machining Quality

With a combination of optimised cutting edge shape and high-precision molding technology, superb wall accuracy and surface finish quality are achieved

● Excellent Sharpness with Low Cutting Force

Reducing machining noise and suppressing burrs, the lineup includes ground type inserts with a focus on sharpness

● Applicable to Various Work Materials

In addition to the general-purpose grade ACU2500, the lineup includes a wide range of specialised grades applicable to various work materials such as steel, cast iron, stainless steel, exotic alloys, etc.

■ Product Range (Standard)

Type	Cat. No.	Dia. (mm) ø14	ø16	ø18	ø20	ø22	ø25	ø26	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	WEZ 11000RS												4 6	5 7	6 8	7 10	9 12		
Shell	WEZ 11000R (Inch)															7 10	9 12		
Shell	WEZ 17000RS												3 4	3 5	4 6	4 7	5 8	6 9 11	8 10 12
Shell	WEZ 17000R (Inch)															4 7	5 8	6 9 11	8 10 12
Shank	WEZ 11000E	1	2*	2	2 3*	3	2 3* 4*		4	4	2 3 4 5*	5	2 4 6	5 7	8	10			
Shank	WEZ 11000ES (For multi-tasking machines)	1	2*		3*		4*												
Shank	WEZ 11000EL	1	2*	2	2*	2	2* 3		2	2	2* 3	2 3	2	3					
Shank	WEZ 17000E						2*		2	3	2 3*	3	3 4	3* 5*	4* 6*	7			
Shank	WEZ 17000ES (For multi-tasking machines)						2				3								
Shank	WEZ 17000EL						2		2	2	2* 3	2	2 3 4	3* 5*	4* 6*				
Modular	WEZ 11000M		2	2	2 3	3	2 3 4	4 5	4 5	2 4 5	2 3 4 5	2 5	2 4 5 6						
Modular	WEZ 17000M						2 3		2	2 3	2 3 4	2 3	2 3 4						

Number in ●●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available

Modular type ☞H254

■ Product Range (Repeater)

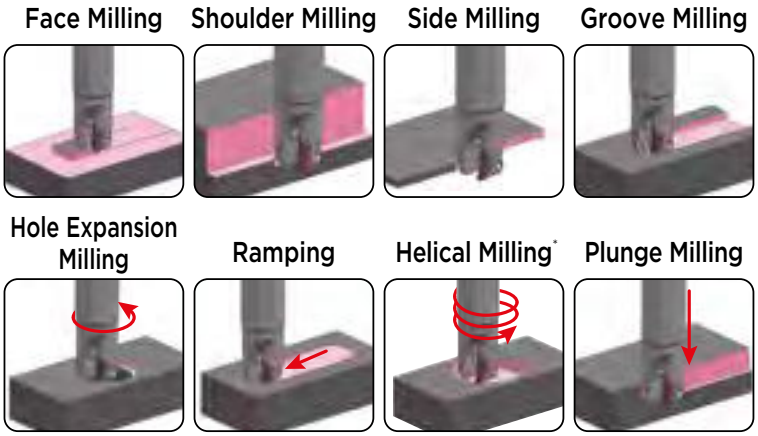
Type	Cat. No.	Dia. (mm) ø20	ø25	ø30	ø32	ø35	ø40	ø50	ø63	ø80
Shell	WEZR 11000RS						4	4		
Shell	WEZR 17000RS							2 3 4	3 4 5	5
Shank	WEZR 11000E	1 2	2	2	2 3	3	3 4			
Shank	WEZR 17000E						2 3	2 3		
Modular	WEZR 11000M				3					
Modular	WEZR 17000M						3			

Number in ●●● represent the effective number of teeth

Modular type ☞H258

WEZ series

■ Supports Ramping/Helical Milling/Plunge Milling Applicable to various applications!



*Helical milling is not recommended for WEZR type products.

■ Optimised Body Design with Wide Guide Face for Stable Insert Clamping



■ Chipbreaker Selection

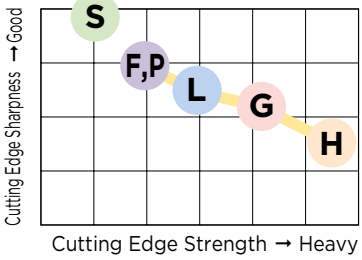
Work Material	P Steel, M Stainless Steel, K Cast Iron, S Heat-resistant Alloy, Titanium Alloy, H Hardened Steel					N Non-Ferrous Metal
Applications	Light Cutting	General-purpose to Interrupted Milling	Heavy Cutting	Light Cutting	Light Cutting	For Non-Ferrous Metals
Features	Low-rigidity Machining	Standard	Heavy Interrupted Cutting Hardened Steel	Medium Finishing Burr Prevention	High-precision Machining High Wall Surface Squareness	Low Cutting Force
	L type	G type	H type	F type	P type	S type
Chipbreaker						
Cutting Edge Cross Section 11 type	Not Available	0.05mm 28°	0.15mm 20°	28°		28°
Cutting Edge Cross Section 17 type	0.05mm 28°	0.15mm 20°	0.2mm 10°	28°		28°

■ Insert Size Comparison



AO□T17 type　AO□T11 type

■ Chipbreaker Selection Guide



■ Product Range (Insert)

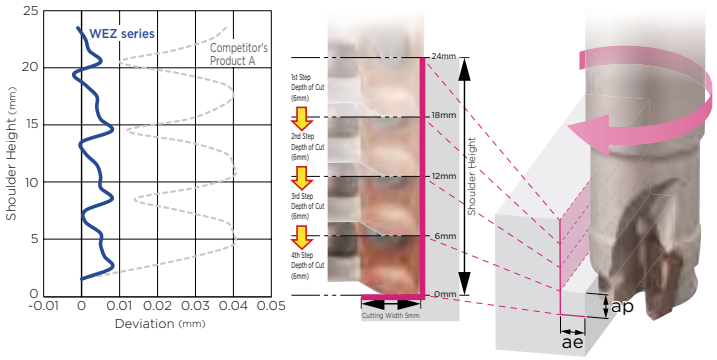
●: Standard stocked item

Insert Size	Tolerance	Cat. No.	Corner Radius (mm)												
			R0.2	R0.4	R0.5	R0.8	R1.0	R1.2	R1.6	R2.0	R2.4	R3.0	R3.2	R4.0	R5.0	R6.4
11 type	M Class	AOMT11T3○○PEER-G	★	★	★	★	★	★	★	★	★	★	★			
		AOMT11T3○○PEER-H		★		★		★	★							
	E Class	AOET11T3○○PEER-F	★	★	★	★	★	★	★	★	★	★	★			
		AOET11T3○○PEER-P16	★	★	★	★	★	★								
		AOET11T3○○PEER-P20	★	★	★	★	★	★								
		AOET11T3○○PEER-P25	★	★	★	★	★	★								
		AOET11T3○○PEFR-S	★	★	★	★	★	★	★	★	★	★	★			
17 type	M Class	AOMT1705○○PEER-L	★	★		★		★	★							
		AOMT1705○○PEER-G	★	★	★	★	★	★	★	★	★	★	★	★	★	★
		AOMT1705○○PEER-H		★		★		★	★							
	E Class	AOET1705○○PEER-F	★	★	★	★	★	★	★	★	★	★	★	★	★	★
		AOET1705○○PEER-P25	★	★	★	★	★	★								
		AOET1705○○PEER-P32	★	★	★	★	★	★								
		AOET1705○○PEFR-S	★	★	★	★	★	★	★	★	★	★	★	★	★	★

P type chipbreaker Cat. No. is specific to a range of cutter diameters. For details, see P type Chipbreaker Selection on page H53.

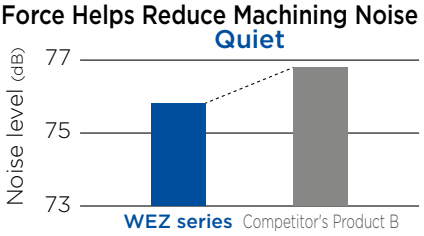
■ Cutting Performance

● Good Wall Accuracy



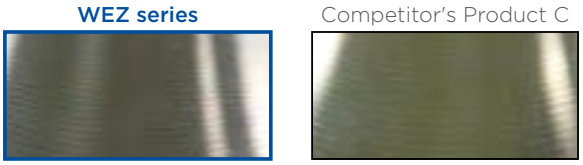
Machine	: Vertical Machining Centre BT40, Work Material: S50C
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.15mm/t, ap = 6mm x 4 Passes, ae = 5mm, Dry

● Lower Cutting Force Helps Reduce Machining Noise



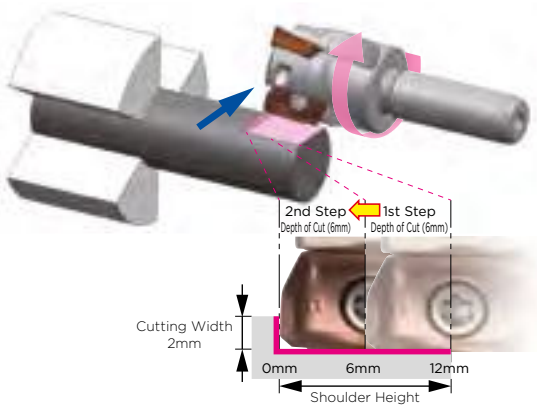
Machine	: Vertical Machining Centre BT40, Work Material: S50C
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc=150 m/min, fz=0.15 mm/t, ap=8 mm, ae=5 mm, Dry

● Excellent Surface Quality

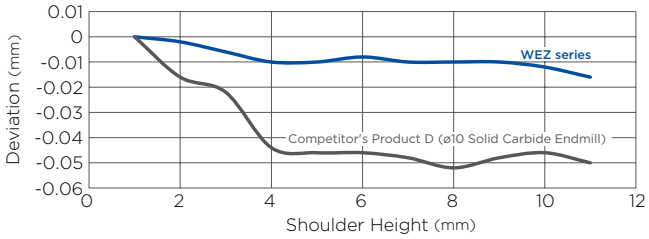


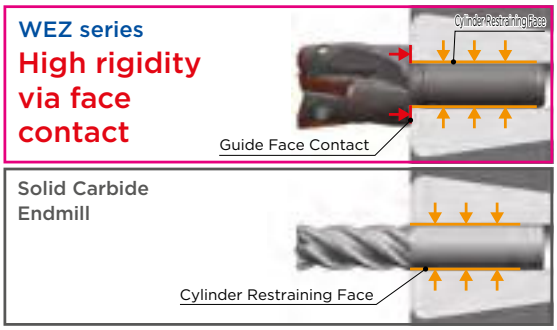
Machine	: Vertical Machining Centre BT50, Work Material: SCM440
Tool	: WEZ 17100RS08 (ø100, 8 teeth)
Insert	: AOMT 170508PEER-G (ACU2500)
Cutting Conditions	: vc=250 m/min, fz=0.15 mm/t, ap=2 mm, ae=85 mm, Dry

● Good Wall Accuracy (for Multi-tasking Machines)



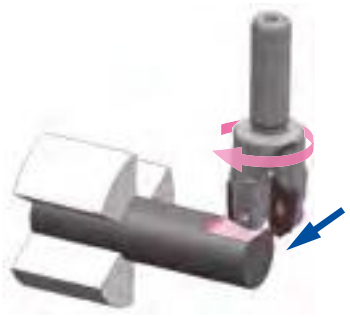
Machine	: Multi-tasking Machine, Work Material: SUS304 ø16 Round Bar
Tool	: WEZ 11020ES03-10 (ø20, 3 teeth)
Insert	: AOET 11T308PEER-F (ACU2500)
Cutting Conditions	: vc = 100m/min, fz = 0.08mm/t, ap = 6mm x 2 Passes, ae = 2mm, Wet

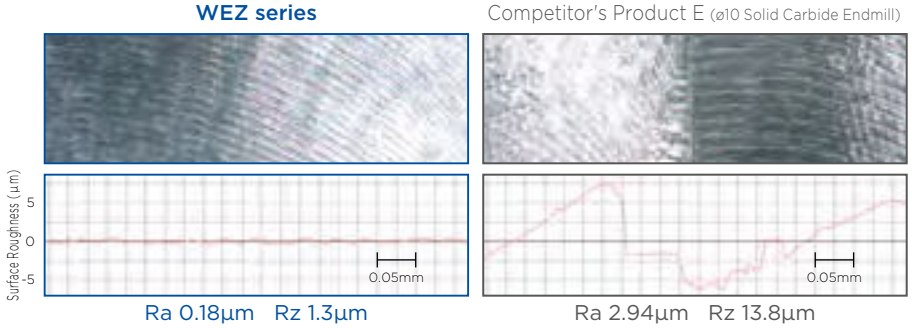




● Excellent machined surface quality (for multi-tasking machines)

Larger tool diameter than solid carbide endmills enables reduced number of passes for high-efficiency machining!
Good wall accuracy and machined surface quality, eliminating the finishing process!



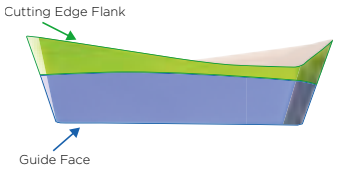


Machine	: Multi-tasking Machine, Work Material: SUS304 ø16 Round Bar Tool: WEZ 11020ES03-10 (ø20, 3 teeth)
Insert	: AOET 11T308PEER-F (ACU2500)
Cutting Conditions	: WEZ series vc = 100m/min, fz = 0.05mm/t, ap = 2mm, ae = 12mm, Wet
	Competitor's Product E vc = 100m/min, fz = 0.05mm/t, ap = 2mm, ae = 6mm × 2 Passes, Wet (Solid Carbide Endmill)

■ High-precision Ground type Insert with Excellent Sharpness

● Ground finish on cutting edge and guide face

The cutting edge, as well as the guide faces are ground finish to minimize corner variations when mounted on the body. Stable edge run-out accuracy and machining quality can be realized!



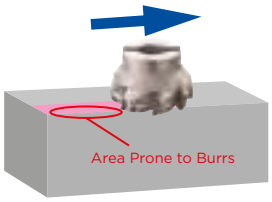
■ Lineup of Chipbreakers for Ground type Inserts

● F type Chipbreaker - Emphasises Edge Sharpness



- Sharpness from ground finish enables burr control
- Good wall accuracy with all cutter diameters

Machine	: Vertical Machining Centre BT50,
Work Material	: SUS304
Tool	: WEZ 11050RS07 (ø50, 7 teeth)
Insert	: AOET 11T308PEER-**F** (ACU2500)
Cutting Conditions	: vc = 120m/min, fz = 0.12mm/t, ap = 1mm, ae = 30mm, Dry



WEZ series



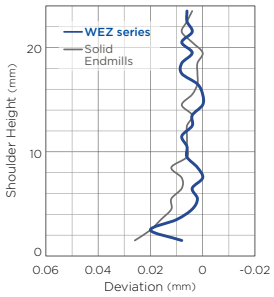
Competitor's Product F

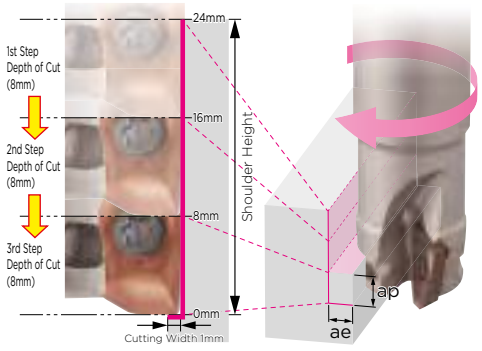


● P type Chipbreaker - Achieves Wall Squareness Equivalent to Using Solid Endmills



- High-precision type with cutting edge shape optimised for each cutter diameter while maintaining the F type chipbreaker's sharpness
- Enables shoulder squareness equal to using solid endmills, through cutting edge shape optimisation for each cutter diameter





Machine	: Vertical Machining Centre BT50,
Work Material	: S50C
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOET 11T308PEER-**P20** (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.1mm/t, ap = 8mm x 3 Passes, ae = 1mm, Dry

P type Chipbreaker Selection Guide

Cat. No.	Dia. (mm)										
	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40 and above
AOET11T3○○PEER-P ○○	**-P16**		**-P20**		Not applicable	**-P25**		Not applicable			
AOET1705○○PEER-P ○○	Not applicable					**-P25**		**-P32**			Not applicable

● S type Chipbreaker - Sharp-Edged Breaker for Non-Ferrous Metals with Excellent Adhesion Resistance



- Suppresses adhesion with rake face lapping
- DLC Coat inserts available for further improved adhesion resistance

Machine	: Vertical Machining Centre BT30, Work Material: ADC12
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOET 11T308PEFR-**S** (H20)
Cutting Conditions	: vc = 350m/min, fz = 0.1mm/t, ap = 3mm, ae = 10mm, Dry

WEZ series



No Adhesion

Competitor's Product G



Adhesion

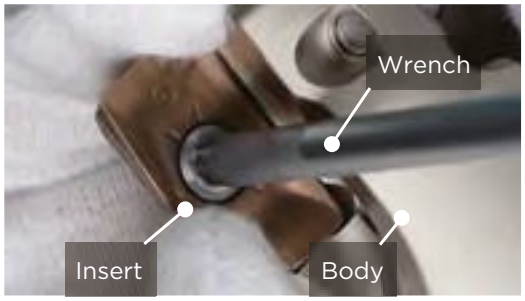
Competitor's Product H



Adhesion

Precautions for Mounting Inserts

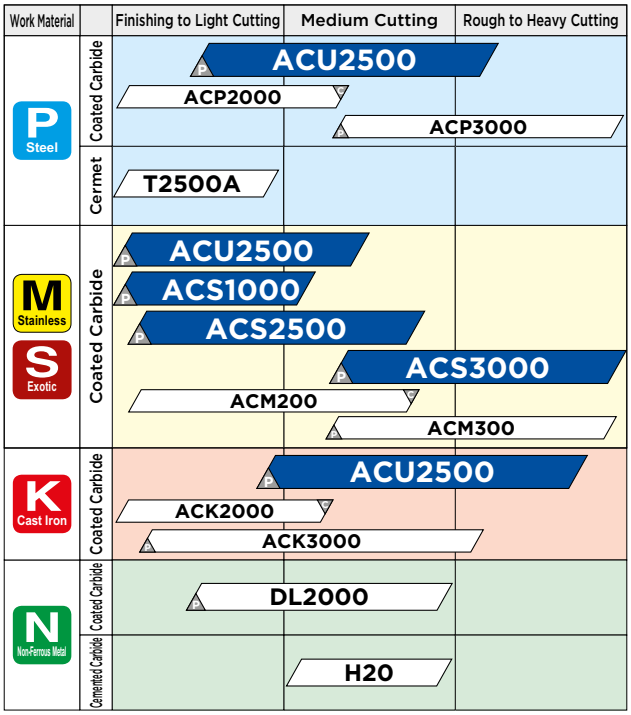
(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert firmly against the seat surface, tighten the screws with the included wrench.
(3) Apply Anti-seizure Cream to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





■ Grade Application Range

The addition of **ACS1000/ACS2500/ACS3000** grades for exotic alloys has expanded our lineup of grades to cover a wider variety of work materials.

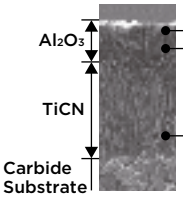


The letters "C" and "P" at the end of each grade indicate the coating type.
▽: CVD △: PVD

■ Grade Features

New coating technology that realises absolute stability
ABSOTECH™ (Absolute Technology)

ABSOTECH CVD



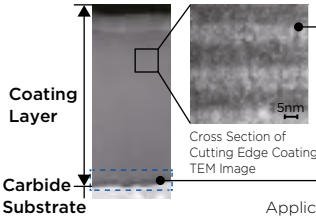
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice that of conventional coatings

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice that of conventional coatings

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice that of conventional coatings

Applicable Grades: ACP2000, ACK2000

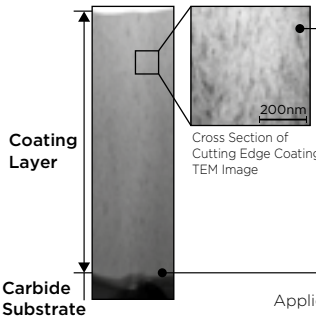
ABSOTECH PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACU2500, ACP3000, ACK3000



Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACS1000, ACS2500, ACS3000

■ Grade Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACP2000**	89.5	3.2	ABSOTECH	10	• For high-speed machining of steel • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	**ACM200**	89.8	3.4	Super FF Coat	6	• For machining high-hardness stainless steel • Adopts a high-strength carbide substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK2000**	91.7	3.1	ABSOTECH	10	• For high-speed cast iron milling • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

PVD

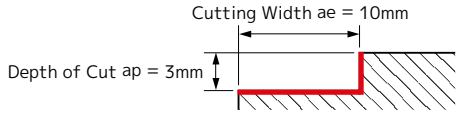
Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACU2500**	91.6	3.8	ABSOTECH	3	• General-purpose grade covering steel, stainless steel, and cast iron machining • Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials	–
	ACP3000	89.5	3.2	ABSOTECH	3	• Our 1st recommended grade for milling steel • Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM300**	89.8	3.4	(New) Super ZX Coat	3	• Our 1st recommended grade for milling stainless steel • Adopts a high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	–
K Cast Iron	**ACK3000**	91.7	3.1	ABSOTECH	3	• Our 1st recommended grade for milling cast iron • Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL2000**	91.6	3.8	AURORA Coat (DLC)	0.5	• For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	–
S Exotic Alloy	**ACS1000**	91.6	3.8	ABSOTECH	3	• For high-efficiency milling of exotic alloys • High-hardness carbide substrate coupled with a chipping-resistant coating provides long, stable tool life in high-speed, high-efficiency machining applications	–
	ACS2500	90.8	4.2	ABSOTECH	3	• First recommendation for titanium alloy applications • Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance	ACM200
	ACS3000	89.8	3.4	ABSOTECH	3	• Suitable for a wide range of exotic alloy machining applications • Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating	ACM300

Cermet

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel M Stainless Steel	**T2500A**	91.8	2.4	–	–	• For finishing of steel and stainless steel • Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A

■ Recommended Cutting Conditions

WEZ11 type



Tool: WEZ11020E03, Insert: AO□T11T3 type

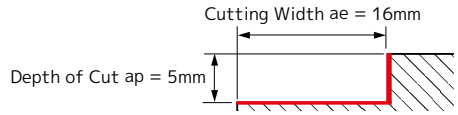
Cutting Conditions: Depth of Cut ap = 3mm, Cutting Width ae = 10mm, Dry

ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade: ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACS1000	ACS2500 ACM200	ACS3000 ACM300	DL2000
					Feed Rate per Tooth fz (mm/t) Min. - **Optimum** - Max.									
					0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.12** - 0.18	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.05 - **0.10** - 0.15
					Cutting Speed vc (m/min) Min. - **Optimum** - Max.									
P	Steel, Carbon Steel	S15C	125	G	270 - **320** - 370	300 - **350** - 400	250 - **300** - 350	230 - **280** - 330						
		S45C	190	G	170 - **220** - 270	200 - **250** - 300	150 - **200** - 250	130 - **180** - 230						
		S45C Hardened	250	G	140 - **180** - 220	160 - **200** - 245	120 - **160** - 200	105 - **145** - 185						
		S75C	270	G	110 - **145** - 175	130 - **165** - 195	100 - **130** - 165	85 - **115** - 150						
		S75C Hardened	300	G	70 - **90** - 110	80 - **100** - 120	60 - **80** - 100	50 - **70** - 90						
	Low-alloy Steel	SCM, SNCM	180	G	160 - **205** - 255	190 - **235** - 280	140 - **190** - 235	120 - **170** - 215						
		SCM, SNCM Hardened	275	G	95 - **120** - 150	110 - **135** - 165	80 - **110** - 140	70 - **100** - 125						
		SCM, SNCM Hardened	300	G	85 - **110** - 130	100 - **125** - 150	75 - **100** - 125	65 - **90** - 115						
		SCM, SNCM Hardened	350	G	60 - **80** - 100	70 - **90** - 110	50 - **70** - 90	45 - **65** - 85						
	High-alloy Steel	SKD, SKT, SKH	200	G	140 - **180** - 220	160 - **200** - 245	120 - **160** - 205							
		SKD, SKT, SKH Hardened	325	G	55 - **70** - 85	60 - **80** - 100	50 - **65** - 80							
M	Stainless Steel	SUS430, Others (Martensitic/Ferritic)	200	G	110 - **140** - 170						160 - **190** - 210	140 - **170** - 190	90 - **110** - 140	
		SUS403 and Others (Martensitic Hardened)	240	G	100 - **125** - 150						145 - **170** - 190	125 - **150** - 170	80 - **100** - 125	
		SUS304, SUS316 (Austenitic)	180	G	120 - **150** - 180						170 - **200** - 220	150 - **180** - 200	100 - **120** - 150	
K	Cast Iron			G	150 - **200** - 250				250 - **300** - 350	170 - **220** - 270				
	Ductile Cast Iron			G	90 - **120** - 150				150 - **180** - 210	100 - **130** - 160				
S	Exotic Alloy	Heat-Resistant Alloy		G	30 - **40** - 55						45 - **55** - 70	35 - **45** - 60	25 - **35** - 50	
		Ti Alloy		G	60 - **80** - 100						80 - **100** - 120	70 - **90** - 110	50 - **70** - 90	
N	Aluminum Alloy	Si Content of 12.6% or less		S										500 - **750** - 1000
		Si Content of over 12.6%		S										170 - **200** - 250
	Copper Alloy			S										300 - **330** - 350

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for WEZ11 type overall. Use within the maximum allowable spindle speed.

WEZ17 type



Tool: WEZ17032E03, Insert: AO□T1705 type

Cutting Conditions: Depth of Cut ap = 5mm, Cutting Width ae = 16mm, Dry

ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade: ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACS1000	ACS2500 ACM200	ACS3000 ACM300	DL2000
					Feed Rate per Tooth fz (mm/t) Min. - **Optimum** - Max.									
					0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.15** - 0.22	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.05 - **0.10** - 0.15
					Cutting Speed vc (m/min) Min. - **Optimum** - Max.									
P	Steel, Carbon Steel	S15C	125	G	285 - **335** - 390	315 - **360** - 420	265 - **315** - 370	240 - **295** - 345						
		S45C	190	G	180 - **230** - 285	210 - **265** - 315	160 - **210** - 265	135 - **190** - 240						
		S45C Hardened	250	G	145 - **190** - 230	170 - **210** - 255	130 - **170** - 215	110 - **155** - 195						
		S75C	270	G	115 - **150** - 185	135 - **170** - 205	100 - **135** - 170	90 - **125** - 155						
		S75C Hardened	300	G	70 - **90** - 115	85 - **105** - 125	65 - **85** - 105	55 - **75** - 95						
	Low-alloy Steel	SCM, SNCM	180	G	170 - **220** - 265	200 - **245** - 295	150 - **200** - 250	130 - **180** - 225						
		SCM, SNCM Hardened	275	G	100 - **130** - 155	115 - **145** - 175	85 - **115** - 145	75 - **105** - 135						
		SCM, SNCM Hardened	300	G	90 - **115** - 140	105 - **130** - 155	75 - **105** - 130	65 - **90** - 120						
		SCM, SNCM Hardened	350	G	65 - **85** - 100	75 - **95** - 115	55 - **75** - 95	50 - **70** - 85						
	High-alloy Steel	SKD, SKT, SKH	200	G	145 - **185** - 230	170 - **215** - 255	130 - **170** - 215							
		SKD, SKT, SKH Hardened	325	G	55 - **75** - 90	65 - **85** - 100	50 - **65** - 85							
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	G	115 - **145** - 175						165 - **195** - 215	145 - **175** - 195	100 - **115** - 145	
		SUS403 and Others (Martensitic Hardened)	240	G	105 - **130** - 155						150 - **175** - 195	130 - **155** - 175	85 - **105** - 130	
		SUS304, SUS316 (Austenitic)	180	G	125 - **155** - 190						180 - **210** - 230	160 - **190** - 210	105 - **125** - 160	
K	Cast Iron			G	160 - **210** - 265				265 - **315** - 370	180 - **230** - 285				
	Ductile Cast Iron			G	95 - **125** - 160				160 - **190** - 220	105 - **140** - 170				
S	Exotic Alloy	Heat-Resistant Alloy		G	30 - **40** - 60						45 - **55** - 70	35 - **45** - 60	25 - **35** - 50	
		Ti Alloy		G	60 - **85** - 105						85 - **105** - 125	75 - **95** - 115	50 - **75** - 95	
N	Aluminum Alloy	Si Content of 12.6% or less		S										500 - **750** - 1000
		Si Content of over 12.6%		S										170 - **200** - 250
	Copper Alloy			S										300 - **330** - 350

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Maximum Allowable Spindle Speed

WEZ11 type

Dia. DC(mm)	n max(min^{-1})	Dia. DC(mm)	n max(min^{-1})
14	12,000(7,500)	**32**	17,200
16	29,000	**35**	16,250
18	26,150	**40**	14,950
20	24,000	**50**	13,100
22	22,300	**63**	11,500
25	20,300	**80**	10,050
28	18,800	**100**	8,900
30	17,950		

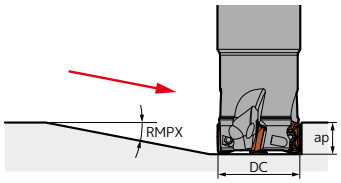
WEZ17 type

Dia. DC(mm)	n max(min^{-1})	Dia. DC(mm)	n max(min^{-1})
25	15,700	**80**	7,250
28	14,350	**100**	6,400
30	13,650	**125**	5,650
32	13,000	**160**	4,950
35	12,200		
40	11,100		
50	9,600		
63	8,350		

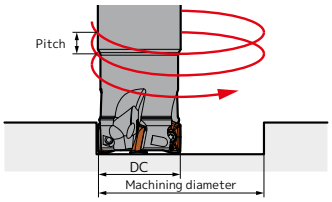
*The parentheses above refer to the use of WEZ11014EL01.
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Ramping/Helical Milling Upper Limit

Ramping



Helical Milling



WEZ11 type

Dia. DC (mm)	Max. Ramping Angle RMPX(°)	Helical Milling					
		Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
14	8.0	25.3	5.0	23.1	3.4	19.0	1.5
16	10.5	29.3	7.6	27.0	5.6	21.7	1.5
18	8.1	33.3	6.7	30.9	5.0	25.2	1.4
20	6.5	37.3	6.0	34.9	4.6	29.1	1.3
22	5.3	41.3	5.4	38.8	4.3	32.9	1.3
25	4.1	47.3	4.8	44.8	3.9	38.9	1.3
28	3.4	53.3	4.4	50.7	3.6	44.9	1.3
30	3.0	57.3	4.2	54.7	3.5	48.8	1.3
32	2.7	61.3	4.0	58.7	3.3	52.8	1.2
35	2.3	67.3	3.8	64.6	3.1	58.8	1.2
40	1.8	77.3	3.4	74.6	2.9	68.8	1.2
50	1.2	97.3	3.0	94.6	2.6	88.8	1.1
63	0.8	123.3	2.8	120.5	2.5	114.7	1.1
80	Not recommended						
100	Not recommended						

*The table above shows values with corner radius 0.8mm. Helical milling is not recommended for WEZR type products.

WEZ17 type

Dia. DC (mm)	Max. Ramping Angle RMPX(°)	Helical Milling					
		Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
25	10.8	47.3	13.0	41.0	8.3	33.1	1.8
28	8.1	53.3	11.1	46.9	7.5	39.0	1.8
30	7.0	57.3	10.2	50.9	7.0	43.0	1.8
32	6.1	61.3	9.5	54.9	6.7	47.0	1.7
35	5.1	67.3	8.7	60.8	6.2	53.0	1.7
40	4.0	77.3	7.7	70.8	5.7	63.0	1.7
50	2.5	97.3	6.5	90.7	5.0	83.0	1.6
63	1.8	123.3	5.6	116.7	4.5	109.0	1.6
80	1.2	156.0	5.0	149.4	4.1	141.8	1.5
100	0.9	197.3	4.7	190.7	4.0	183.1	1.5
125	Not recommended						
160	Not recommended						

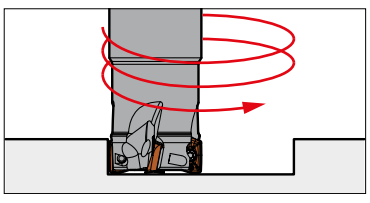
*The table above shows values with corner radius 0.8mm. Helical milling is not recommended for WEZR type products.

■ Plunge Cutting Upper Limit



	Max. ae (mm)
WEZ11 type	3
WEZ17 type	5

■ Precautions for Helical Milling



- For helical milling, if the work diameter is smaller than the standard diameter, there will be a centre uncut portion.
- A prepared centre hole should be made.
- Above the standard diameter, this portion can be removed by traverse cutting with the same cutter.

WEZ 11000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-7° to -11°
	Axial	14° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

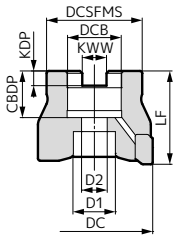


Fig 2

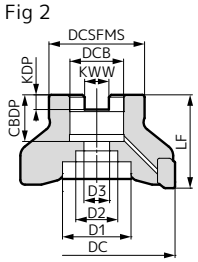
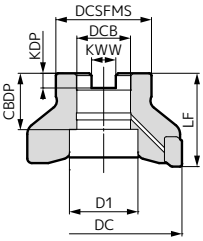


Fig 3



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEZ 11040RS04**	★	**40**	33	40(39.7)	**16**	8.4	5.6	18	14	9	—	4	0.21	1
	11040RS06	★	**40**	33	40(39.7)	**16**	8.4	5.6	18	14	9	—	6	0.20	1
	11050RS05	★	**50**	41	40(39.7)	**22**	10.4	6.3	20	18	11	—	5	0.32	1
	11050RS07	★	**50**	41	40(39.7)	**22**	10.4	6.3	20	18	11	—	7	0.31	1
	11063RS06	★	**63**	50	40(39.7)	**22**	10.4	6.3	20	18	11	—	6	0.58	1
	11063RS08	★	**63**	50	40(39.7)	**22**	10.4	6.3	20	18	11	—	8	0.57	1
	11080RS07	★	*80	55	50(49.7)	**27**	12.4	7	22	20	14	—	7	1.08	1
	11080RS10	★	*80	55	50(49.7)	**27**	12.4	7	22	20	14	—	10	1.07	1
	11100RS09	★	**100**	70	50(49.7)	**32**	14.4	8	32	46	—	—	9	1.57	3
	11100RS12	★	**100**	70	50(49.7)	**32**	14.4	8	32	46	—	—	12	1.56	3
Inch	**WEZ 11080R07**	★	*80	55	50(49.7)	**25.4**	9.5	6	25	20	14	—	7	1.09	1
	11080R10	★	*80	55	50(49.7)	**25.4**	9.5	6	25	20	14	—	10	1.08	1
	11100R09	★	*100	70	63(62.7)	**31.75**	12.7	8	32	46	27	18	9	2.12	2
	11100R12	★	*100	70	63(62.7)	**31.75**	12.7	8	32	46	27	18	12	2.10	2

The LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts.
When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0306IP	**1.5**	TRDR08IP	SUMI-P

Identification Code

WEZ **11** **050** **R** **S** **07**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Number of Teeth

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

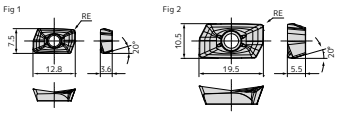
WEZ 11000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	KMS		P		K		MS	MS	MS	MS	N	N		
	Roughing	KMS		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	**11T302PEER-G**	★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
	11T304PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	11T305PEER-G	★							★	▲	▲	—	—		0.5	1
	11T308PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	11T310PEER-G	★							★	▲	▲	—	—		1.0	1
	11T312PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	11T316PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	11T320PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	11T324PEER-G*	★							★	▲	▲	—	—		2.4	1
	11T330PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	2
	11T332PEER-G*	★							★	▲	▲	—	—		3.2	2
AOMT	**11T304PEER-H**	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	11T308PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	11T312PEER-H	★							★	▲	▲	—	—	—	1.2	1
	11T316PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	**11T302PEER-F**	★	—	—	—				★	—		—	—	—	0.2	1
	11T304PEER-F	★	—	—	—				★	—		—	—	—	0.4	1
	11T305PEER-F	★	—	—	—					—		—	—	—	0.5	1
	11T308PEER-F	★	—	—	—				★	—		—	—	—	0.8	1
	11T310PEER-F	★	—	—	—					—		—	—	—	1.0	1
	11T312PEER-F	★	—	—	—				★	—		—	—	—	1.2	1
	11T316PEER-F	★	—	—	—					—		—	—	—	1.6	1
	11T320PEER-F	★	—	—	—				★	—		—	—	—	2.0	1
	11T324PEER-F*	★	—	—	—					—		—	—	—	2.4	1
	11T330PEER-F*	★	—	—	—				★	—		—	—	—	3.0	2
	11T332PEER-F*	★	—	—	—					—		—	—	—	3.2	2
AOET	**11T302PEFR-S**	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	11T304PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	11T305PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	11T308PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	11T310PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	11T312PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	11T316PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	11T320PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	11T324PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	11T330PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
	11T332PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-4° to -9°
	Axial	10° to 15°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

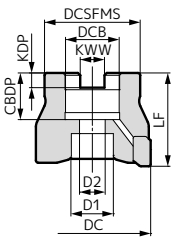


Fig 2

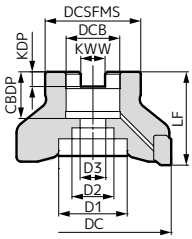


Fig 3

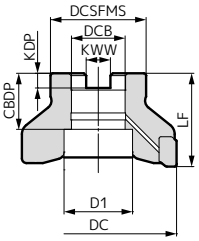


Fig 4

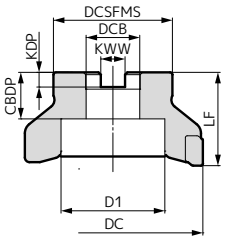
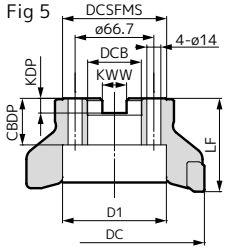


Fig 5



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEZ 17040RS03**	★	**40**	33	40(39.3)	**16**	8.4	5.6	18	14	9	—	3	0.19	1
	17040RS04	★	**40**	33	40(39.3)	**16**	8.4	5.6	18	14	9	—	4	0.16	1
	17050RS03	★	**50**	41	40(39.3)	**22**	10.4	6.3	20	18	11	—	3	0.30	1
	17050RS05	★	**50**	41	40(39.3)	**22**	10.4	6.3	20	18	11	—	5	0.26	1
	17063RS04	★	**63**	50	40(39.3)	**22**	10.4	6.3	20	18	11	—	4	0.54	1
	17063RS06	★	**63**	50	40(39.3)	**22**	10.4	6.3	20	18	11	—	6	0.51	1
	17080RS04	★	*80	55	50(49.3)	**27**	12.4	7	22	20	14	—	4	1.10	1
	17080RS07	★	*80	55	50(49.3)	**27**	12.4	7	22	20	14	—	7	1.05	1
	17100RS05	★	**100**	70	50(49.3)	**32**	14.4	8	32	46	—	—	5	1.58	3
	17100RS08	★	**100**	70	50(49.3)	**32**	14.4	8	32	46	—	—	8	1.57	3
	17125RS06	★	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	6	3.04	1
	17125RS09	★	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	9	3.07	1
	17125RS11	★	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	11	3.02	1
	17160RS08	★	**160**	100	63(62.3)	**40**	16.4	9	29	90	—	—	8	5.24	5
	17160RS10	★	**160**	100	63(62.3)	**40**	16.4	9	29	90	—	—	10	5.31	5
	17160RS12	★	**160**	100	63(62.3)	**40**	16.4	9	29	90	—	—	12	5.26	5
Inch	**WEZ 17080R04**	★	*80	55	50(49.3)	**25.4**	9.5	6	25	20	14	—	4	1.10	1
	17080R07	★	*80	55	50(49.3)	**25.4**	9.5	6	25	20	14	—	7	1.06	1
	17100R05	★	*100	70	63(62.3)	**31.75**	12.7	8	32	46	27	18	5	2.08	2
	17100R08	★	*100	70	63(62.3)	**31.75**	12.7	8	32	46	27	18	8	2.07	2
	17125R06	★	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	6	3.09	1
	17125R09	★	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	9	3.11	1
	17125R11	★	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	11	3.06	1
	17160R08	★	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	8	5.04	4
	17160R10	★	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	10	5.09	4
	17160R12	★	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	12	5.04	4

The LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
WEZ17040RS03	BFTX0409IP	3.0	—	HPS1015	TRB15IP	SUMI-P
WEZ17040RS04						
WEZ17050RS03						
WEZ17050RS05						
WEZ17063RS04						
WEZ17063RS06						
WEZ17080R(S)04						
WEZ17080R(S)07						
WEZ17100R(S)05						
WEZ17100R(S)08						
WEZ17125R(S)06						
WEZ17125R(S)09						
WEZ17125R(S)11						
WEZ17160R(S)08			TRDR15IP	—	—	
WEZ17160R(S)10						
WEZ17160R(S)12						

Identification Code

WEZ 17 100 R S 05

Series Code | Insert Size | Dia. | Feed Direction | Metric Bore | Number of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M K S		P		K		M S		M S					
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	**170502PEER-L**	★	—		—				★	▲	▲	—	—		0.2	1
	170504PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
	170508PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
	170512PEER-L	★	—		—				★	▲	▲	—	—		1.2	1
	170516PEER-L	★	—		—				★	▲	▲	—	—		1.6	1
AOMT	**170502PEER-G**	★		★		★	★	★	★	▲	▲	—	—		0.2	1
	170504PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	170505PEER-G	★							★	▲	▲	—	—		0.5	1
	170508PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	170510PEER-G	★							★	▲	▲	—	—		1.0	1
	170512PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	170516PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	170520PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	170524PEER-G*	★							★	▲	▲	—	—		2.4	1
	170530PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	1
	170532PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.2	1
	170540PEER-G*	★		★		★	★	★	★	▲	▲	—	—		4.0	1
	170550PEER-G*	★		★		★	★	★	★	▲	▲	—	—		5.0	2
	170564PEER-G*	★							★	▲	▲	—	—		6.4	2
AOMT	**170504PEER-H**	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	170508PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	170512PEER-H	★							★	▲	▲	—	—	—	1.2	1
	170516PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	**170502PEER-F**	★	—		—					—		—	—	—	0.2	1
	170504PEER-F	★	—		—				★	—		—	—	—	0.4	1
	170505PEER-F	★	—		—					—		—	—	—	0.5	1
	170508PEER-F	★	—		—				★	—		—	—	—	0.8	1
	170510PEER-F	★	—		—					—		—	—	—	1.0	1
	170512PEER-F	★	—		—				★	—		—	—	—	1.2	1
	170516PEER-F	★	—		—				★	—		—	—	—	1.6	1
	170520PEER-F	★	—		—				★	—		—	—	—	2.0	1
	170524PEER-F*	★	—		—					—		—	—	—	2.4	1
	170530PEER-F*	★	—		—				★	—		—	—	—	3.0	1
	170532PEER-F*	★	—		—				★	—		—	—	—	3.2	1
	170540PEER-F*	★	—		—				★	—		—	—	—	4.0	1
	170550PEER-F*	★	—		—					—		—	—	—	5.0	2
	170564PEER-F*	★	—		—					—		—	—	—	6.4	2
AOET	**170502PEFR-S**	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

Fig 1

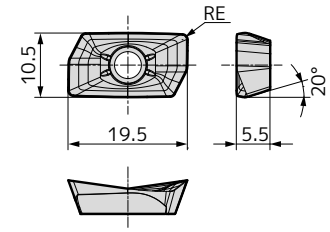
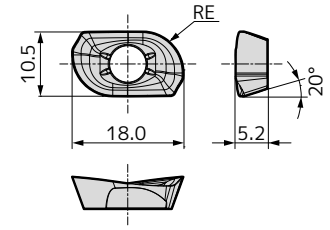


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge,
-F: Medium Finishing, -S: Non-Ferrous Metals.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 11000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-7° to -18°
	Axial	6° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

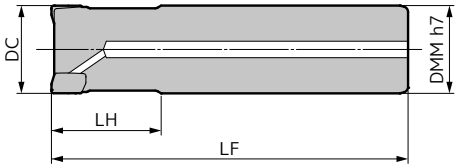
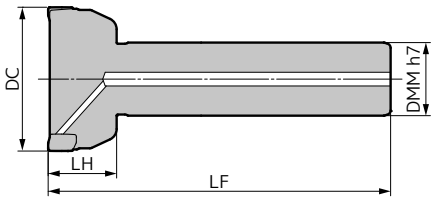


Fig 2



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014E01	★	**14**	16	25(24.7)	80(79.7)	1	0.10	1
11016E02	★	**16**	16	25(24.7)	100(99.7)	2	0.13	1
11016E02-12	★	**16**	12	25(24.7)	100(99.7)	2	0.07	2
11018E02	★	**18**	16	25(24.7)	100(99.7)	2	0.13	2
11020E02	★	**20**	20	30(29.7)	110(109.7)	2	0.23	1
11020E02-16	★	**20**	16	30(29.7)	110(109.7)	2	0.15	2
11020E03	★	**20**	20	30(29.7)	110(109.7)	3	0.22	1
11020E03-16	★	**20**	16	30(29.7)	110(109.7)	3	0.14	2
11022E03	★	**22**	20	30(29.7)	110(109.7)	3	0.23	2
11025E02	★	**25**	25	35(34.7)	120(119.7)	2	0.40	1
11025E03	★	**25**	25	35(34.7)	120(119.7)	3	0.40	1
11025E03-20	★	**25**	20	35(34.7)	120(119.7)	3	0.26	2
11025E04	★	**25**	25	35(34.7)	120(119.7)	4	0.39	1
11025E04-20	★	**25**	20	35(34.7)	120(119.7)	4	0.26	2
11028E04	★	**28**	25	35(34.7)	120(119.7)	4	0.41	2
11030E04	★	**30**	25	40(39.7)	130(129.7)	4	0.46	2
11032E02	★	**32**	32	40(39.7)	130(129.7)	2	0.74	1
11032E03	★	**32**	32	40(39.7)	130(129.7)	3	0.73	1
11032E04	★	**32**	32	40(39.7)	130(129.7)	4	0.73	1
11032E05	★	**32**	32	40(39.7)	130(129.7)	5	0.72	1
11032E05-25	★	**32**	25	40(39.7)	130(129.7)	5	0.46	2
11035E05	★	**35**	32	40(39.7)	130(129.7)	5	0.75	2
11040E02	★	**40**	32	30(29.7)	150(149.7)	2	0.96	2
11040E04	★	**40**	32	30(29.7)	150(149.7)	4	0.94	2
11040E06	★	**40**	32	30(29.7)	150(149.7)	6	0.93	2
11050E05	★	**50**	32	30(29.7)	150(149.7)	5	1.04	2
11050E07	★	**50**	32	30(29.7)	150(149.7)	7	1.04	2
11063E08	★	**63**	32	30(29.7)	150(149.7)	8	1.24	2
11080E10	★	**80**	32	30(29.7)	150(149.7)	10	1.52	2

The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Anti-seizure Cream
WEZ11014E01	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016E02(-12)				
WEZ11018E02				
WEZ11020E02(-16)	BFTX0306IP			
WEZ11020E03(-16)				
WEZ11022E03				
WEZ11025E02				
WEZ11025E03(-20)				
WEZ11025E04(-20)				
WEZ11028E04				
WEZ11030E04				
WEZ11032E02				
WEZ11032E03				
WEZ11032E04				
WEZ11032E05(-25)				
WEZ11035E05				
WEZ11040E02				
WEZ11040E04				
WEZ11040E06				
WEZ11050E05				
WEZ11050E07				
WEZ11063E08				
WEZ11080E10				

Identification Code

WEZ	11	025	E	03	-20
Series Code	Insert Size	Dia.	Shank type	Number of Teeth	Shank Dia.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C2.5 (AOMT11T330PEER)
Corner radius = 3.2: C2.5 (AOMT11T332PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

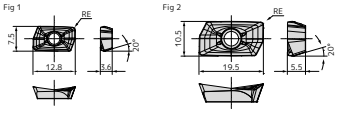
WEZ 11000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	K M S		P		K		M S	M S	M S	M S	N	N		
	Roughing	K M S		P		K			M S		M S				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
11T304PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
11T305PEER-G		★							★	▲	▲	—	—		0.5	1
11T308PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
11T310PEER-G		★							★	▲	▲	—	—		1.0	1
11T312PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
11T316PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
11T320PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
11T324PEER-G*		★							★	▲	▲	—	—		2.4	1
11T330PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	2
11T332PEER-G*		★							★	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
11T308PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
11T312PEER-H		★							★	▲	▲	—	—	—	1.2	1
11T316PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		★	—		—				★	—		—	—	—	0.2	1
11T304PEER-F		★	—		—				★	—		—	—	—	0.4	1
11T305PEER-F		★	—		—					—		—	—	—	0.5	1
11T308PEER-F		★	—		—				★	—		—	—	—	0.8	1
11T310PEER-F		★	—		—					—		—	—	—	1.0	1
11T312PEER-F		★	—		—				★	—		—	—	—	1.2	1
11T316PEER-F		★	—		—					—		—	—	—	1.6	1
11T320PEER-F		★	—		—				★	—		—	—	—	2.0	1
11T324PEER-F*		★	—		—					—		—	—	—	2.4	1
11T330PEER-F*		★	—		—				★	—		—	—	—	3.0	2
11T332PEER-F*		★	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		★	—		—					—		—	—	—	0.2	1
11T304PEER-P16		★	—		—					—		—	—	—	0.4	1
11T305PEER-P16		★	—		—					—		—	—	—	0.5	1
11T308PEER-P16		★	—		—					—		—	—	—	0.8	1
11T310PEER-P16		★	—		—					—		—	—	—	1.0	1
11T312PEER-P16		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		★	—		—					—		—	—	—	0.2	1
11T304PEER-P20		★	—		—					—		—	—	—	0.4	1
11T305PEER-P20		★	—		—					—		—	—	—	0.5	1
11T308PEER-P20		★	—		—					—		—	—	—	0.8	1
11T310PEER-P20		★	—		—					—		—	—	—	1.0	1
11T312PEER-P20		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		★	—		—					—		—	—	—	0.2	1
11T304PEER-P25		★	—		—					—		—	—	—	0.4	1
11T305PEER-P25		★	—		—					—		—	—	—	0.5	1
11T308PEER-P25		★	—		—					—		—	—	—	0.8	1
11T310PEER-P25		★	—		—					—		—	—	—	1.0	1
11T312PEER-P25		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.
* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20. -P25 is applicable to cutter diameters ø25 and ø28.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WEZ 11000ES type for Multi-tasking Machines

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-14° to -18°
	Axial	6° to 10°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

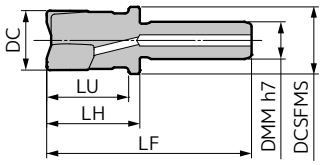
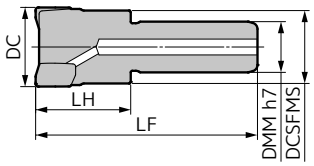


Fig 2



Body (Short Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Shank DMM	Head LH	Effective Length LU	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014ES01-12	★	**14**	18	12	30(29.7)	27	65(64.7)	1	0.05	1
11016ES02-10	★	**16**	18	10	25(24.7)	22	55(54.7)	2	0.04	1
11016ES02-12	★	**16**	18	12	30(29.7)	27	65(64.7)	2	0.05	1
11020ES03-10	★	**20**	18	10	25(24.7)	—	55(54.7)	3	0.04	2
11020ES03-12	★	**20**	18	12	30(29.7)	—	65(64.7)	3	0.06	2
11020ES03-16	★	**20**	23	16	30(29.7)	27	70(69.7)	3	0.10	1
11025ES04-12	★	**25**	23	12	30(29.7)	—	65(64.7)	4	0.09	2
11025ES04-16	★	**25**	23	16	30(29.7)	—	70(69.7)	4	0.12	2

The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ11014ES01-12	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016ES02-10				
WEZ11016ES02-12				
WEZ11020ES03-10	BFTX0306IP			
WEZ11020ES03-12				
WEZ11020ES03-16				
WEZ11025ES04-12				
WEZ11025ES04-16				

Identification Code

WEZ 11 020 E S 03 -12

WEZ	11	020	E	S	03	-12
Series Code	Insert Size	Dia.	Shank type	Short Shank	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



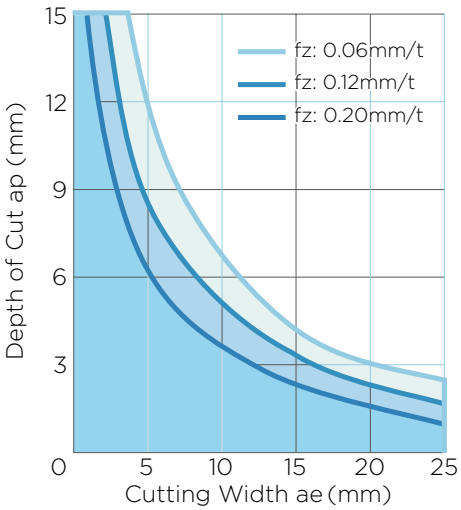
Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

Recommended Cutting Conditions

Tool: WEZ 11016ES02-10
Insert: AOET 11T3OOPEER-F



- For cutting conditions for each work material, see page H56.
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 11000ES type for Multi-tasking Machines

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MSK		P		K		MS	MS	MS	MS	N	N		
	Roughing	MSK		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
11T304PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
11T305PEER-G		★							★	▲	▲	—	—		0.5	1
11T308PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
11T310PEER-G		★							★	▲	▲	—	—		1.0	1
11T312PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
11T316PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
11T320PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
11T324PEER-G*		★							★	▲	▲	—	—		2.4	1
11T330PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	2
11T332PEER-G*		★							★	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
11T308PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
11T312PEER-H		★							★	▲	▲	—	—	—	1.2	1
11T316PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		★	—		—				★	—		—	—	—	0.2	1
11T304PEER-F		★	—		—				★	—		—	—	—	0.4	1
11T305PEER-F		★	—		—					—		—	—	—	0.5	1
11T308PEER-F		★	—		—				★	—		—	—	—	0.8	1
11T310PEER-F		★	—		—					—		—	—	—	1.0	1
11T312PEER-F		★	—		—				★	—		—	—	—	1.2	1
11T316PEER-F		★	—		—					—		—	—	—	1.6	1
11T320PEER-F		★	—		—				★	—		—	—	—	2.0	1
11T324PEER-F*		★	—		—					—		—	—	—	2.4	1
11T330PEER-F*		★	—		—				★	—		—	—	—	3.0	2
11T332PEER-F*		★	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		★	—		—					—		—	—	—	0.2	1
11T304PEER-P16		★	—		—					—		—	—	—	0.4	1
11T305PEER-P16		★	—		—					—		—	—	—	0.5	1
11T308PEER-P16		★	—		—					—		—	—	—	0.8	1
11T310PEER-P16		★	—		—					—		—	—	—	1.0	1
11T312PEER-P16		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		★	—		—					—		—	—	—	0.2	1
11T304PEER-P20		★	—		—					—		—	—	—	0.4	1
11T305PEER-P20		★	—		—					—		—	—	—	0.5	1
11T308PEER-P20		★	—		—					—		—	—	—	0.8	1
11T310PEER-P20		★	—		—					—		—	—	—	1.0	1
11T312PEER-P20		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		★	—		—					—		—	—	—	0.2	1
11T304PEER-P25		★	—		—					—		—	—	—	0.4	1
11T305PEER-P25		★	—		—					—		—	—	—	0.5	1
11T308PEER-P25		★	—		—					—		—	—	—	0.8	1
11T310PEER-P25		★	—		—					—		—	—	—	1.0	1
11T312PEER-P25		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2

Fig 1

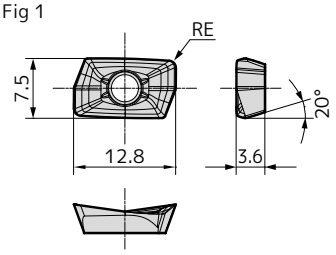
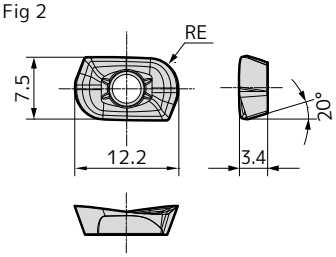


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.

Recommended Cutting Conditions H56 Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20.
-P25 is applicable to cutter diameters ø25 and ø28.
* marked inserts require modification of the cutter body.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 11000EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-7° to -18°
	Axial	6° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

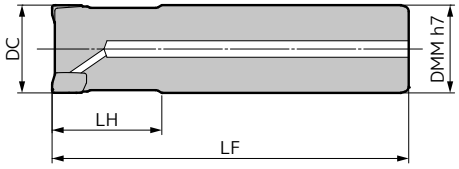
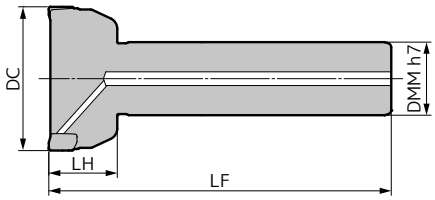


Fig 2



Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014EL01	★	**14**	16	25(24.7)	120(119.7)	1	0.16	1
11016EL02	★	**16**	16	25(24.7)	145(144.7)	2	0.19	1
11016EL02-14	★	**16**	14	25(24.7)	145(144.7)	2	0.15	2
11018EL02	★	**18**	16	25(24.7)	145(144.7)	2	0.20	2
11020EL02	★	**20**	20	40(39.7)	150(149.7)	2	0.31	1
11020EL02-18	★	**20**	18	25(24.7)	150(149.7)	2	0.26	2
11022EL02	★	**22**	20	30(29.7)	150(149.7)	2	0.32	2
11025EL02	★	**25**	25	50(49.7)	170(169.7)	2	0.57	1
11025EL02-22	★	**25**	22	30(29.7)	170(169.7)	2	0.46	2
11025EL03	★	**25**	25	50(49.7)	170(169.7)	3	0.57	1
11028EL02	★	**28**	25	30(29.7)	170(169.7)	2	0.60	2
11030EL02	★	**30**	25	30(29.7)	170(169.7)	2	0.62	2
11032EL02	★	**32**	32	60(59.7)	170(169.7)	2	0.97	1
11032EL02-30	★	**32**	30	30(29.7)	170(169.7)	2	0.88	2
11032EL03	★	**32**	32	60(59.7)	170(169.7)	3	0.96	1
11035EL02	★	**35**	32	30(29.7)	170(169.7)	2	1.02	2
11035EL03	★	**35**	32	30(29.7)	170(169.7)	3	1.00	2
11040EL02	★	**40**	32	30(29.7)	170(169.7)	2	1.08	2
11050EL03	★	**50**	32	30(29.7)	170(169.7)	3	1.19	2

The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ11014EL01	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016EL02(-14)				
WEZ11018EL02				
WEZ11020EL02(-18)	BFTX0306IP			
WEZ11022EL02				
WEZ11025EL02(-22)				
WEZ11025EL03				
WEZ11028EL02				
WEZ11030EL02				
WEZ11032EL02(-30)				
WEZ11032EL03				
WEZ11035EL02				
WEZ11035EL03				
WEZ11040EL02				
WEZ11050EL03				

Identification Code

WEZ 11 025 E L 02 -22

WEZ	11	025	E	L	02	-22
Series Code	Insert Size	Dia.	Shank type	Long Shank	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 11000EL type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MK		P		K		MS	MS	MS	MS	N			
	Roughing	MK		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
11T304PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
11T305PEER-G		★							★	▲	▲	—	—		0.5	1
11T308PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
11T310PEER-G		★							★	▲	▲	—	—		1.0	1
11T312PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
11T316PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
11T320PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
11T324PEER-G*		★							★	▲	▲	—	—		2.4	1
11T330PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	2
11T332PEER-G*		★							★	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
11T308PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
11T312PEER-H		★							★	▲	▲	—	—	—	1.2	1
11T316PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		★	—		—				★	—		—	—	—	0.2	1
11T304PEER-F		★	—		—				★	—		—	—	—	0.4	1
11T305PEER-F		★	—		—					—		—	—	—	0.5	1
11T308PEER-F		★	—		—				★	—		—	—	—	0.8	1
11T310PEER-F		★	—		—					—		—	—	—	1.0	1
11T312PEER-F		★	—		—				★	—		—	—	—	1.2	1
11T316PEER-F		★	—		—					—		—	—	—	1.6	1
11T320PEER-F		★	—		—				★	—		—	—	—	2.0	1
11T324PEER-F*		★	—		—					—		—	—	—	2.4	1
11T330PEER-F*		★	—		—				★	—		—	—	—	3.0	2
11T332PEER-F*		★	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		★	—		—					—		—	—	—	0.2	1
11T304PEER-P16		★	—		—					—		—	—	—	0.4	1
11T305PEER-P16		★	—		—					—		—	—	—	0.5	1
11T308PEER-P16		★	—		—					—		—	—	—	0.8	1
11T310PEER-P16		★	—		—					—		—	—	—	1.0	1
11T312PEER-P16		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		★	—		—					—		—	—	—	0.2	1
11T304PEER-P20		★	—		—					—		—	—	—	0.4	1
11T305PEER-P20		★	—		—					—		—	—	—	0.5	1
11T308PEER-P20		★	—		—					—		—	—	—	0.8	1
11T310PEER-P20		★	—		—					—		—	—	—	1.0	1
11T312PEER-P20		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		★	—		—					—		—	—	—	0.2	1
11T304PEER-P25		★	—		—					—		—	—	—	0.4	1
11T305PEER-P25		★	—		—					—		—	—	—	0.5	1
11T308PEER-P25		★	—		—					—		—	—	—	0.8	1
11T310PEER-P25		★	—		—					—		—	—	—	1.0	1
11T312PEER-P25		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2

Fig 1

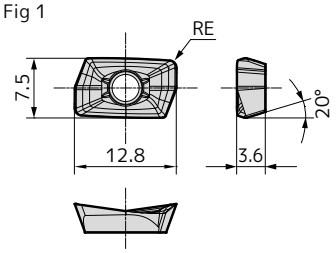
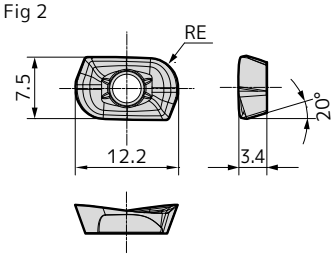


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.

* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20.
-P25 is applicable to cutter diameters ø25 and ø28.

* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-6° to -12°
	Axial	6° to 15°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

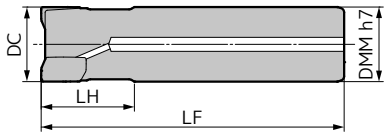
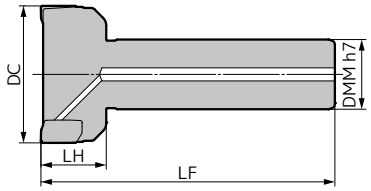


Fig 2



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025E02	★	**25**	25	35(34.3)	120(119.3)	2	0.38	1
17025E02-20	★	**25**	20	35(34.3)	120(119.3)	2	0.25	2
17028E02	★	**28**	25	35(34.3)	120(119.3)	2	0.40	2
17030E03	★	**30**	25	40(39.3)	130(129.3)	3	0.43	2
17032E02	★	**32**	32	40(39.3)	130(129.3)	2	0.71	1
17032E03	★	**32**	32	40(39.3)	130(129.3)	3	0.69	1
17032E03-25	★	**32**	25	40(39.3)	130(129.3)	3	0.44	2
17035E03	★	**35**	32	40(39.3)	130(129.3)	3	0.72	2
17040E03	★	**40**	32	30(29.3)	135(134.3)	3	0.81	2
17040E04	★	**40**	32	30(29.3)	135(134.3)	4	0.79	2
17050E03	★	**50**	32	30(29.3)	135(134.3)	3	0.93	2
17050E03-42	★	**50**	42	30(29.3)	135(134.3)	3	1.41	2
17050E05	★	**50**	32	30(29.3)	135(134.3)	5	0.89	2
17050E05-42	★	**50**	42	30(29.3)	135(134.3)	5	1.37	2
17063E04	★	**63**	32	30(29.3)	135(134.3)	4	1.10	2
17063E04-42	★	**63**	42	30(29.3)	135(134.3)	4	1.58	2
17063E06	★	**63**	32	30(29.3)	135(134.3)	6	1.08	2
17063E06-42	★	**63**	42	30(29.3)	135(134.3)	6	1.56	2
17080E07	★	**80**	32	30(29.3)	135(134.3)	7	1.39	2

The LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025E02(-20)	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17028E02				
WEZ17030E03				
WEZ17032E02	BFTX0409IP			
WEZ17032E03(-25)				
WEZ17035E03				
WEZ17040E03				
WEZ17040E04				
WEZ17050E03(-42)				
WEZ17050E05(-42)				
WEZ17063E04(-42)				
WEZ17063E06(-42)				
WEZ17080E07				

Identification Code

WEZ 17 025 E 02 -20

Series Code	Insert Size	Dia.	Shank type	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	KMS		P		K		MS	MS	MS	MS	N			
	Roughing	KMS		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New!)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		★	—		—				★	▲	▲	—	—		0.2	1
170504PEER-L		★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
170508PEER-L		★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
170512PEER-L		★	—		—				★	▲	▲	—	—		1.2	1
170516PEER-L		★	—		—				★	▲	▲	—	—		1.6	1
AOMT 170502PEER-G		★		★		★	★	★	★	▲	▲	—	—		0.2	1
170504PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
170505PEER-G		★							★	▲	▲	—	—		0.5	1
170508PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
170510PEER-G		★							★	▲	▲	—	—		1.0	1
170512PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
170516PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
170520PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
170524PEER-G*		★							★	▲	▲	—	—		2.4	1
170530PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	1
170532PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.2	1
170540PEER-G*		★		★		★	★	★	★	▲	▲	—	—		4.0	1
170550PEER-G*		★		★		★	★	★	★	▲	▲	—	—		5.0	2
170564PEER-G*		★							★	▲	▲	—	—		6.4	2
AOMT 170504PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
170508PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
170512PEER-H		★							★	▲	▲	—	—	—	1.2	1
170516PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 170502PEER-F		★	—		—					—		—	—	—	0.2	1
170504PEER-F		★	—		—				★	—		—	—	—	0.4	1
170505PEER-F		★	—		—					—		—	—	—	0.5	1
170508PEER-F		★	—		—				★	—		—	—	—	0.8	1
170510PEER-F		★	—		—					—		—	—	—	1.0	1
170512PEER-F		★	—		—				★	—		—	—	—	1.2	1
170516PEER-F		★	—		—				★	—		—	—	—	1.6	1
170520PEER-F		★	—		—				★	—		—	—	—	2.0	1
170524PEER-F*		★	—		—					—		—	—	—	2.4	1
170530PEER-F*		★	—		—				★	—		—	—	—	3.0	1
170532PEER-F*		★	—		—				★	—		—	—	—	3.2	1
170540PEER-F*		★	—		—				★	—		—	—	—	4.0	1
170550PEER-F*		★	—		—					—		—	—	—	5.0	2
170564PEER-F*		★	—		—					—		—	—	—	6.4	2
AOET 170502PEER-P25		★	—		—					—		—	—	—	0.2	1
170504PEER-P25		★	—		—					—		—	—	—	0.4	1
170505PEER-P25		★	—		—					—		—	—	—	0.5	1
170508PEER-P25		★	—		—					—		—	—	—	0.8	1
170510PEER-P25		★	—		—					—		—	—	—	1.0	1
170512PEER-P25		★	—		—					—		—	—	—	1.2	1
AOET 170502PEER-P32		★	—		—					—		—	—	—	0.2	1
170504PEER-P32		★	—		—					—		—	—	—	0.4	1
170505PEER-P32		★	—		—					—		—	—	—	0.5	1
170508PEER-P32		★	—		—					—		—	—	—	0.8	1
170510PEER-P32		★	—		—					—		—	—	—	1.0	1
170512PEER-P32		★	—		—					—		—	—	—	1.2	1
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
170524PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
170530PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
170532PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
170540PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
170550PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
170564PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

Fig 1

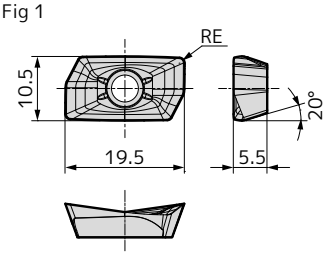
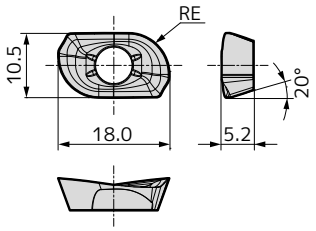


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge,
-F: Medium Finishing, -P25/-P32: High-precision Machining,
-S: Non-Ferrous Metals.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

* -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.
* marked inserts require modification of the cutter body.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000ES type for Multi-tasking Machines

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

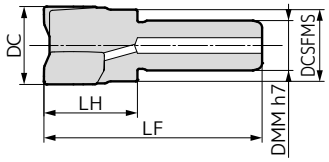
Rake Angle	Radial	-10° to -12°
	Axial	6° to 8°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Body (Short Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025ES02-16	★	**25**	23	16	30(29.3)	70(69.3)	2	0.11	1
17032ES03-16	★	**32**	27	16	30(29.3)	70(69.3)	3	0.14	1

The LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025ES02-16	BFTX0407IP	**3.0**	TRDR15IP	SUMI-P
WEZ17032ES03-16	BFTX0409IP			

Identification Code

WEZ 17 025 E S 02 -16

WEZ	17	025	E	S	02	-16
Series Code	Insert Size	Dia.	Shank type	Short Shank	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



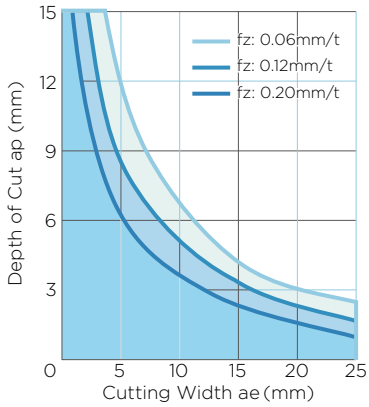
Modify the C chamfering portion.

WEZ17 type

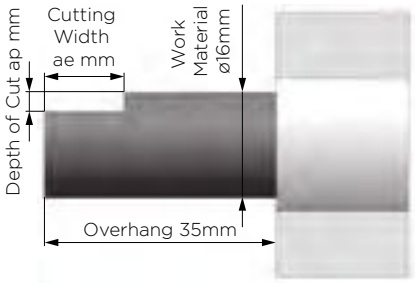
Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

Recommended Cutting Conditions

Tool: WEZ17025ES02-16
Insert: AOET1705OOPEER-F



- For cutting conditions for each work material, see page H56.
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000ES type for Multi-tasking Machines

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M S K		P		K		M S	M S	M S	M S	N	N		
	Roughing	M S K		P		K		M S		M S					
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	**170502PEER-L**	★	—		—				★	▲	▲	—	—		0.2	1
	170504PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
	170508PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
	170512PEER-L	★	—		—				★	▲	▲	—	—		1.2	1
	170516PEER-L	★	—		—				★	▲	▲	—	—		1.6	1
AOMT	**170502PEER-G**	★		★		★	★	★	★	▲	▲	—	—		0.2	1
	170504PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	170505PEER-G	★							★	▲	▲	—	—		0.5	1
	170508PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	170510PEER-G	★							★	▲	▲	—	—		1.0	1
	170512PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	170516PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	170520PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	170524PEER-G*	★							★	▲	▲	—	—		2.4	1
	170530PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	1
	170532PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.2	1
	170540PEER-G*	★		★		★	★	★	★	▲	▲	—	—		4.0	1
	170550PEER-G*	★		★		★	★	★	★	▲	▲	—	—		5.0	2
	170564PEER-G*	★							★	▲	▲	—	—		6.4	2
AOMT	**170504PEER-H**	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	170508PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	170512PEER-H	★							★	▲	▲	—	—	—	1.2	1
	170516PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	**170502PEER-F**	★	—		—					—		—	—	—	0.2	1
	170504PEER-F	★	—		—				★	—		—	—	—	0.4	1
	170505PEER-F	★	—		—					—		—	—	—	0.5	1
	170508PEER-F	★	—		—				★	—		—	—	—	0.8	1
	170510PEER-F	★	—		—					—		—	—	—	1.0	1
	170512PEER-F	★	—		—				★	—		—	—	—	1.2	1
	170516PEER-F	★	—		—				★	—		—	—	—	1.6	1
	170520PEER-F	★	—		—				★	—		—	—	—	2.0	1
	170524PEER-F*	★	—		—					—		—	—	—	2.4	1
	170530PEER-F*	★	—		—				★	—		—	—	—	3.0	1
	170532PEER-F*	★	—		—				★	—		—	—	—	3.2	1
	170540PEER-F*	★	—		—				★	—		—	—	—	4.0	1
	170550PEER-F*	★	—		—					—		—	—	—	5.0	2
	170564PEER-F*	★	—		—					—		—	—	—	6.4	2
AOET	**170502PEER-P25**	★	—		—					—		—	—	—	0.2	1
	170504PEER-P25	★	—		—					—		—	—	—	0.4	1
	170505PEER-P25	★	—		—					—		—	—	—	0.5	1
	170508PEER-P25	★	—		—					—		—	—	—	0.8	1
	170510PEER-P25	★	—		—					—		—	—	—	1.0	1
	170512PEER-P25	★	—		—					—		—	—	—	1.2	1
AOET	**170502PEER-P32**	★	—		—					—		—	—	—	0.2	1
	170504PEER-P32	★	—		—					—		—	—	—	0.4	1
	170505PEER-P32	★	—		—					—		—	—	—	0.5	1
	170508PEER-P32	★	—		—					—		—	—	—	0.8	1
	170510PEER-P32	★	—		—					—		—	—	—	1.0	1
	170512PEER-P32	★	—		—					—		—	—	—	1.2	1
AOET	**170502PEFR-S**	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

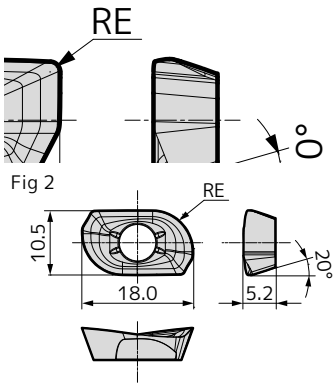


Fig 2

-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P25/-P32: High-precision Machining, -S: Non-Ferrous Metals.

Recommended Cutting Conditions H56

* -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.
* marked inserts require modification of the cutter body.

★ mark: Global stocked item
Blank: Made-to-order item
(N·m) Recommended Tightening Torque (N·m)

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

WEZ 17000EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-6° to -12°
	Axial	6° to 15°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

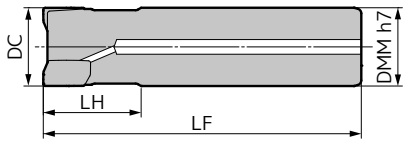
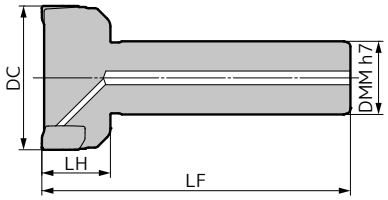


Fig 2



Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025EL02	★	**25**	25	50(49.3)	170(169.3)	2	0.55	1
17028EL02	★	**28**	25	50(49.3)	170(169.3)	2	0.57	2
17030EL02	★	**30**	25	50(49.3)	170(169.3)	2	0.59	2
17032EL02	★	**32**	32	60(59.3)	170(169.3)	2	0.94	1
17032EL02-30	★	**32**	30	50(49.3)	170(169.3)	2	0.85	2
17032EL03	★	**32**	32	60(59.3)	170(169.3)	3	0.92	1
17035EL02	★	**35**	32	50(49.3)	170(169.3)	2	0.98	2
17040EL02	★	**40**	32	50(49.3)	170(169.3)	2	1.09	2
17040EL03	★	**40**	32	50(49.3)	170(169.3)	3	1.08	2
17040EL04	★	**40**	32	50(49.3)	170(169.3)	4	1.05	2
17050EL03	★	**50**	32	50(49.3)	170(169.3)	3	1.29	2
17050EL03-42	★	**50**	42	50(49.3)	170(169.3)	3	1.83	2
17050EL05	★	**50**	32	50(49.3)	170(169.3)	5	1.25	2
17050EL05-42	★	**50**	42	50(49.3)	170(169.3)	5	1.79	2
17063EL04	★	**63**	32	50(49.3)	170(169.3)	4	1.61	2
17063EL04-42	★	**63**	42	50(49.3)	170(169.3)	4	2.16	2
17063EL06	★	**63**	32	50(49.3)	170(169.3)	6	1.58	2
17063EL06-42	★	**63**	42	50(49.3)	170(169.3)	6	2.13	2

The LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025EL02	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17028EL02				
WEZ17030EL02				
WEZ17032EL02(-30)	BFTX0409IP			
WEZ17032EL03				
WEZ17035EL02				
WEZ17040EL02				
WEZ17040EL03				
WEZ17040EL04				
WEZ17050EL03(-42)				
WEZ17050EL05(-42)				
WEZ17063EL04(-42)				
WEZ17063EL06(-42)				

Identification Code

WEZ Series Code | **17** Insert Size | **032** Dia. | **E** Shank type | **L** Long Shank type | **02** Number of Teeth | **-30** Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000EL type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MK		P		K		MS	MS	MS	MS	N	N		
	Roughing	MK		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New!)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		★	—		—				★	▲	▲	—	—		0.2	1
170504PEER-L		★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
170508PEER-L		★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
170512PEER-L		★	—		—				★	▲	▲	—	—		1.2	1
170516PEER-L		★	—		—				★	▲	▲	—	—		1.6	1
AOMT 170502PEER-G		★		★		★	★	★	★	▲	▲	—	—		0.2	1
170504PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
170505PEER-G		★							★	▲	▲	—	—		0.5	1
170508PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
170510PEER-G		★							★	▲	▲	—	—		1.0	1
170512PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
170516PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
170520PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
170524PEER-G*		★							★	▲	▲	—	—		2.4	1
170530PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	1
170532PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.2	1
170540PEER-G*		★		★		★	★	★	★	▲	▲	—	—		4.0	1
170550PEER-G*		★		★		★	★	★	★	▲	▲	—	—		5.0	2
170564PEER-G*		★							★	▲	▲	—	—		6.4	2
AOMT 170504PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
170508PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
170512PEER-H		★							★	▲	▲	—	—	—	1.2	1
170516PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 170502PEER-F		★	—		—					—		—	—	—	0.2	1
170504PEER-F		★	—		—				★	—		—	—	—	0.4	1
170505PEER-F		★	—		—					—		—	—	—	0.5	1
170508PEER-F		★	—		—				★	—		—	—	—	0.8	1
170510PEER-F		★	—		—					—		—	—	—	1.0	1
170512PEER-F		★	—		—				★	—		—	—	—	1.2	1
170516PEER-F		★	—		—				★	—		—	—	—	1.6	1
170520PEER-F		★	—		—				★	—		—	—	—	2.0	1
170524PEER-F*		★	—		—					—		—	—	—	2.4	1
170530PEER-F*		★	—		—				★	—		—	—	—	3.0	1
170532PEER-F*		★	—		—				★	—		—	—	—	3.2	1
170540PEER-F*		★	—		—				★	—		—	—	—	4.0	1
170550PEER-F*		★	—		—					—		—	—	—	5.0	2
170564PEER-F*		★	—		—					—		—	—	—	6.4	2
AOET 170502PEER-P25		★	—		—					—		—	—	—	0.2	1
170504PEER-P25		★	—		—					—		—	—	—	0.4	1
170505PEER-P25		★	—		—					—		—	—	—	0.5	1
170508PEER-P25		★	—		—					—		—	—	—	0.8	1
170510PEER-P25		★	—		—					—		—	—	—	1.0	1
170512PEER-P25		★	—		—					—		—	—	—	1.2	1
AOET 170502PEER-P32		★	—		—					—		—	—	—	0.2	1
170504PEER-P32		★	—		—					—		—	—	—	0.4	1
170505PEER-P32		★	—		—					—		—	—	—	0.5	1
170508PEER-P32		★	—		—					—		—	—	—	0.8	1
170510PEER-P32		★	—		—					—		—	—	—	1.0	1
170512PEER-P32		★	—		—					—		—	—	—	1.2	1
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
170524PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
170530PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
170532PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
170540PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
170550PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
170564PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

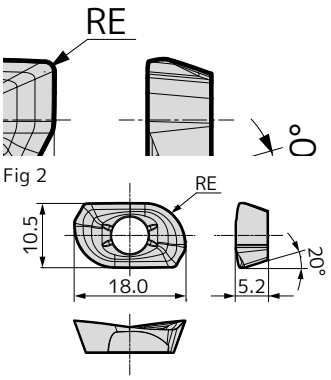


Fig 2

-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P25/-P32: High-precision Machining, -S: Non-Ferrous Metals.

Recommended Cutting Conditions H56

* -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.
* marked inserts require modification of the cutter body.

★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

WEZR series



■ Features

● High-efficiency shoulder milling of deep steps

Inserts for SEC-WaveMill WEZ series are arranged in multiple stages forming a long cutting edge, to enable high-efficiency shoulder milling of deep steps

● Superb chatter resistance

Sharp inserts and irregular pitched body help suppress chatter and vibration

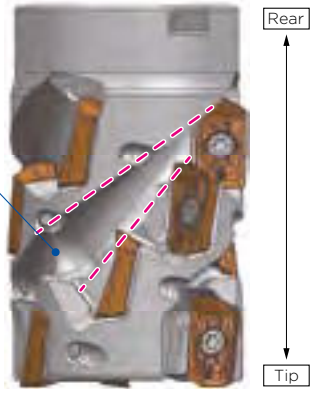
● Support for all types of work materials

A lineup of grades specific to each work material, as well as the general-purpose ACU2500 grade, which is applicable to steel, stainless steel and cast iron

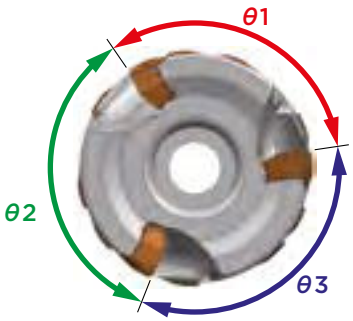
■ Body Features

● Flute shape ensures both rigidity and excellent chip evacuation performance

The chip pocket is larger toward the tip and the body is thicker toward the rear, for excellent chip evacuation and rigidity



● Irregular pitched body suppresses chattering



θ1 ≠ θ2 ≠ θ3

Irregular pitch is used to improve chatter resistance

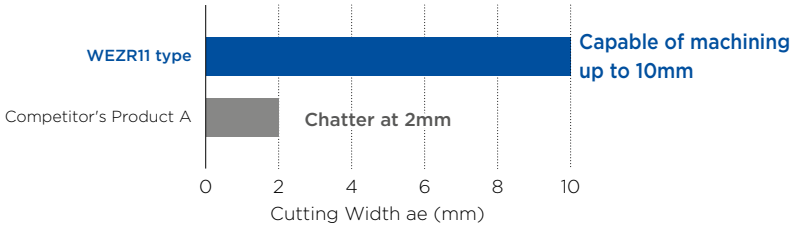
■ Cutting Performance

● Sharp inserts and irregular pitched body provide superb chatter resistance

Capable of stable machining even with BT40 spindle machines

Vertical Machining Centre BT40



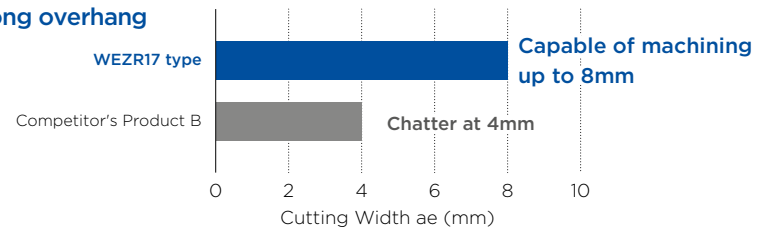


Machine	: Vertical Machining Centre BT40, Work Material: S50C, Overhang Amount: 60mm
Tool	: WEZR 11032E3632Z03 (ø32, 3-teeth 4-stage)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.1mm/t, ap = 30mm, Dry

Capable of stable machining even with a long overhang

Vertical Machining Centre BT50

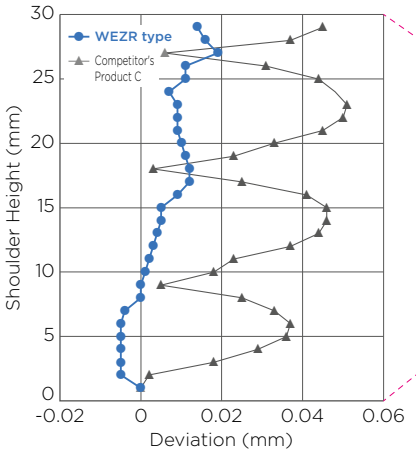


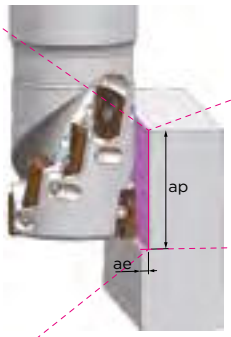


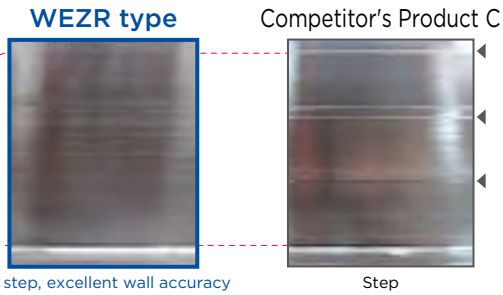
Machine	: Vertical Machining Centre BT50, Work Material: SCM440, Overhang Amount: 235mm
Tool	: WEZR 17063RS5727Z04 (ø63, 4-teeth 4-stage)
Insert	: AOMT 170508PEER-G (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.15mm/t, ap = 50mm, Dry

■ Cutting Performance

● Optimised cutting edge shape and high-precision molding technology result in excellent wall accuracy



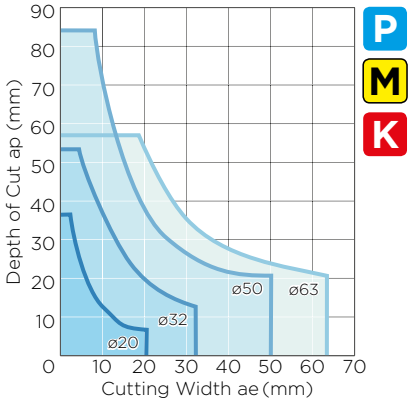




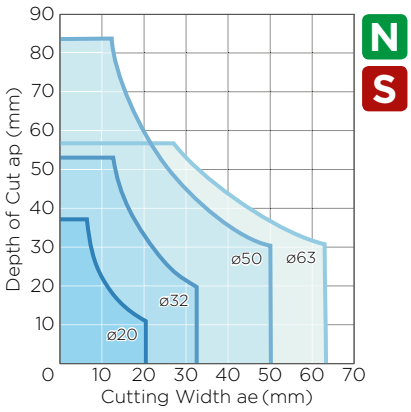
Machine	: Vertical Machining Centre BT50, Work Material: SCM435, Overhang Amount: 60mm
Tool	: WEZR 11032E3632Z02 (ø32, 2-teeth 4-stage)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc = 160m/min, fz = 0.15mm/t, ap = 30mm, ae = 2mm, Dry

■ Application Range

● Steel, stainless steel, cast iron



● Aluminum alloys, titanium alloys



Note
- The depth of cut figures above are guidelines for use with BT50 machine tools. Use a depth of cut of approximately 50% if using BT40.
- For a tool overhang of L/D = 3 or L/D = 4, use a depth of cut of approximately 50% or 25%, respectively.
- There may be cases where machining cannot be performed at the depth of cut figures above, depending on the machine rigidity and work rigidity.

WEZR 11000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

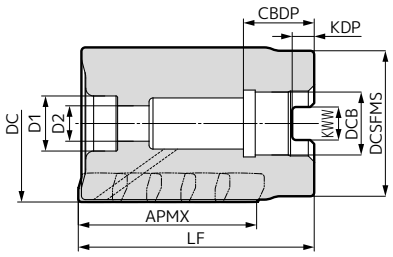
Rake Angle	Radial	-11° to -9°
	Axial	14° to 15°

44-53mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective Number of Teeth	Weight (kg)	Fig
Metric	**WEZR 11040RS4416Z04**	★	**40**	44(43)	37	60(59.7)	16	8.4	5.6	18	14	9	20	5	4	0.27	1
	11050RS5322Z04	★	**50**	53(52)	47	70(69.7)	22	10.4	6.3	20	18	11	24	6	4	0.57	1

The APMX and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Bolt	Anti-seizure Cream
WEZR 11040RS4416Z04 WEZR 11050RS5322Z04	BFTX0306IP	**1.5**	TRDR08IP	BX0850 BX1060	SUMI-P

Identification Code

WEZR **11** **040** **R** **S** **44** **16** **Z04**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Size	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.08 - **0.12** - 0.20	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.08 - **0.12** - 0.20	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

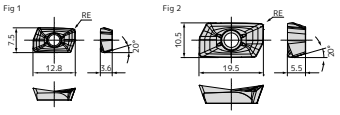
WEZR 11000RS type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M K S		P		K			M S		M S				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	**11T302PEER-G**	★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
	11T304PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	11T305PEER-G	★							★	▲	▲	—	—		0.5	1
	11T308PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	11T310PEER-G	★							★	▲	▲	—	—		1.0	1
	11T312PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	11T316PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	11T320PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	11T324PEER-G*	★							★	▲	▲	—	—		2.4	1
	11T330PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	2
	11T332PEER-G*	★							★	▲	▲	—	—		3.2	2
AOMT	**11T304PEER-H**	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	11T308PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	11T312PEER-H	★							★	▲	▲	—	—	—	1.2	1
	11T316PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	**11T302PEER-F**	★	—	—	—				★	—		—	—	—	0.2	1
	11T304PEER-F	★	—		—				★	—		—	—	—	0.4	1
	11T305PEER-F	★	—		—					—		—	—	—	0.5	1
	11T308PEER-F	★	—		—				★	—		—	—	—	0.8	1
	11T310PEER-F	★	—		—					—		—	—	—	1.0	1
	11T312PEER-F	★	—		—				★	—		—	—	—	1.2	1
	11T316PEER-F	★	—		—					—		—	—	—	1.6	1
	11T320PEER-F	★	—		—				★	—		—	—	—	2.0	1
	11T324PEER-F*	★	—		—					—		—	—	—	2.4	1
	11T330PEER-F*	★	—		—				★	—		—	—	—	3.0	2
	11T332PEER-F*	★	—		—					—		—	—	—	3.2	2
AOET	**11T302PEFR-S**	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	11T304PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	11T305PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	11T308PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	11T310PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	11T312PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	11T316PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	11T320PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	11T324PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	11T330PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
	11T332PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H76
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZR 17000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

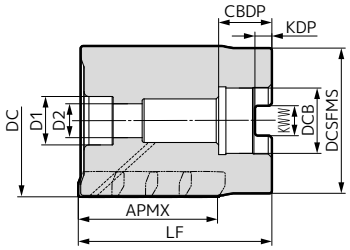
Rake Angle		
	Radial	-8° to -6°
	Axial	7° to 15°

29-57mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WEZR 17050RS2922Z04**	★	**50**	29(28)	47	50(49.3)	22	10.4	6.3	20	18	11	8	2	4	0.35	1
	17050RS5722Z02	★	**50**	57(56)	47	80(79.3)	22	10.4	6.3	20	18	11	8	4	2	0.70	1
	17050RS5722Z03	★	**50**	57(56)	47	80(79.3)	22	10.4	6.3	20	18	11	12	4	3	0.59	1
	17063RS2927Z05	★	**63**	29(28)	60	55(54.3)	27	12.4	7	22	20	14	10	2	5	0.74	1
	17063RS5727Z03	★	**63**	57(56)	60	80(79.3)	27	12.4	7	22	20	14	12	4	3	1.11	1
	17063RS5727Z04	★	**63**	57(56)	60	80(79.3)	27	12.4	7	22	20	14	16	4	4	1.05	1
	17080RS5627Z05	★	**80**	56(55)	70	80(79.3)	27	12.4	7	22	20	14	20	4	5	1.85	1
	17080RS5632Z05	★	**80**	56(55)	70	80(79.3)	32	14.4	8	26	25	18	20	4	5	1.76	1

The APMX and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seizure Cream
							
WEZR 17050RS2922Z04	BFTX0409IP	**3.0**	—	HPS1015	TRB15IP	BX1045	SUMI-P
WEZR 17050RS5722Z02						BX1070	
WEZR 17050RS5722Z03							
WEZR 17063RS2927Z05						BX1240	
WEZR 17063RS5727Z03							
WEZR 17063RS5727Z04						BX1265	
WEZR 17080RS5627Z05			TRDR15IP	—	—		
WEZR 17080RS5632Z05						BX1660	

Identification Code

WEZR **17** **050** **R** **S** **29** **22** **Z04**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Size	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.10 - **0.20** - 0.30	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.10 - **0.20** - 0.30	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WEZR 17000RS type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MK		P		K		MS	MS	MS	MS	N	N		
	Roughing	MK		P		K			MS		MS				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	**170502PEER-L**	★	—		—				★	▲	▲	—	—		0.2	1
	170504PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
	170508PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
	170512PEER-L	★	—		—				★	▲	▲	—	—		1.2	1
	170516PEER-L	★	—		—				★	▲	▲	—	—		1.6	1
AOMT	**170502PEER-G**	★		★		★	★	★	★	▲	▲	—	—		0.2	1
	170504PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	170505PEER-G	★							★	▲	▲	—	—		0.5	1
	170508PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	170510PEER-G	★							★	▲	▲	—	—		1.0	1
	170512PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	170516PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	170520PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	170524PEER-G*	★							★	▲	▲	—	—		2.4	1
	170530PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	1
	170532PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.2	1
	170540PEER-G*	★		★		★	★	★	★	▲	▲	—	—		4.0	1
	170550PEER-G*	★		★		★	★	★	★	▲	▲	—	—		5.0	2
	170564PEER-G*	★							★	▲	▲	—	—		6.4	2
AOMT	**170504PEER-H**	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	170508PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	170512PEER-H	★							★	▲	▲	—	—	—	1.2	1
	170516PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	**170502PEER-F**	★	—		—					—		—	—	—	0.2	1
	170504PEER-F	★	—		—				★	—		—	—	—	0.4	1
	170505PEER-F	★	—		—					—		—	—	—	0.5	1
	170508PEER-F	★	—		—				★	—		—	—	—	0.8	1
	170510PEER-F	★	—		—					—		—	—	—	1.0	1
	170512PEER-F	★	—		—				★	—		—	—	—	1.2	1
	170516PEER-F	★	—		—				★	—		—	—	—	1.6	1
	170520PEER-F	★	—		—				★	—		—	—	—	2.0	1
	170524PEER-F*	★	—		—					—		—	—	—	2.4	1
	170530PEER-F*	★	—		—				★	—		—	—	—	3.0	1
	170532PEER-F*	★	—		—				★	—		—	—	—	3.2	1
	170540PEER-F*	★	—		—				★	—		—	—	—	4.0	1
	170550PEER-F*	★	—		—					—		—	—	—	5.0	2
	170564PEER-F*	★	—		—					—		—	—	—	6.4	2
AOET	**170502PEFR-S**	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

Fig 1

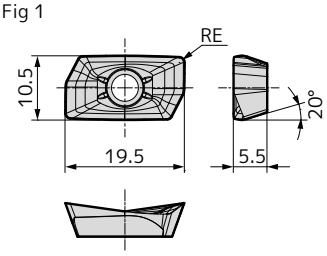
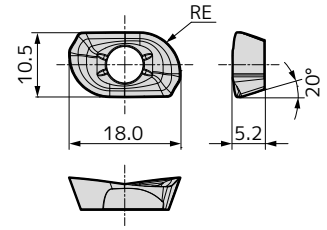


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H78
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZR 11000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-15° to -11°
	Axial	8° to 14°

19-61mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1

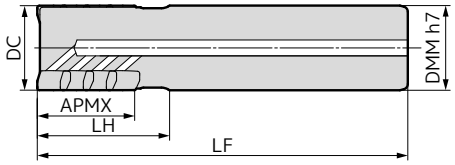
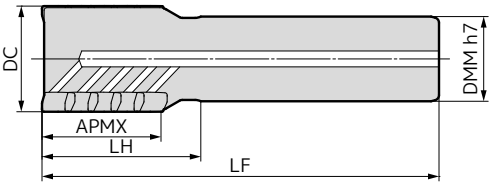


Fig 2



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WEZR 11020E1920Z02	★	**20**	19(18)	20	30(29.7)	110(109.7)	4	2	2	0.22	1
11020E3620Z01	★	**20**	36(35)	20	45(44.7)	125(124.7)	4	4	1	0.24	1
11025E2725Z02	★	**25**	27(26)	25	40(39.7)	130(129.7)	6	3	2	0.41	1
11025E3625Z02	★	**25**	36(35)	25	50(49.7)	140(139.7)	8	4	2	0.42	1
11030E5325Z02	★	**30**	53(52)	25	65(64.7)	155(154.7)	12	6	2	0.52	2
11032E3632Z02	★	**32**	36(35)	32	50(49.7)	140(139.7)	8	4	2	0.74	1
11032E3632Z03	★	**32**	36(35)	32	50(49.7)	140(139.7)	12	4	3	0.71	1
11032E5332Z02	★	**32**	53(52)	32	70(69.7)	160(159.7)	12	6	2	0.90	1
11035E5332Z03	★	**35**	53(52)	32	65(64.7)	155(154.7)	18	6	3	0.88	2
11040E4432Z03	★	**40**	44(43)	32	60(59.7)	150(149.7)	15	5	3	0.87	2
11040E4432Z04	★	**40**	44(43)	32	60(59.7)	150(149.7)	20	5	4	0.85	2
11040E6132Z03	★	**40**	61(60)	32	75(74.7)	165(164.7)	21	7	3	0.95	2

The APMX, LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**1.5**	TRDR08IP	SUMI-P

Identification Code

WEZR **11** **032** **E** **36** **32** **Z02**

Series Code	Insert Size	Dia.	Shank type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.08 - **0.12** - 0.20	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.08 - **0.12** - 0.20	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note

- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)

Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

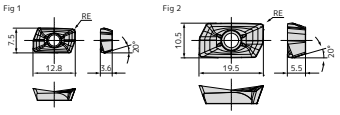
WEZR 11000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MS		P		K		MS	MS	MS	N	N			
	Roughing	MS		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	11T302PEER-G	★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
	11T304PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	11T305PEER-G	★							★	▲	▲	—	—		0.5	1
	11T308PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	11T310PEER-G	★							★	▲	▲	—	—		1.0	1
	11T312PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	11T316PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	11T320PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	11T324PEER-G*	★							★	▲	▲	—	—		2.4	1
	11T330PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	2
	11T332PEER-G*	★							★	▲	▲	—	—		3.2	2
AOMT	11T304PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	11T308PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	11T312PEER-H	★							★	▲	▲	—	—	—	1.2	1
	11T316PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	11T302PEER-F	★	—		—				★	—		—	—	—	0.2	1
	11T304PEER-F	★	—		—				★	—		—	—	—	0.4	1
	11T305PEER-F	★	—		—					—		—	—	—	0.5	1
	11T308PEER-F	★	—		—				★	—		—	—	—	0.8	1
	11T310PEER-F	★	—		—					—		—	—	—	1.0	1
	11T312PEER-F	★	—		—				★	—		—	—	—	1.2	1
	11T316PEER-F	★	—		—					—		—	—	—	1.6	1
	11T320PEER-F	★	—		—				★	—		—	—	—	2.0	1
	11T324PEER-F*	★	—		—					—		—	—	—	2.4	1
	11T330PEER-F*	★	—		—				★	—		—	—	—	3.0	2
	11T332PEER-F*	★	—		—					—		—	—	—	3.2	2
AOET	11T302PEER-P20	★	—		—					—		—	—	—	0.2	1
	11T304PEER-P20	★	—		—					—		—	—	—	0.4	1
	11T305PEER-P20	★	—		—					—		—	—	—	0.5	1
	11T308PEER-P20	★	—		—					—		—	—	—	0.8	1
	11T310PEER-P20	★	—		—					—		—	—	—	1.0	1
	11T312PEER-P20	★	—		—					—		—	—	—	1.2	1
AOET	11T302PEER-P25	★	—		—					—		—	—	—	0.2	1
	11T304PEER-P25	★	—		—					—		—	—	—	0.4	1
	11T305PEER-P25	★	—		—					—		—	—	—	0.5	1
	11T308PEER-P25	★	—		—					—		—	—	—	0.8	1
	11T310PEER-P25	★	—		—					—		—	—	—	1.0	1
	11T312PEER-P25	★	—		—					—		—	—	—	1.2	1
AOET	11T302PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	11T304PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	11T305PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	11T308PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	11T310PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	11T312PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	11T316PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	11T320PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	11T324PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	11T330PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
	11T332PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P20/-P25: High-precision Machining,
-S: Non-Ferrous Metals.
* -P20 is applicable to cutter diameter ø20. -P25 is applicable to cutter diameter ø25.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H80
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WEZR 17000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

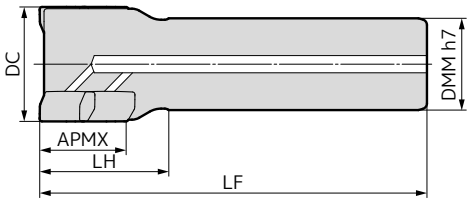
Rake Angle	Radial	-9° to -8°
	Axial	10° to 12°

29-84mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WEZR 17040E2932Z03	★	**40**	29(28)	32	45(44.3)	135(134.3)	6	2	3	0.75	1
17040E4332Z02	★	**40**	43(42)	32	60(59.3)	150(149.3)	6	3	2	0.86	1
17050E5742Z03	★	**50**	57(56)	42	75(74.3)	165(164.3)	12	4	3	1.58	1
17050E8442Z02	★	**50**	84(83)	42	105(104.3)	195(194.3)	12	6	2	1.94	1

The APMX, LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

WEZR **17** **040** **E** **29** **32** **Z03**

Series Code	Insert Size	Dia.	Shank type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.10 - **0.20** - 0.30	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.10 - **0.20** - 0.30	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note

- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)

Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZR 17000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	KM		P		K		MS	MS	MS	MS	N	N		
	Roughing	KM		P		K			MS		MS				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	170502PEER-L	★	—		—				★	▲	▲	—	—		0.2	1
	170504PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
	170508PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
	170512PEER-L	★	—		—				★	▲	▲	—	—		1.2	1
	170516PEER-L	★	—		—				★	▲	▲	—	—		1.6	1
AOMT	170502PEER-G	★		★		★	★	★	★	▲	▲	—	—		0.2	1
	170504PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	170505PEER-G	★							★	▲	▲	—	—		0.5	1
	170508PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	170510PEER-G	★							★	▲	▲	—	—		1.0	1
	170512PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	170516PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	170520PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	170524PEER-G*	★							★	▲	▲	—	—		2.4	1
	170530PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	1
	170532PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.2	1
	170540PEER-G*	★		★		★	★	★	★	▲	▲	—	—		4.0	1
	170550PEER-G*	★		★		★	★	★	★	▲	▲	—	—		5.0	2
	170564PEER-G*	★							★	▲	▲	—	—		6.4	2
AOMT	170504PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	170508PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	170512PEER-H	★							★	▲	▲	—	—	—	1.2	1
	170516PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	170502PEER-F	★	—		—					—		—	—	—	0.2	1
	170504PEER-F	★	—		—				★	—		—	—	—	0.4	1
	170505PEER-F	★	—		—					—		—	—	—	0.5	1
	170508PEER-F	★	—		—				★	—		—	—	—	0.8	1
	170510PEER-F	★	—		—					—		—	—	—	1.0	1
	170512PEER-F	★	—		—				★	—		—	—	—	1.2	1
	170516PEER-F	★	—		—				★	—		—	—	—	1.6	1
	170520PEER-F	★	—		—				★	—		—	—	—	2.0	1
	170524PEER-F*	★	—		—					—		—	—	—	2.4	1
	170530PEER-F*	★	—		—				★	—		—	—	—	3.0	1
	170532PEER-F*	★	—		—				★	—		—	—	—	3.2	1
	170540PEER-F*	★	—		—				★	—		—	—	—	4.0	1
	170550PEER-F*	★	—		—					—		—	—	—	5.0	2
	170564PEER-F*	★	—		—					—		—	—	—	6.4	2
AOET	170502PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

Fig 1

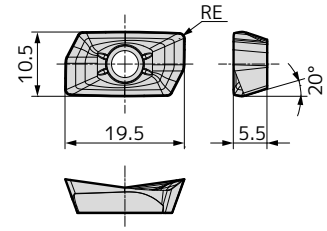
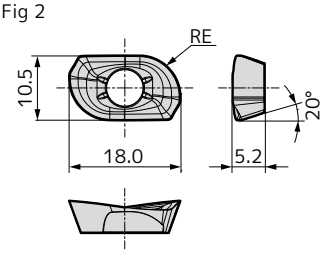


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H82
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill WEZR series Repeater Made-to-Order Request Sheet (1)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

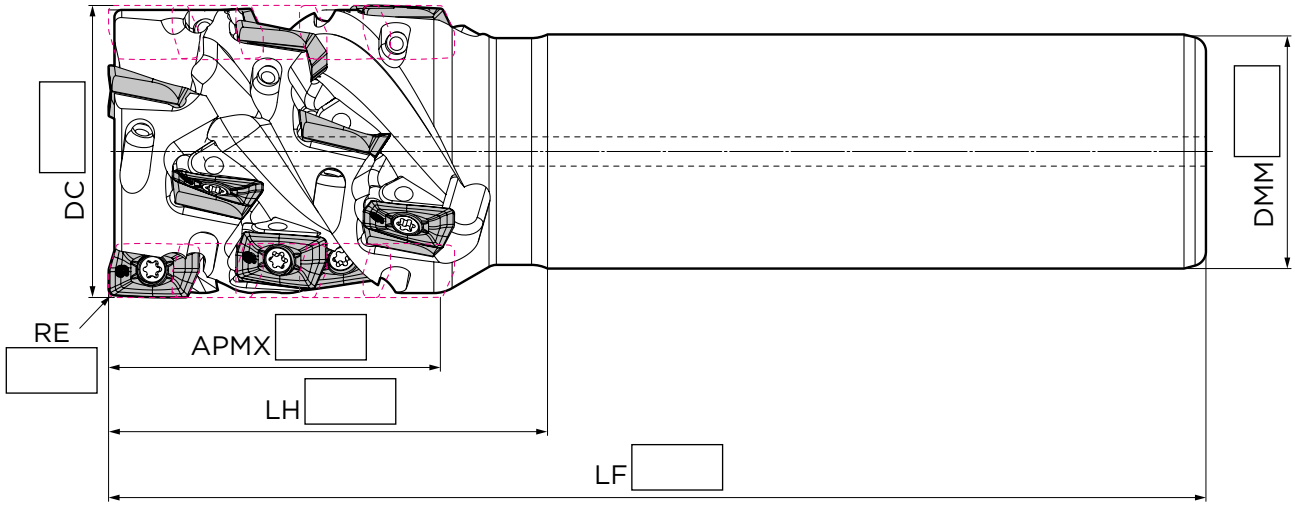


■ Reference Specifications

*1: The max. effective no. of teeth below is based on standard insert stage configurations.

Applicable Inserts	Dia. (mm) DC	Max. Depth of Cut (mm) APMX	Total No. of Teeth	Insert Stages	Max. Effective No. of Teeth *1	Specifications Shell	Specifications Shank
AOMT11 AOET11 (Refer to page H81)	20	19	4	2	2		○
	25	27	6	3	2		○
	32	36	12	4	3		○
	40	44	20	5	4	○	○
	50	53	24	6	4	○	
AOMT17 AOET17 (Refer to page H83)	40	43	6	3	2		○
	50	57	12	4	3	○	○
	63	57	16	4	4	○	
	80	56	20	4	5	○	

☑ **Shank** Refer to the reference specifications above.



Effective No. of Teeth Desired: ☐, Coolant Hole: Yes ☑ No ☑

- The tip insert corner radius (RE) can be selected. (Applicable size: Refer to page H51 ■ Product Range) Other inserts are all RE = 0.8mm or less.

■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

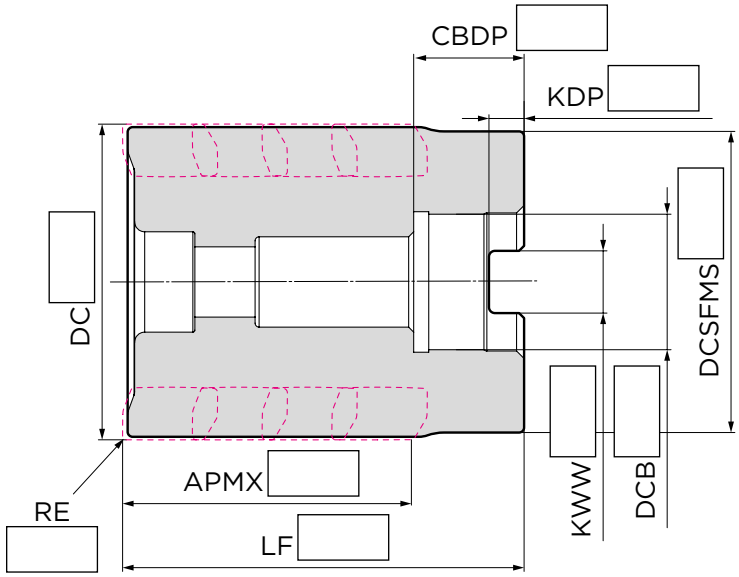
SEC-WaveMill WEZR series Repeater Made-to-Order Request Sheet (2)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.
Feel free to contact us for other shapes or dimensions or with other requests.

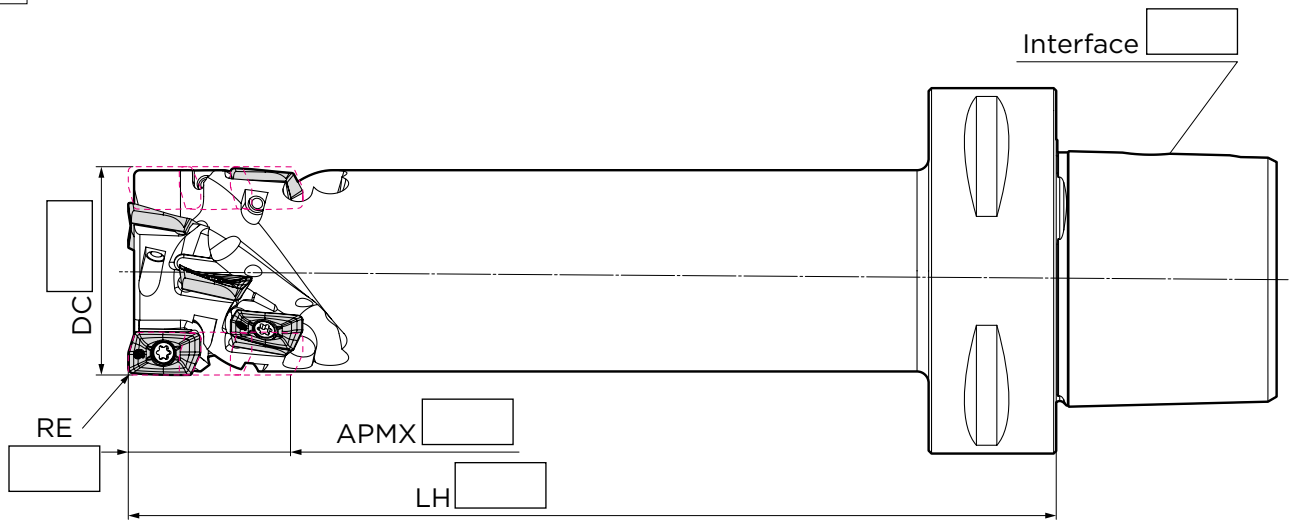
Company Name/Contact

☑ **Shell** Refer to the reference specifications on page H84.



Effective No. of Teeth Desired: ☐, Coolant Hole: Yes ☑ No ☑

☑ **Integrated Arbor** Refer to the reference specifications on page H84.



Effective No. of Teeth Desired: ☐, Coolant Hole: Yes ☑ No ☑

- The tip insert corner radius (RE) can be selected.
  (Applicable size: Refer to page H51 ■ Product Range)
  Other inserts are all RE = 0.8mm or less.

■ Accessories

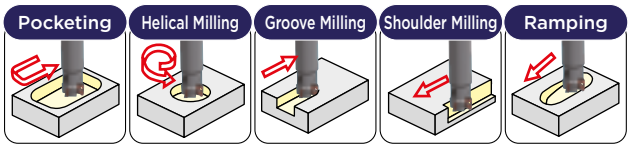
Flat Insert Screw	Wrench	Anti-seizure Cream
		



■ Features

Utilising an insert with a strong cutting edge design coupled with a high rigidity body, for stable and high-efficiency milling with low cutting force.
The improved body and insert accuracy realise high accuracy and smooth surface finish, supporting various machining with a selection of 6 types of chipbreakers and 9 milling grades.

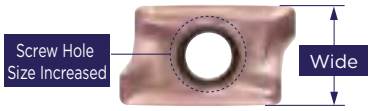
Compatible with Wide Range of Milling

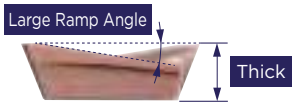


Higher Accuracy Cutting Edge with Both Sharpness and Cutting Edge Strength

Unique curved cutting edge design lowers cutting force yet improves cutting edge strength.
Achieves high quality machined surface with high precision cutting edge.
Smooth deep groove milling even with low-rigidity machines

High-precision Curved Cutting Edge | High Rake Wave Cutting Edge





Coolant Holes are a Standard Feature for the Whole Series

Improved chip evacuation with air or coolant supply

Highly Durable Body

Special surface treatment improves corrosion resistance and scratch resistance
Increased screw size improves clamping force and durability

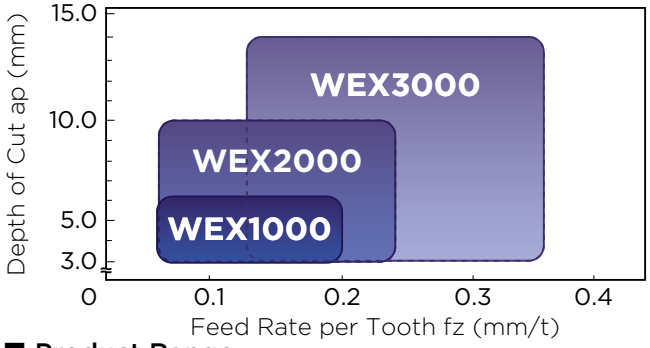
WEX1000 Series

Enables multiple teeth high-efficiency milling for small stock removal amounts

Wide Variety of Inserts

6 types of chipbreaker and 9 milling grades available for a wide range of applications and work materials

■ WEX series Application Range (Shoulder Milling)



■ WEX1000 Number of Teeth

Dia.	Number of Teeth: WEX1000E Standard type Max. Depth of Cut: 6.0mm	WEX1000EL Long type Max. Depth of Cut: 6.0mm	WEX2000E Standard type Max. Depth of Cut: 10.0mm
ø10mm	2	2	—
ø12mm	3	2	—
ø14mm	3	3	1
ø16mm	4	3	2

■ Product Range

Type	Cat. No.	Description	Dia. (mm) ø10	ø12	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	Shape
Shell	WEX 1000F	Standard type											8		10	12	14				
	WEX 2000F	Standard type													6	7	8				
	WEX 3000F	Standard type													4	5	6				
	WEX 3000R (Inch)	Standard type																4	5	6	
	WEXF 3000R (Inch)	Fine Pitch																7	8	9	
Shank	WEX 1000E	Standard type	2	3	3	4	4	5		7											
	WEX 1000EL	Long type	2	2	3	3	3	4													
	WEX 2000E	Standard type			1	2	2	3	3	4	4	4	5		6	7	8				
	WEX 2000EL	Long type			1	2	2	2	2	2	2	2	2		2						
	WEX 3000E	Standard type								2*	2	3	3*	3	4	5	6				
	WEX 3000ES	Short type														5*	6*				
	WEX 3000EL	Long type								2	2	2	2	2	2						
	WEX 3000E-C	Coarse Pitch type													3	3	4				
	WEX 3000ES-C	Short & Coarse Pitch type														3*	4*				
Modular	WEX 2000M	Modular type				2	2	3	3	4	4	4	5		6						
	WEX 3000M	Modular type								2	2	3	3	3	4						







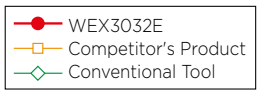
Number in ●●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available Modular type H262

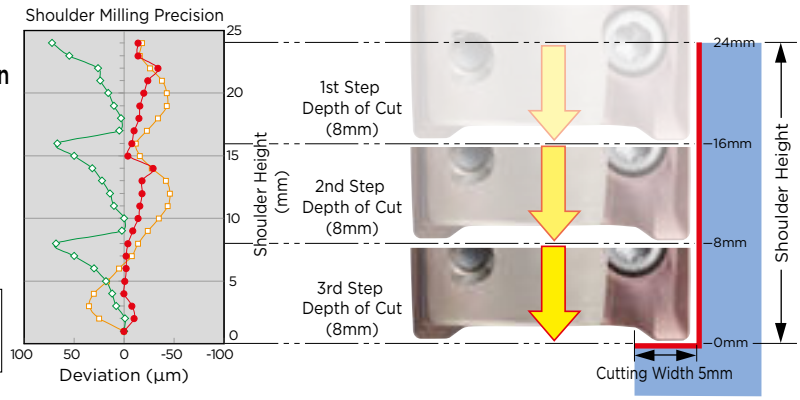
WEX series

■ Cutting Performance

(1) Shoulder Milling Precision

High-precision cutting edges provide very small step marks
(less than half that of competitors' products)

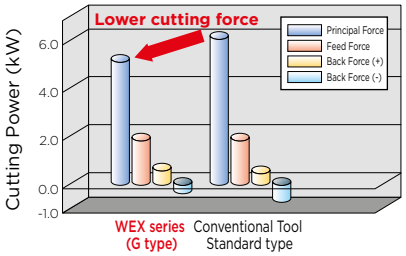




Cutting Conditions
Work Material: SS400
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: vc = 150m/min
Feed Rate: fz = 0.15mm/t (vf = 675mm/min)
Cutting Width: ae = 5mm
Depth of Cut: ap = 8mm x 3 times
Dry

(2) Cutting force

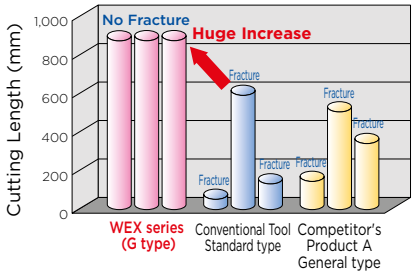
Cutting force (principal force) is approximately 15% lower than conventional tools



Cutting Conditions
Work Material: S50C
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: vc = 200m/min
Feed Rate: fz = 0.2mm/t (vf = 1,200mm/min)
Cutting Width: ae = 8mm
Depth of Cut: ap = 10mm, Dry

(3) Fracture resistance

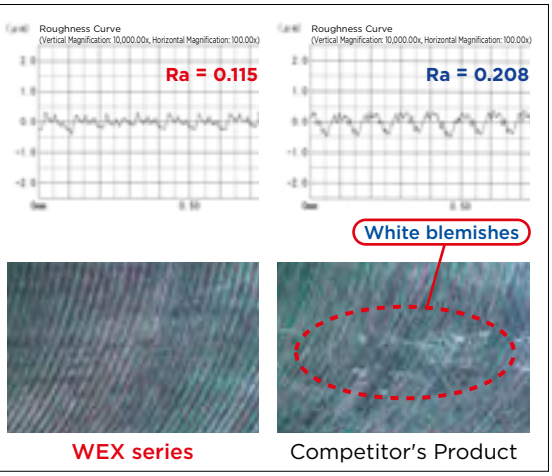
Huge increase in fracture resistance with improved cutting edge strength



Cutting Conditions
Work Material: SCM440
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: vc = 100m/min
Feed Rate: fz = 0.4mm/t (vf = 1,260mm/min)
Cutting Width: ae = 25mm
Depth of Cut: ap = 3mm, Dry

(4) Surface finish (aluminum alloy milling)

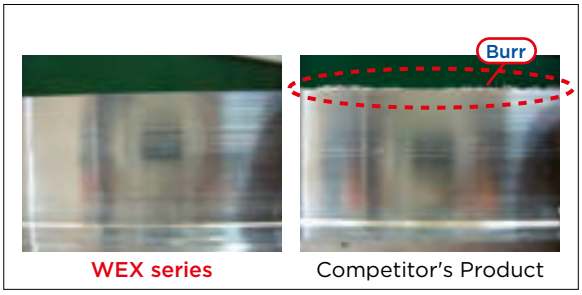
Smooth surface finish free of white blemishes



Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: vc = 800m/min
Feed Rate: fz = 0.1mm/t (vf = 2,400mm/min)
Cutting Width: ae = 16mm
Depth of Cut: ap = 10mm, Dry

(5) Wall surface burrs (aluminum alloy milling)

High rake edge significantly reduces burrs

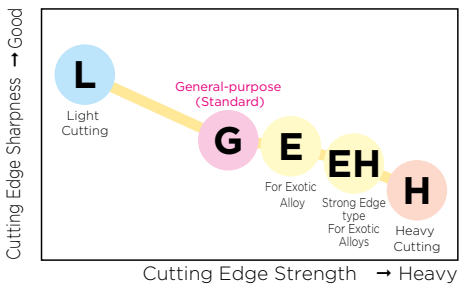


Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: vc = 800m/min
Feed Rate: fz = 0.1mm/t (vf = 2,400mm/min)
Cutting Width: ae = 5mm
Depth of Cut: ap = 12mm, Dry

■ Chipbreaker Selection

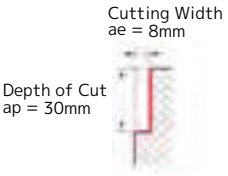
Work Material	P K			M S		N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	**Main Chipbreaker** General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	Light Cutting to General-purpose	Heavy Interrupted Machining	Aluminum Alloy and Non-Ferrous Metal
Features	Low Cutting Force	General-purpose type	High Strength type	General-purpose type For Exotic Alloys	Strong Edge type For Exotic Alloys	High Rake type
Chipbreaker	**L type**	**G type**	**H type**	**E type**	**EH type**	**S type**
1000 series Cross Section	25°	0.05mm 25°	0.05mm 15°	-	-	25°
2000 series Cross Section	-	0.05mm 28°	0.2mm 20°	0.05mm 17°	0.1mm 17°	27°
3000 series Cross Section	0.05mm 25°	0.15mm 20°	0.24mm 5°	0.2mm 14°	0.2mm 8°	30°

■ Chipbreaker Selection Guide



■ Recommended Cutting Conditions

WEX1000



Tool: WEX1012E, Insert: AX□T0602

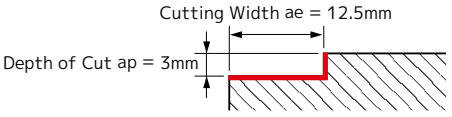
Cutting Conditions: Depth of Cut ap = 4mm, Cutting Width ae = 1mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed Rate per tooth fz (mm/t)																							
					0.08	0.12	0.16	0.08	0.12	0.16	0.08	0.12	0.16	0.10	0.15	0.20	0.10	0.15	0.20	0.08	0.10	0.12	0.08	0.10	0.12	0.05	0.10	0.15
					Cutting Speed vc (m/min)																							
P	Steel, Carbon Steel	S15C	125	G	260	240	220	240	220	200	220	200	180															
		S45C	190	G	200	180	160	180	160	140	180	160	140															
		S45C Hardened	250	G	180	120	140	160	140	120	150	130	110															
		S75C	270	G	160	140	120	150	130	110	130	110	110															
		S75C Hardened	300	G	100	80	70	90	70	60	70	60	50															
	Low Alloy Steel (SCM, SNCM)		180	G	200	180	160	180	160	150	160	150	130															
		SCM, SNCM Hardened	275	G	130	110	90	120	100	90	100	90	80															
		SCM, SNCM Hardened	300	G	120	100	80	100	90	80	90	80	60															
		SCM, SNCM Hardened	350	G	90	80	60	80	70	60	70	60	40															
	High Alloy Steel (SKD, SKT, SKH)		200	G	180	170	160	170	160	130	150	140	120															
		SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30															
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																170	150	120	140	130	110			
		SUS403 and Others (Martensitic/Hardened)	240	E																140	120	100	120	100	90			
		SUS304, SUS316 (Austenitic)	180	E																180	160	140	160	140	130			
K	Cast Iron			G										240	220	200	220	200	180									
	Ductile Cast Iron			G										160	140	120	140	120	100									
S	Exotic Alloy			E																50	35		45	25				
N	Aluminum Alloy	Si Content of 12.6% or less		S																						800	600	400
		Si Content of over 12.6%		S																						240	200	160
	Copper Alloy			S																						330	300	270

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WEX2000



Tool: WEX2025E, Insert: AX□T1235

Cutting Conditions: Depth of Cut ap = 3mm, Cutting Width ae = 12.5mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed Rate per tooth fz (mm/t)																							
					0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.05	0.15	0.22
					Cutting Speed vc (m/min)																							
P	Steel, Carbon Steel	S15C	125	G	380	350	330	350	330	315	330	315	295															
		S45C	190	G	285	255	235	255	235	220	235	220	200															
		S45C Hardened	250	G	235	210	190	210	190	170	190	170	150															
		S75C	270	G	190	162	143	171	152	133	152	133	115															
		S75C Hardened	300	G	145	115	95	115	95	75	95	75	55															
	Low Alloy Steel (SCM, SNCM)		180	G	265	235	220	235	220	200	220	200	180															
		SCM, SNCM Hardened	275	G	170	145	125	150	130	115	130	115	95															
		SCM, SNCM Hardened	300	G	150	125	105	135	115	95	115	95	75															
		SCM, SNCM Hardened	350	G	125	95	75	105	85	65	85	65	45															
	High Alloy Steel (SKD, SKT, SKH)		200	G	235	210	190	210	190	170	190	170	150															
		SKD, SKT, SKH Hardened	325	G	125	95	75	95	75	55	75	55	35															
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																175	155	125	155	140	110			
		SUS403 and Others (Martensitic/Hardened)	240	EH																160	140	110	145	125	100			
		SUS304, SUS316 (Austenitic)	180	E																190	170	140	170	150	125			
K	Cast Iron			G										285	255	235	255	235	220									
	Ductile Cast Iron			G										190	160	140	160	140	125									
S	Exotic Alloy		300	E																50	40		45	35				
	(Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		330	E																35	25		30	20				
N	Aluminum Alloy	Si Content of 12.6% or less		S																						1000	750	500
		Si Content of over 12.6%		S																						250	200	170
	Copper Alloy			S																						350	330	300

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

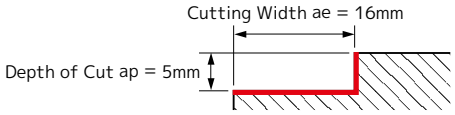
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Cutting Conditions

WEX3000

Tool: WEX3032E, Insert: AX□T1705

Cutting Conditions: Depth of Cut ap = 5mm, Cutting Width ae = 16mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade	ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per tooth fz (mm/t)	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.05	0.15	0.25
				Cutting Speed vc (m/min)																								
P	Steel, Carbon Steel S15C	125	G		400	370	350	370	350	330	350	330	310															
	S45C	190	G		300	270	250	270	250	230	250	230	210															
	S45C Hardened	250	G		250	220	200	220	200	180	200	180	160															
	S75C	270	G		200	170	150	180	160	140	160	140	120															
	S75C Hardened	300	G		150	120	100	120	100	80	100	80	60															
	Low Alloy Steel (SCM, SNCM)	180	G		280	250	230	250	230	210	230	210	190															
	SCM, SNCM Hardened	275	G		180	150	130	160	140	120	140	120	100															
	SCM, SNCM Hardened	300	G		160	130	110	140	120	100	120	100	80															
	SCM, SNCM Hardened	350	G		130	100	80	110	90	70	90	70	50															
	High Alloy Steel (SKD, SKT, SKH)	200	G		250	220	200	220	200	180	200	180	160															
	SKD, SKT, SKH Hardened	325	G		130	100	80	100	80	60	80	60	40															
M	Stainless Steel SUS430 and Others (Martensitic/Ferritic)	200	E								185	165	135							185	165	135	165	150	120			
	SUS403 and Others (Martensitic/Hardened)	240	EH								170	150	120							170	150	120	150	135	110			
	SUS304, SUS316 (Austenitic)	180	E								200	180	150							200	180	150	180	160	135			
K	Cast Iron		G											300	270	250	270	250	230									
	Ductile Cast Iron		G											200	170	150	170	150	130									
S	Exotic Alloy	300	E														50	30		50	30		45	25				
	(Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	330	E														50	30		50	30		45	25				
N	Aluminum Alloy Si Content of 12.6% or less		S																							1000	750	500
	Si Content of over 12.6%		S																							250	200	170
	Copper Alloy		S																							350	330	300

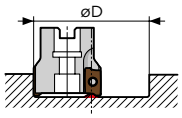
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Values for Helical Milling and Ramping

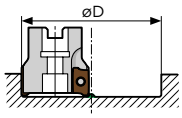
Precautions for Helical Milling

For Minimum Diameter and Below



Centre uncut portion **cannot be removed** by traverse cutting with the same cutter.

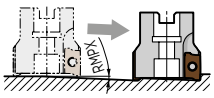
For Maximum Diameter and Above



Centre uncut portion **can be removed** by traverse cutting with the same cutter.

Precautions for Ramping

Use at the RMPX at right or lower.



Recommended Values for Helical Milling and Ramping

Dia. (mm) DC	WEX1000 (AX□T06···)			WEX2000 (AX□T12···)			WEX3000 (AX□T17···)		
	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping
	Machining Dia. øD		Maximum Ramp Angle RMPX	Machining Dia. øD		Maximum Ramp Angle RMPX	Machining Dia. øD		Maximum Ramp Angle RMPX
	Min. Dia.	Max. Dia.		Min. Dia.	Max. Dia.		Min. Dia.	Max. Dia.	
10	16.0	18.0	2°30'						
12	20.0	22.0	1°45'						
14	24.0	26.0	1°25'	25.0	27.0	1°40'			
16	28.0	30.0	1°00'	29.0	31.0	1°20'			
18	32.0	34.0	0°45'	33.0	35.0	1° 10'			
20	36.0	38.0	0°30'	37.0	39.0	1°00'			
22				41.0	43.0	0°50'			
25	46.0	48.0	0°30'	47.0	49.0	0°45'	44.5	48.0	1°30'
28				53.0	55.0	0°45'	50.5	54.0	1° 10'
30				57.0	59.0	0°40'	54.5	58.0	1° 10'
32	60.0	62.0	0°25'	61.0	63.0	0°35'	58.5	62.0	1°00'
35							64.5	68.0	0°50'
40	76.0	78.0	0°20'	77.0	79.0	0°25'	74.5	78.0	0°45'
50	96.0	98.0	0°15'	97.0	99.0	0°20'	94.5	98.0	0°30'
63	122.0	124.0	0°10'	123.0	125.0	0°15'	120.5	124.0	0°20'
80							154.5	158.0	0°15'
100							Unusable	Unusable	Unusable
125							Unusable	Unusable	Unusable

The table above shows recommended values with corner radius 0.8mm.

WEX 1000F type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

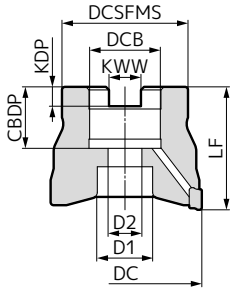
Rake Angle		
	Radial	7° to 17°
	Axial	9° to 17°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1032F**	★	**32**	31	40	**16**	8.4	5.6	18	14	9	8	0.16	1
	1040F	★	**40**	32	40	**16**	8.4	5.6	18	14	9	10	0.21	1
	1050F	★	**50**	38	40	**22**	10.4	6.3	20	18	11	12	0.30	1
	1063F	★	**63**	48	40	**22**	10.4	6.3	20	18	11	14	0.52	1

Inserts are sold separately.

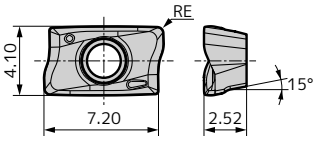
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 060204PDER-L		★	★	★	★	★	▲	▲	—	—	0.4	1
060208PDER-L		★	★	★	★	★	▲	▲	—	—	0.8	1
060212PDER-L		★	★	★	★	★	▲	▲	—	—	1.2	1
060202PDER-G		★	★	★	★	★	▲	▲	—	—	0.2	1
060204PDER-G		★	★	★	★	★	▲	▲	—	—	0.4	1
060208PDER-G		★	★	★	★	★	▲	▲	—	—	0.8	1
060212PDER-G		★	★	★	★	★	▲	▲	—	—	1.2	1
060204PDER-H		★	★	★	★	★	▲	▲	—	—	0.4	1
060208PDER-H		★	★	★	★	★	▲	▲	—	—	0.8	1
060212PDER-H		★	★	★	★	★	▲	▲	—	—	1.2	1
060202PDFR-S		—	—	—	—	—	—	—	★	★	0.2	1

-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -S: Aluminum Alloy.

Fig 1



Recommended Cutting Conditions H88

Parts

(Sold Separately)

Flat Insert Screw		Wrench	Anti-seizure Cream	Torque Wrench
				 0.5N·m
BFTX01804IP	**0.5**	TRX06IP	SUMI-P	TRDR06IP05

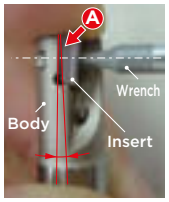
Identification Code

WEX **1** **032** **F**

Series Code | Insert Size | Dia. | Metric Bore

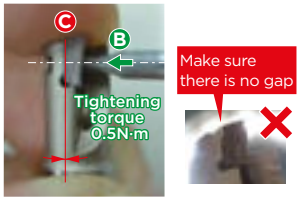
Precautions when Mounting WEX1000 Inserts

1



Press the top of the insert in the direction of A.

2



Hold down as shown in C so that there is no gap between the insert bottom and the base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WEX 2000F type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	16° to 18°
	Axial	23° to 25°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

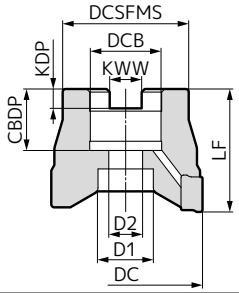
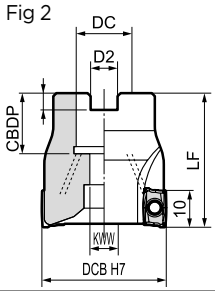


Fig 2



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 2040F**	★	**40**	32	40	**16**	8.4	5.6	18	14	9	6	0.19	1
	2050F	★	**50**	40	40	**22**	10.4	6.3	20	18	11	7	0.29	1
	2063F	★	**63**	50	40	**22**	10.4	6.3	20	18	11	8	0.51	1
	2080F	★	**80**	27	50	**27**	12.4	7.0	25		13.5	10		2

Inserts are sold separately.

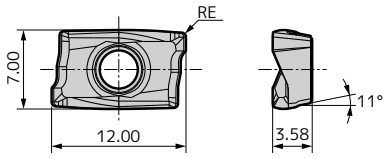
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC
Process	High-speed/Light Cutting	P			K		M S		K N	N
	Medium Cutting		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G	★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-G	★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-G	★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-H	★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-H	★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-H	★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-E	—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E	—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E	—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH	—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S	—	—	—	—	—	—	—	★	★	0.2	1
123504PEFR-S	—	—	—	—	—	—	—	★	★	0.4	1
123508PEFR-S	—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

WEX **2** **040** **F**

Series Code	Insert Size	Dia.	Metric Bore

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WEX 3000F/R type WEXF 3000R type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	12° to 15°
	Axial	19° to 24°

14mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

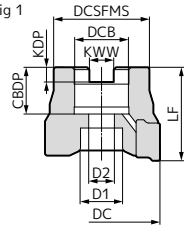
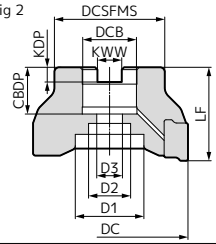


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 3040F**	★	**40**	32	40	**16**	8.4	5.6	18	14	9	—	4	0.16	1
	3050F	★	**50**	40	40	**22**	10.4	6.3	20	18	11	—	5	0.25	1
	3063F	★	**63**	50	40	**22**	10.4	6.3	20	18	11	—	6	0.48	1
Inch	**WEX 3080R**	★	*80	60	50	**25.4**	9.5	6	25	35	26	13.5	4	1.06	2
	3100R	★	*100	70	63	**31.75**	12.7	8	32.5	46	28	17	5	1.99	2
	3125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	6	2.89	1

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Inch	**WEXF 3080R**	★	*80	60	50	**25.4**	9.5	6	25	35	26	13.5	7	0.98	2
	3100R	★	*100	70	63	**31.75**	12.7	8	32.5	46	28	17	8	1.91	2
	3125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	9	2.80	1

Inserts are sold separately.

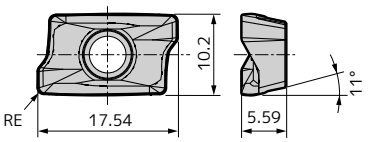
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		★	★	★	★	★	—	—	—	—	0.8	1
AXMT 170504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
170508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
170516PEER-G		★	★	★	★	★	—	—	—	—	1.6	1
170520PEER-G*		★	★	★	★	★	—	—	—	—	2.0	1
170530PEER-G*		★	★	★	★	★	—	—	—	—	3.0	1
AXMT 170508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H89

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
				
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

WEX 3 040 F

Series Code	Insert Size	Dia.	F: Metric Bore R: Inch Bore

*Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.



Modify this portion.

Reworking guidelines

For Corner Radius RE 2.0: C1 (AXMT170520PEER)

For Corner Radius RE 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEX 1000E/EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	7° to 17°
	Axial	9° to 17°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

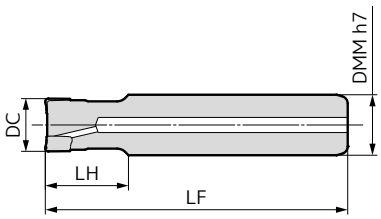
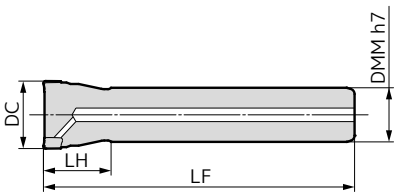


Fig 2



Body (Shank type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1010E**	★	**10**	10	17	50	2	0.03	1
	1012E	★	**12**	12	20	80	3	0.06	1
	1014E	★	**14**	16	22	80	3	0.10	1
	1016E	★	**16**	16	20	90	4	0.12	1
	1018E	★	**18**	20	22	100	4	0.21	1
	1020E	★	**20**	20	22	100	5	0.22	1
	1025E	★	**25**	20	25	115	7	0.27	2

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1010EL**	★	**10**	8	17	100	2	0.03	2
	1012EL	★	**12**	10	20	120	2	0.06	2
	1014EL	★	**14**	12	20	145	3	0.11	2
	1016EL	★	**16**	14	20	160	3	0.17	2
	1016EL15	★	**16**	15	20	160	3	0.19	2
	1018EL	★	**18**	16	20	180	3	0.25	2
	1020EL	★	**20**	18	25	200	4	0.36	2
	1020EL19	★	**20**	19	25	200	4	1.38	2

Inserts are sold separately.

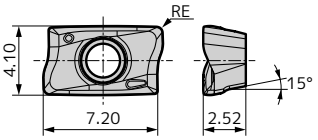
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 060204PDER-L		★	★	★	★	★	▲	▲	—	—	0.4	1
060208PDER-L		★	★	★	★	★	▲	▲	—	—	0.8	1
060212PDER-L		★	★	★	★	★	▲	▲	—	—	1.2	1
AXMT 060202PDER-G		★	★	★	★	★	▲	▲	—	—	0.2	1
060204PDER-G		★	★	★	★	★	▲	▲	—	—	0.4	1
060208PDER-G		★	★	★	★	★	▲	▲	—	—	0.8	1
060212PDER-G		★	★	★	★	★	▲	▲	—	—	1.2	1
AXMT 060204PDER-H		★	★	★	★	★	▲	▲	—	—	0.4	1
060208PDER-H		★	★	★	★	★	▲	▲	—	—	0.8	1
060212PDER-H		★	★	★	★	★	▲	▲	—	—	1.2	1
AXMT 060202PDFR-S		—	—	—	—	—	—	—	★	★	0.2	1

-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -S: Aluminum Alloy.

Fig 1



Recommended Cutting Conditions H88

Identification Code

WEX **1** **010** **E** **L**

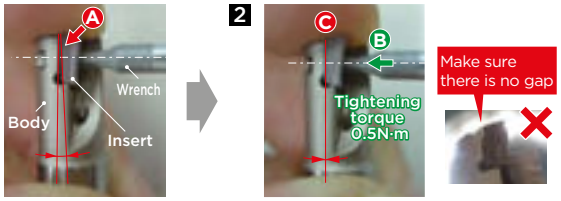
Series Code	Insert Size	Dia.	Shank type	Long type

Parts

(Sold Separately)

Flat Insert Screw		Wrench	Anti-seizure Cream	Torque Wrench
				 0.5N·m
BFTX01804IP	**0.5**	TRX06IP	SUMI-P	TRDR06IP05

Precautions when Mounting WEX1000 Inserts



Press the top of the insert in the direction of A.

Hold down as shown in C so that there is no gap between the insert bottom and the base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WEX 2000E/EL/EW 3000EW type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	10° to 18°
	Axial	14° to 25°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

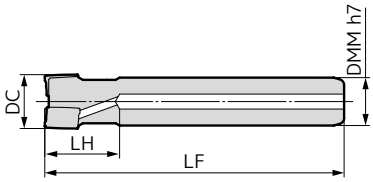
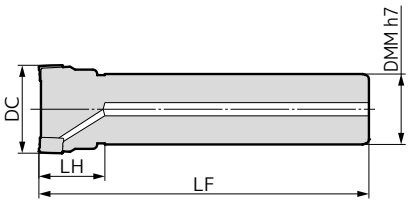


Fig 2



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2014E	★	**14**	16	25	80	1	0.10	1
2016E	★	**16**	16	25	100	2	0.13	1
2018E	★	**18**	16	25	100	2	0.14	2
2020E	★	**20**	20	30	110	3	0.22	1
2022E	★	**22**	20	30	110	3	0.23	2
2025E	★	**25**	25	35	120	4	0.38	1
2028E	★	**28**	25	35	120	4	0.39	2
2030E	★	**30**	25	35	120	4	0.40	2
2032E	★	**32**	32	40	130	5	0.70	1
2040E	★	**40**	32	30	150	6	0.91	2
2050E	★	**50**	32	30	150	7	1.02	2
2063E	★	**63**	32	30	150	8	1.22	2

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2014EL	★	**14**	16	25	120	1	0.14	1
2016EL	★	**16**	16	25	145	2	0.19	1
2016EL15	★	**16**	15	25	145	2	0.17	2
2018EL	★	**18**	16	25	145	2	0.19	2
2020EL	★	**20**	20	40	150	2	0.32	1
2020EL19	★	**20**	19	40	150	2	0.30	2
2022EL	★	**22**	20	30	150	2	0.33	2
2025EL	★	**25**	25	50	170	2	0.55	1
2025EL24	★	**25**	24	50	170	2	0.53	2
2028EL	★	**28**	25	30	170	2	0.59	2
2030EL	★	**30**	25	30	170	2	0.60	2
2032EL	★	**32**	32	60	180	2	0.99	1
2040EL	★	**40**	32	30	180	2	1.12	2

Inserts are sold separately.

Body (Shank type + Weldon)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2016EW	★	**16**	16	25	100	2	0.12	1
2020EW	★	**20**	20	30	110	3	0.21	1
3025EW	★	**25**	25	35	120	2	0.36	1
3032EW	★	**32**	32	40	90	3	0.65	1

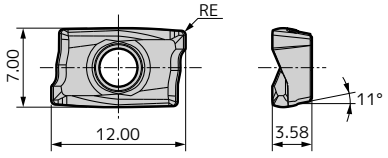
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-H		★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEX2014E(EL) to WEX2018E(EL)	BFTX0305IP	**2.0**	TRDR08IP	SUMI-P
WEX2020E(EL) to WEX2063E	BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

WEX **2** **014** **E** **L**

Series Code | Insert Size | Dia. | Shank type | Long type

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEX 3000 E/ES/EL/E-C/ES-C type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	8° to 15°
	Axial	16° to 24°

14mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling

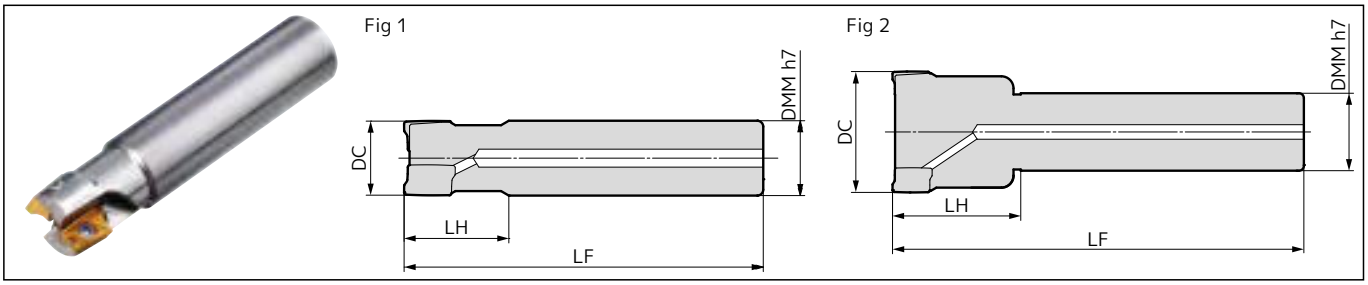


Fig 1

Fig 2

Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3025E-20	★	**25**	20	35	120	2	0.25	2
3025E	★	**25**	25	35	120	2	0.37	1
3028E	★	**28**	25	35	120	2	0.39	2
3030E	★	**30**	25	40	130	3	0.42	2
3032E-25	★	**32**	25	40	130	3	0.43	2
3032E	★	**32**	32	40	130	3	0.67	1
3035E	★	**35**	32	40	130	3	0.69	2
3040E	★	**40**	32	50	170	4	1.01	2
3050E	★	**50**	32	50	170	5	1.23	2
3063E	★	**63**	32	50	170	6	1.58	2

Body (Short Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3050ES	★	**50**	32	25	135	5	0.86	2
3050ES-42	★	**50**	42	25	135	5	1.36	2
3063ES	★	**63**	32	25	135	6	1.02	2
3063ES-42	★	**63**	42	25	135	6	1.52	2

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3025EL	★	**25**	25	50	170	2	0.54	1
3028EL	★	**28**	25	50	170	2	0.56	2
3030EL	★	**30**	25	60	180	2	0.60	2
3032EL	★	**32**	32	60	180	2	0.95	1
3035EL	★	**35**	32	60	180	2	0.98	2
3040EL	★	**40**	32	80	220	2	1.38	2

Body (Coarse Pitch type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3040E-C	★	**40**	32	50	170	3	1.04	2
3050E-C	★	**50**	32	50	170	3	1.28	2
3063E-C	★	**63**	32	50	170	4	1.64	2

Body (Short Coarse Pitch type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3050ES-C	★	**50**	32	25	135	3	0.91	2
3050ES-C-42	★	**50**	42	25	135	3	1.41	2
3063ES-C	★	**63**	32	25	135	4	1.07	2
3063ES-C-42	★	**63**	42	25	135	4	1.57	2

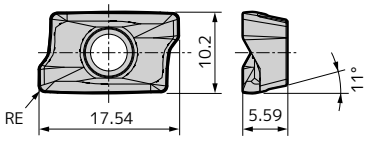
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		★	★	★	★	★	—	—	—	—	0.8	1
AXMT 170504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
170508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
170516PEER-G		★	★	★	★	★	—	—	—	—	1.6	1
170520PEER-G*		★	★	★	★	★	—	—	—	—	2.0	1
170530PEER-G*		★	★	★	★	★	—	—	—	—	3.0	1
AXMT 170508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H89

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEX3025E(EL) to 3030EL	BFTX0407IP	**3.0**	TRDR15IP	SUMI-P
WEX3032E(EL) to 3063E(ES)	BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

*Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.



Modify this portion.

Reworking guidelines

For Corner Radius RE 2.0: C1 (AXMT170520PEER)

For Corner Radius RE 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WRX series

High-efficiency Shoulder Milling of Deep Steps

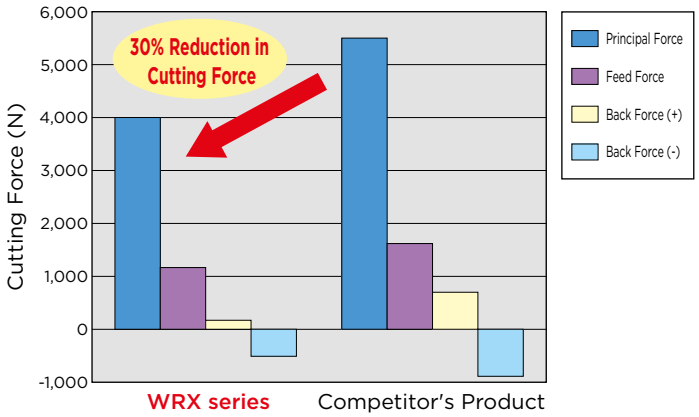


■ Features

Inserts for SEC-WaveMill WEX series, with wave-like cutting edges, are arranged in multiple stages forming a long cutting edge to enable high-efficiency shoulder milling of deep steps.

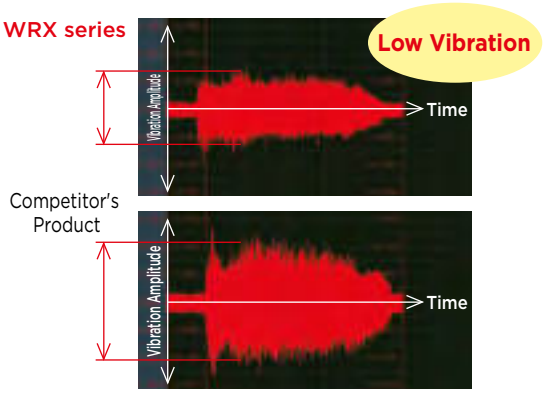
● Cutting edge positions are optimised to provide low cutting force and low vibration

■ Comparison of Cutting Force



Cutting Conditions
Work Material : S50C
Tool : WRX2025E2725
Cutting Speed : vc = 100m/min, fz = 0.15mm/t, ae = 10mm, ap = 25mm, Dry

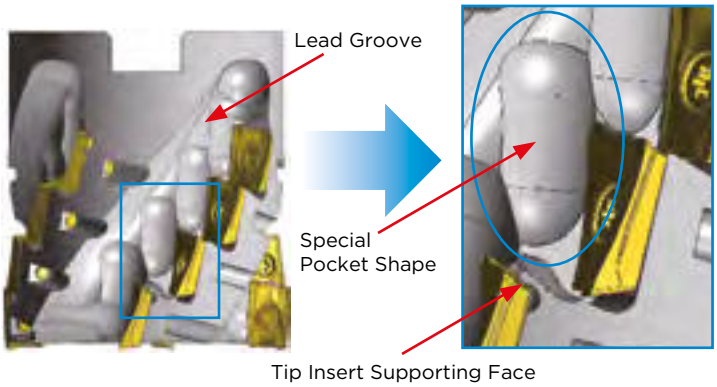
■ Comparison of Vibration



Cutting Conditions
Work Material : S50C
Tool : WRX3080RS5332
Cutting Speed : vc = 150m/min, fz = 0.20mm/t, ae = 5mm, ap = 40mm, Dry

● Lead groove and special pocket shape provide smooth chip evacuation and high body rigidity

● Tip insert supporting face reduces bottom edge fracture and provides high reliability





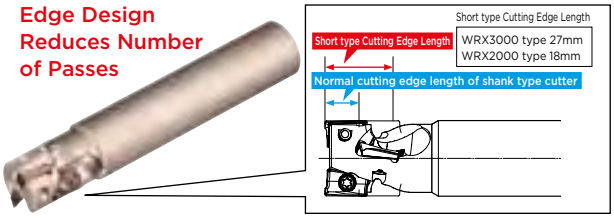
■ Product Range

Cutting Edge	Series Code	Cutting Edge Length (mm)	Dia. (mm)	Shape	Applicable Inserts (*)
Standard type	WRX2000E	27 to 36	ø20 to ø40	Shank type	AXMT1235 type
	WRX2000R	36	ø40 to ø50	Mounting Hole type	
	WRX3000E	40 to 53	ø40 to ø50	Shank type	AXMT1705 type
	WRX3000R	53	ø50 to ø100	Mounting Hole type	
Short Cutting Edge type	WRX2000E	18	ø20 to ø40	Shank type	AXMT1235 type
	WRX2000R		ø40 to ø50	Mounting Hole type	
	WRX3000E	27	ø40 to ø50	Shank type	AXMT1705 type
	WRX3000R		ø50 to ø100	Mounting Hole type	

* Applicable inserts are the same as those used in the popular SEC-WaveMill WEX series.

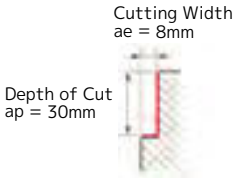
Short Cutting Edge Series

2-stepped Cutting Edge Design Reduces Number of Passes



■ Recommended Cutting Conditions

WRX2000



Tool: WRX2040E3642 Insert: AXMT123504PEER

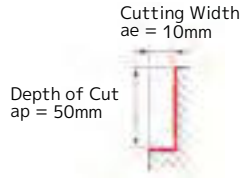
Cutting Conditions: Depth of Cut ap = 30mm, Cutting Width ae = 8mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed Rate per tooth fz (mm/t)																							
					0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2
					Cutting Speed vc (m/min)																							
P	Steel, Carbon Steel	S15C	125	G	280	260	240	260	240	220	240	220	200															
		S45C	190	G	200	180	160	180	160	140	180	160	140															
		S45C Hardened	250	G	180	120	140	160	140	120	150	130	110															
		S75C	270	G	160	140	120	150	130	110	130	110	110															
		S75C Hardened	300	G	100	80	70	90	70	60	70	60	50															
	Low Alloy Steel (SCM, SNCM)		180	G	200	180	160	180	160	150	160	150	130															
		SCM, SNCM Hardened	275	G	130	110	90	120	100	90	100	90	80															
		SCM, SNCM Hardened	300	G	120	100	80	100	90	80	90	80	60															
		SCM, SNCM Hardened	350	G	90	80	60	80	70	60	70	60	40															
	High Alloy Steel (SKD, SKT, SKH)		200	G	180	170	160	170	160	130	150	140	120															
		SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30															
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																170	150	120	140	130	110			
		SUS403 and Others (Martensitic/Hardened)	240	E																140	120	100	120	100	90			
		SUS304, SUS316 (Austenitic)	180	E																180	160	140	160	140	130			
K	Cast Iron			G										240	220	200	220	200	180									
	Ductile Cast Iron			G										160	140	120	140	120	100									
S	Exotic Alloy			E																50	35		45	25				
N	Aluminum Alloy	Si Content of 12.6% or less		S																						1000	750	500
		Si Content of over 12.6%		S																						250	200	170

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WRX3000



Tool: WRX3050E5342 Insert: AXMT170508PEER

Cutting Conditions: Depth of Cut ap = 50mm, Cutting Width ae = 10mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed Rate per tooth fz (mm/t)																							
					0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2
					Cutting Speed vc (m/min)																							
P	Steel, Carbon Steel	S15C	125	G	320	300	280	300	280	260	280	260	240															
		S45C	190	G	240	220	200	220	200	180	200	180	160															
		S45C Hardened	250	G	200	180	160	180	160	140	160	140	120															
		S75C	270	G	160	140	120	150	130	110	130	110	110															
		S75C Hardened	300	G	120	100	80	100	80	60	80	60	50															
	Low Alloy Steel (SCM, SNCM)		180	G	220	200	180	200	180	170	180	170	150															
		SCM, SNCM Hardened	275	G	140	120	100	130	110	100	110	100	80															
		SCM, SNCM Hardened	300	G	130	110	90	110	90	80	100	80	60															
		SCM, SNCM Hardened	350	G	100	80	60	90	70	60	70	60	40															
	High Alloy Steel (SKD, SKT, SKH)		200	G	200	180	160	180	160	140	160	140	120															
		SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30															
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																170	150	130	140	130	110			
		SUS403 and Others (Martensitic/Hardened)	240	E																140	120	100	120	100	90			
		SUS304, SUS316 (Austenitic)	180	E																180	160	140	160	140	130			
K	Cast Iron			G										240	220	200	220	200	180									
	Ductile Cast Iron			G										160	140	120	140	120	100									
S	Exotic Alloy			E																50	30		45	25				
N	Aluminum Alloy	Si Content of 12.6% or less		S																						1000	750	500
		Si Content of over 12.6%		S																						250	200	170

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WRX 2000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	16° to 17°
	Axial	24°

18-36mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1

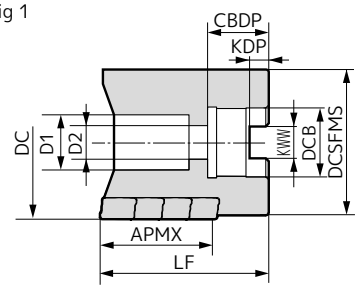
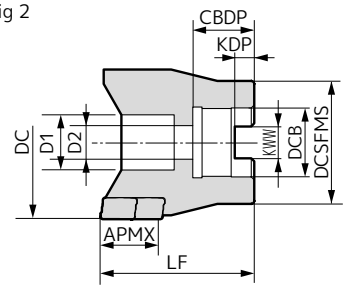


Fig 2



Body (Standard type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 2040RS3616**	▲	**40**	36	37.5	55	**16**	8.4	5.6	18	14	9	16	4	4	0.3	1
	2050RS3622	▲	**50**	36	47.5	55	**22**	10.4	6.3	20	18	11	16	4	4	0.5	1

Body (Short Cutting Edge type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 2040RS1816**	▲	**40**	18	32	50	**16**	8.4	5.6	18	14	9	10	2	5	0.3	2
	2050RS1822	▲	**50**	18	40	50	**22**	10.4	6.3	20	18	11	10	2	5	0.4	2

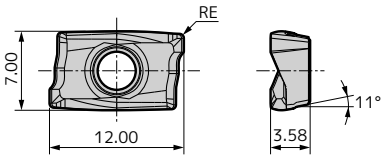
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-H		★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H97

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Identification Code

WRX **2** **040** **R** **S** **36** **16**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Cutting Edge Length	Mounting Size
WRX	2	040	R	S	36	16

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WRX 3000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	13° to 15°
	Axial	22° to 24°

27-53mm 90°

Shoulder Milling | Groove Milling | Side Milling

Fig 1



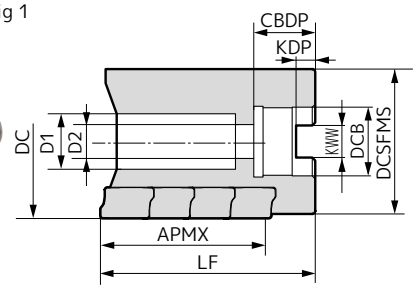
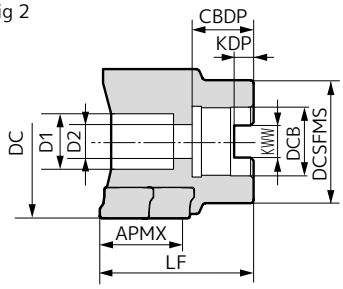


Fig 2



Body (Standard type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 3050RS5322**	▲	**50**	53	47	70	**22**	10.4	6.3	20	18	11	—	12	4	3	0.6	1
	3063RS5327	▲	**63**	53	60	70	**27**	12.4	7	23	20	13.5	—	16	4	4	1.0	1
	3080RS5332	▲	**80**	53	77	85	**32**	14.4	8	26	25	17	—	20	4	5	2.2	1
	3100RS5340	▲	**100**	53	97	85	**40**	16.4	9.5	30	32	21	—	24	4	6	3.5	1

Body (Short Cutting Edge type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 3050RS2722**	▲	**50**	27	40	50	**22**	10.4	6.3	20	18	11	—	8	2	4	0.4	2
	3063RS2722	▲	**63**	27	50	50	**22**	10.4	6.3	20	18	11	—	10	2	5	0.7	2

Body (Short Cutting Edge type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Inch	**WRX 3080R27254**	▲	*80	27	60	50	**25.4**	9.5	6	25	35	26	13	12	2	6	1.1	3
	3100R27317	▲	*100	27	70	63	**31.75**	12.7	8	32.5	46	28	17	14	2	7	2.0	3

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

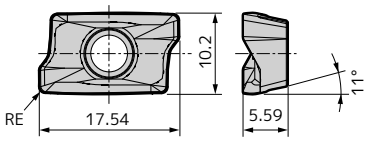
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		★	★	★	★	★	—	—	—	—	0.8	1
AXMT 170504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
170508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
170516PEER-G		★	★	★	★	★	—	—	—	—	1.6	1
170520PEER-G*		★	★	★	★	★	—	—	—	—	2.0	1
170530PEER-G*		★	★	★	★	★	—	—	—	—	3.0	1
AXMT 170508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H97

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
	N·m			
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

*Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.



Modify this portion.

Reworking guidelines

For RE = 2.0: C1 (AXMT170520PEER)

For RE = 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WRX 2000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	13° to 16°
	Axial	16° to 24°

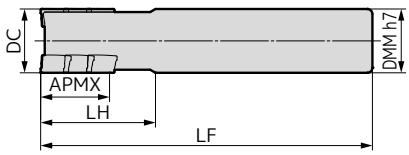
18-36mm 90°

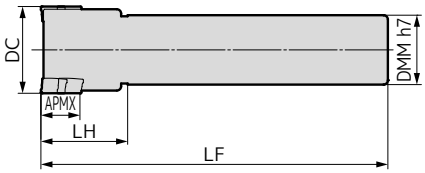
Shoulder Milling | Groove Milling | Side Milling

Fig 1



Fig 2





Body (Shank type/Shank type inner coolant*)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 2020E3620	▲	**20**	36	20	45	130	4	4	1	0.3	1
2025E2725	▲	**25**	27	25	45	130	6	3	2	0.4	1
2032E2732	▲	**32**	27	32	45	130	9	3	3	0.7	1
2040E3642	▲	**40**	36	42	45	130	16	4	4	1.2	1

Body (Short Cutting Edge type)

Dimensions (mm)

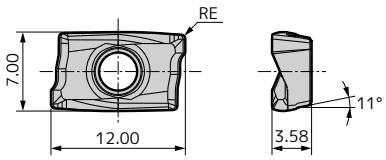
ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 2020E1820	▲	**20**	18	20	40	120	4	2	2	0.3	1
2025E1825	▲	**25**	18	25	45	130	6	2	3	0.4	1
2032E1832	▲	**32**	18	32	50	140	8	2	4	0.8	1
2040E1832	▲	**40**	18	32	40	160	10	2	5	1.1	2

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-H		★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H97

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Identification Code

WRX **2** **020** **E** **36** **20**

Series Code	Insert Size	Dia.	Shank type	Cutting Edge Length	~~Shank~~ Dia.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WRX 3000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	12° to 13°
	Axial	20° to 22°

27-53mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1

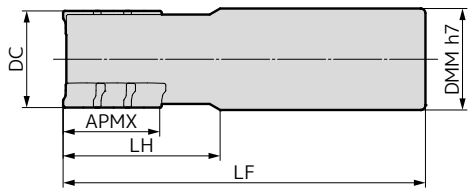
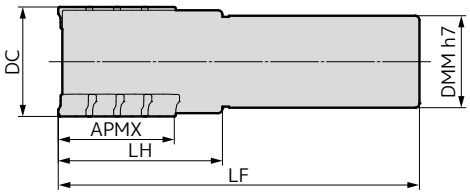


Fig 2



Body (Shank type/Shank type inner coolant*)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 3040E4042	▲	**40**	40	42	65	150	9	3	3	1.3	1
3050E5342	▲	**50**	53	42	75	165	12	4	3	1.8	2

Body (Short Cutting Edge type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 3040E2732	▲	**40**	27	32	60	180	6	2	3	1.2	2
3050E2732	▲	**50**	27	32	60	180	8	2	4	1.4	2

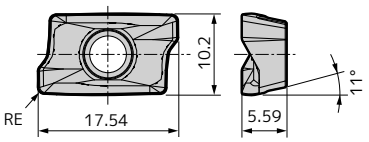
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		★	★	★	★	★	—	—	—	—	0.8	1
AXMT 170504PEER-G		★	★	★	★	★	—	—	—	—	0.4	1
170508PEER-G		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-G		★	★	★	★	★	—	—	—	—	1.2	1
170516PEER-G		★	★	★	★	★	—	—	—	—	1.6	1
170520PEER-G*		★	★	★	★	★	—	—	—	—	2.0	1
170530PEER-G*		★	★	★	★	★	—	—	—	—	3.0	1
AXMT 170508PEER-H		★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-H		★	★	★	★	★	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	★	★	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	★	★	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H97

Identification Code

WRX **3** **040** **E** **40** **42**

Series Code	Insert Size	Dia.	Shank type	Cutting Edge Length	Shank Dia.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

***Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.**



Modify this portion.

Reworking guidelines

For RE = 2.0: C1
(AXMT170520PEER)

For RE = 3.0: C1.5
(AXMT170530PEER)

Standard: C0.5.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WSE series



■ Features

- Ideal for machining titanium alloys for aerospace
  Designed for machining at large ramping angles, coupled with a selection of corner radiuses, makes it applicable for a variety of applications including titanium structural parts
- Stable and long tool life in machining titanium alloys
  The optimised cutting edge shape together with newly developed ACS1000/ACS2500/ACS3000 grades (for machining exotic alloys) result in excellent wear resistance and fracture resistance
- Optimized cutting edge shape and chip pocket for excellent chip evacuation

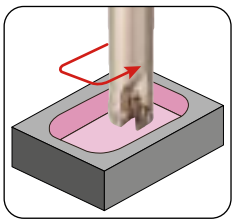
■ Product Range

Type	Description	Cat. No.	Dia. (mm) ø32	ø50	ø63
Shell	Standard	**WSE 16000RS○○**		5	6
	Long	**WSE 16000RS○○L**		5	6
Shank	Standard	**WSE 16000E○○**	3		

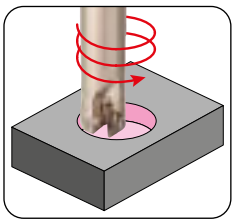
Number in ●● shows the number of teeth

■ Applicable to various applications!

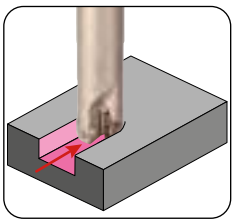
Pocket Expansion



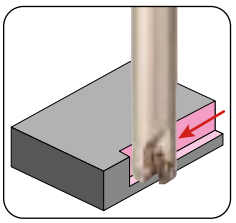
Helical Milling



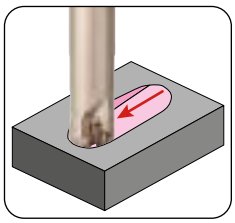
Groove Milling



Shoulder Milling

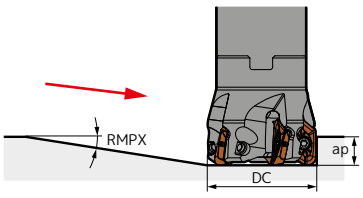


Ramping

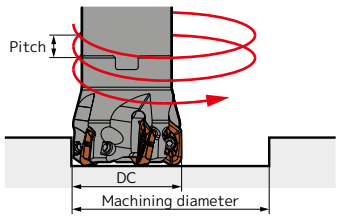


■ Ramping/Helical Milling Upper Limit

Ramping



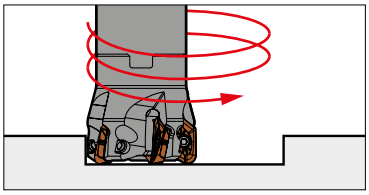
Helical Milling



Dia. DC ø (mm)	Corner Radius RE	Max. Ramping Angle RMPX(°)
32	RE ≥ 5.0	8.4
	RE ≤ 4.0	12.2
50	RE ≥ 5.0	3.6
	RE ≤ 4.0	5.6
63	RE ≥ 5.0	2.5
	RE ≤ 4.0	3.9

Dia. DC ø (mm)	Corner Radius RE	Max. Machining Dia. ø (mm)	Max. Pitch (mm/rev)	Standard Diameter ø (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. ø (mm)	Max. Pitch (mm/rev)
32	4.0	55.3	13.0	55.2	13.0	45.9	3.0
	0.8	61.3	13.0	56.3	13.0	45.9	2.9
50	4.0	91.6	11.2	91.6	11.2	81.9	2.8
	0.8	97.3	13.0	92.2	11.0	81.9	2.7
63	4.0	117.6	10.1	117.6	10.1	107.9	2.7
	0.8	123.3	11.7	118.2	9.9	107.9	2.6

Precautions for Helical Milling



Helical Milling

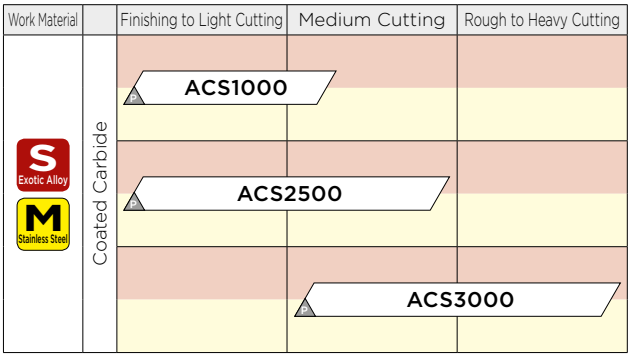
- For helical milling, if the work diameter is smaller than the standard diameter, there will be a centre uncut portion.
- A prepared centre hole should be made.
- Above the standard diameter, this portion can be removed by traverse cutting with the same cutter.

■ Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
S Exotic Alloy M Stainless Steel	ACS1000	3	• For high-efficiency milling of exotic alloys • High-hardness carbide substrate coupled with a chipping-resistant coating provides long and stable tool life in high-speed, high-efficiency machining applications
	ACS2500	3	Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping resistant coating, provide outstanding performance, especially in machining **titanium alloys**
	ACS3000	3	High toughness carbide substrate and a coating with excellent chipping resistance provide outstanding stability when machining **titanium alloys**, **heat-resistant alloys** or **stainless steel**

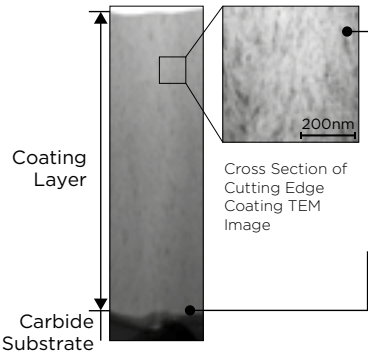
■ Grade Application Range

Lineup includes **ACS1000/ACS2500/ACS3000** grades, ideal for machining titanium alloys, heat-resistant alloys and stainless steel



New PVD Coating Layer Features

ABSOTECH **PVD**



Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion and more than twice the conventional chipping resistance

■ Chipbreaker Shape

Work Material	M Stainless Steel, S Exotic Alloy
Applications	General-purpose to Roughing
Features	Standard
Chipbreaker	**E type**
Cutting Edge Cross Section	15°

■ Excellent Chip Control

Cutting Conditions	Chip	
vc = 60m/min fz = 0.12mm/t ap = 10mm ae = 21mm Wet (7MPa) Ramping Angle: 0°	Stable Chip Control **WSE series**	Unstable Chips Competitor's Product
vc = 50m/min fz = 0.12mm/t ap = 4mm ae = 50mm Wet (7MPa) Ramping Angle: 3°	Stable Chip Control **WSE series**	Unstable Chips Competitor's Product
vc = 50m/min fz = 0.12mm/t ap = 4mm ae = 50mm Wet (7MPa) Ramping Angle: 5.5°	Stable Chip Control **WSE series**	× Machining Not Possible Competitor's Product

Machine: 5-axis Machine HSK100, Work Material: Ti-6Al-4V
Tool: WSE 16050RS05L (ø50, 5-tooth)
Insert: XOMT160540PEER-E (ACS3000)

WSE 16000RS type

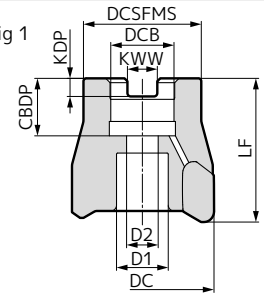
Rake Angle		
	Radial	-9° to -6°
	Axial	8° to 14°

15mm 90°

Shoulder Milling | Groove Milling | Ramping | Helical Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WSE 16050RS05**	★	**50**	41	40(38.5)	22	10.4	6.3	20	18	11	5	0.24	1
	16050RS05L	★	**50**	41	50(48.5)	22	10.4	6.3	20	18	11	5	0.33	1
	16063RS06	★	**63**	50	40(38.5)	22	10.4	6.3	20	18	11	6	0.46	1
	16063RS06L	★	**63**	50	50(48.5)	22	10.4	6.3	20	18	11	6	0.61	1

The LF dimensions in parentheses are dimensions using RE = 5.0 or larger inserts. When using RE = 5.0 or larger inserts, the maximum depth of cut is 13mm.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Identification Code

WSE	16	050	R	S	05	L
Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Number of Teeth	Long Body

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WSE 16000RS type

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

ISO Cat. No.	ACS1000 (New)	ACS2500	ACS3000	Corner Radius RE	Fig
XOMT 160508PEER-E		★	★	0.8	1
160512PEER-E		★	★	1.2	1
160516PEER-E		★	★	1.6	1
160520PEER-E		★	★	2	1
160530PEER-E		★	★	3	1
160540PEER-E		★	★	4	1
160550PEER-E*		★	★	5	2
160560PEER-E*		★	★	6	2
160564PEER-E*		★	★	6.35	2

Fig 1

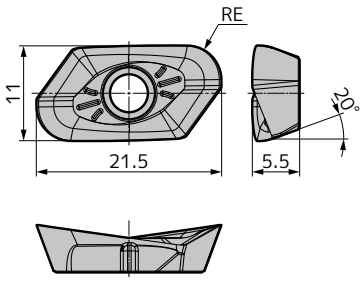
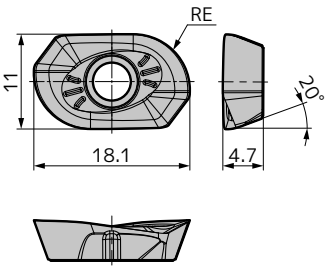


Fig 2



* marked inserts require modification of the cutter body.

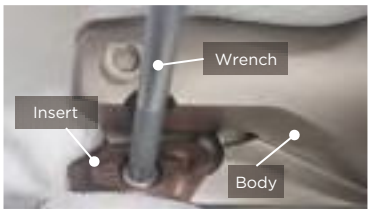
Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.

(2) While pressing the insert firmly against the seat surface, tighten the screws with the included wrench.

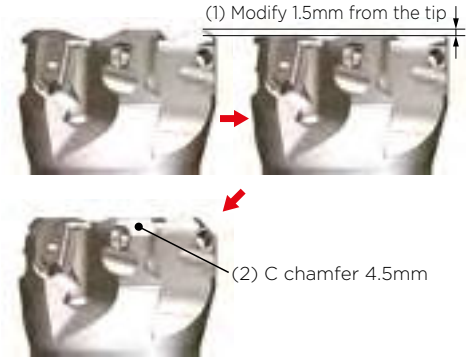
(3) Apply Anti-seizure Cream to the screws and tighten at the recommended torque.

(4) After tightening, check that there are no gaps on the seat surface.





* Modification of the cutter body is required when using inserts with corner radius RE 5.0 or larger.



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	E	25 - **35** - 50	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		Ti Alloy	—	E	30 - **60** - 90	0.05 - **0.10** - 0.15	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E	115 - **145** - 175	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240	E	105 - **130** - 155	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180	E	125 - **155** - 190	0.05 - **0.10** - 0.15	ACS2500/ACS3000

★ The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
★ For groove milling, adjust the feed rate to around 70% of the above values.
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WSE 16000E type

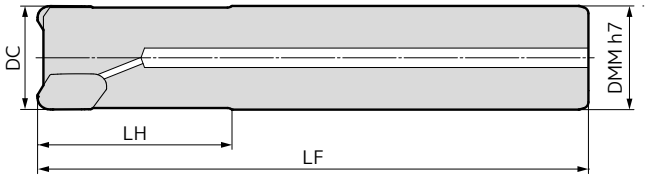
Rake	Radial	-9°
Angle	Axial	8°

15mm 90°

Shoulder Milling | Groove Milling | Ramping | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WSE 16032E03	★	**32**	32	60(58.4)	170(168.4)	3	0.9	1

The LH and LF dimensions in parentheses are dimensions using RE = 5.0 or larger inserts. When using RE = 5.0 or larger inserts, the maximum depth of cut is 13mm.
Inserts are sold separately.

Identification Code

WSE (Series Code) **16** (Insert Size) **032** (Dia.) **E** (Shank type) **03** (Number of Teeth)

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WSE 16000E type

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

ISO Cat. No.	ACS1000	ACS2500	ACS3000	Corner Radius RE	Fig
XOMT 160508PEER-E		★	★	0.8	1
160512PEER-E		★	★	1.2	1
160516PEER-E		★	★	1.6	1
160520PEER-E		★	★	2	1
160530PEER-E		★	★	3	1
160540PEER-E		★	★	4	1
160550PEER-E*		★	★	5	2
160560PEER-E*		★	★	6	2
160564PEER-E*		★	★	6.35	2

Fig 1

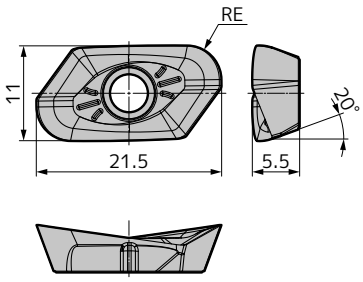
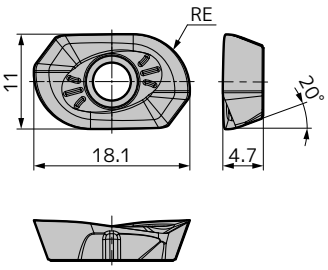


Fig 2



* marked inserts require modification of the cutter body.

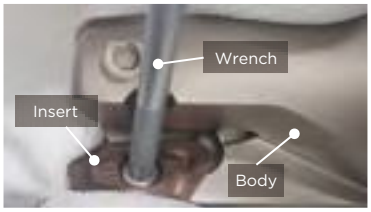
Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.

(2) While pressing the insert firmly against the seat surface, tighten the screws with the included wrench.

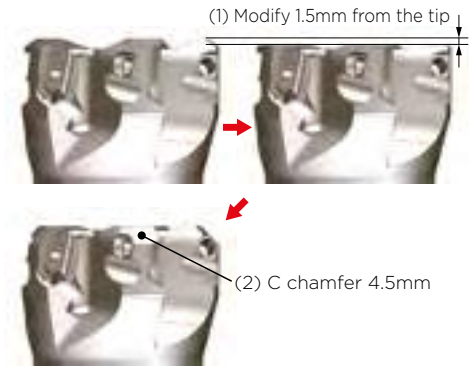
(3) Apply Anti-seizure Cream to the screws and tighten at the recommended torque.

(4) After tightening, check that there are no gaps on the seat surface.





* Modification of the cutter body is required when using inserts with corner radius RE 5.0 or larger.



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	E	25 - **35** - 50	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		Ti Alloy	—	E	30 - **60** - 90	0.05 - **0.10** - 0.15	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E	115 - **145** - 175	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240	E	105 - **130** - 155	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180	E	125 - **155** - 190	0.05 - **0.10** - 0.15	ACS2500/ACS3000

★ The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
★ For groove milling, adjust the feed rate to around 70% of the above values.
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)



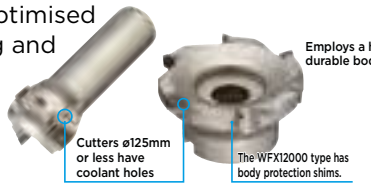
■ Features

SEC-WaveMill WFX series for shoulder milling is a screw-lock type cutter capable of using four corne
Now with high-efficiency multi-functional WFXH type and ideal cutting edge design delivers goo
chamfering WFXC type, our comprehensive range covers a wide variety of applications.
Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

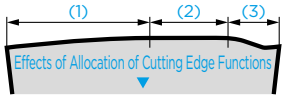


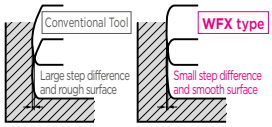
WFXH type **WFXC type**

The insert shape optimised for shoulder milling and the high-precision body leave a superior machined surface finish.



● Optimised Edge Shape (For Shoulder Milling)



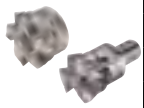


(1) : The convex shape ensures **cutting edge strength**
(2) : The flat shape reduces step **differences in shoulder milling**
(3) : The wiper edge function improves **the surface roughness**

■ Product Range

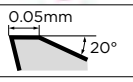
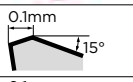
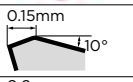
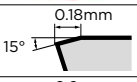
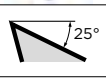
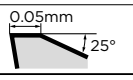
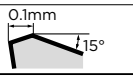
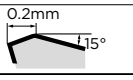
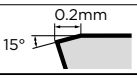
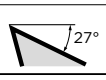
Applications	Type	ISO Cat. No.	Description	Dia. (mm) ø8	ø16	ø20	ø22	ø25	ø28	ø30	ø32	ø33	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	Shape
Shoulder Milling	Shell	WFX 08000R (Inch)	Standard Pitch													6	8					
		WFX 08000RS	Standard Pitch										3	4	5	6	8					
		WFXM 08000R (Inch)	Fine Pitch													8	10					
		WFXM 08000RS	Fine Pitch										4	5	6	8	10					
		WFXF 08000R (Inch)	Extra Fine Pitch													10	12					
		WFXF 08000RS	Extra Fine Pitch										6	7	8	10	12					
		WFX 12000R (Inch)	Standard Pitch													4	5	6	8	10	12	
		WFX 12000RS	Standard Pitch											3	4	4	5					
		WFXF 12000R (Inch)	Extra Fine Pitch													6	7	8	12	16	18	
		WFXF 12000RS	Extra Fine Pitch											4	5	6	7					
	Shank	WFX 08000E	Standard Pitch			2*	2	2*	2	3	3	3	3	4	5							
		WFXM 08000E	Fine Pitch					3			4		4	5	6							
		WFX 12000E	Standard Pitch										3	3	4	4						
		WFXF 12000E	Extra Fine Pitch											4	5	6						
	Modular	WFX 08000M	Modular type			2	2	2	2	3	3		3									
High Efficiency	Shell	WFXH 08000RS	Standard Pitch										4	5 6	6							
		WFXH 12000RS	Standard Pitch											4	5							
	Modular	WFXH 08000M	Modular type					2			3											
		WFXH 12000M	Modular type										3									
Chamfering	Shank	WFXC 08000E	Standard Pitch	1	2																	
		WFXC 12000E	Standard Pitch					3			3											
	Modular	WFXC 08000M	Modular type		2																	
		WFXC 12000M	Modular type					3			3											



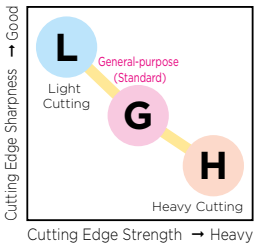




■ Chipbreaker Selection

Number in ●●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available Modular type ☞H264

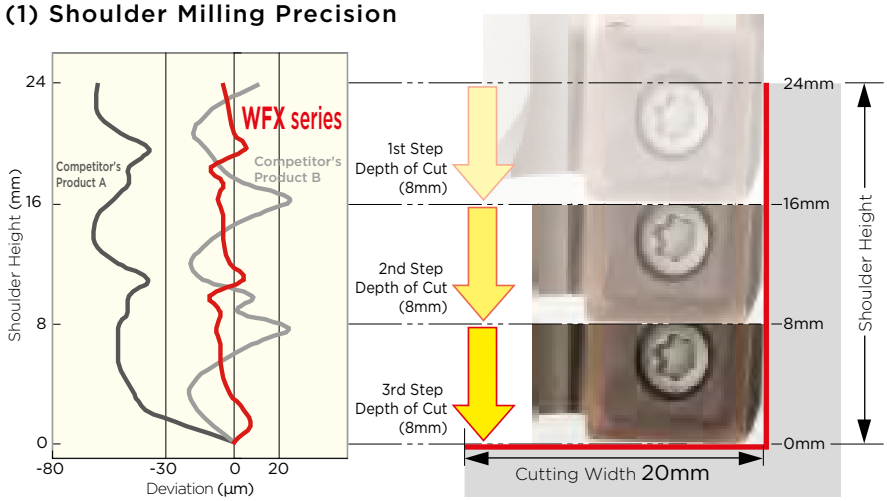
Work Material	P M K S				N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	High-precision Finish	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose type	High Strength type	Wiper	Sharp Edge
	L type	G type	H type	Wiper Insert	S type
Chipbreaker					
08 type Cross Section	 0.05mm 20°	 0.1mm 15°	 0.15mm 10°	 0.18mm 15°	 25°
12 type Cross Section	 0.05mm 25°	 0.1mm 15°	 0.2mm 15°	 0.2mm 15°	 27°

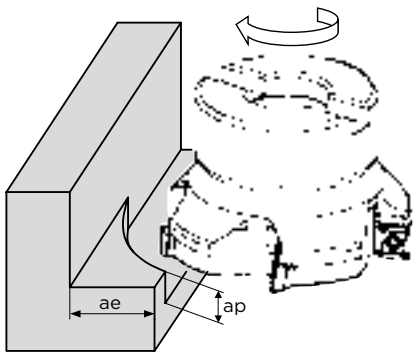
■ Chipbreaker Selection Guide



■ Cutting Performance

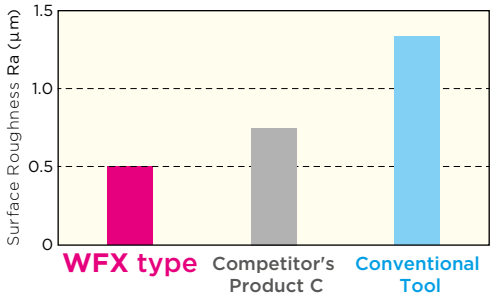
(1) Shoulder Milling Precision





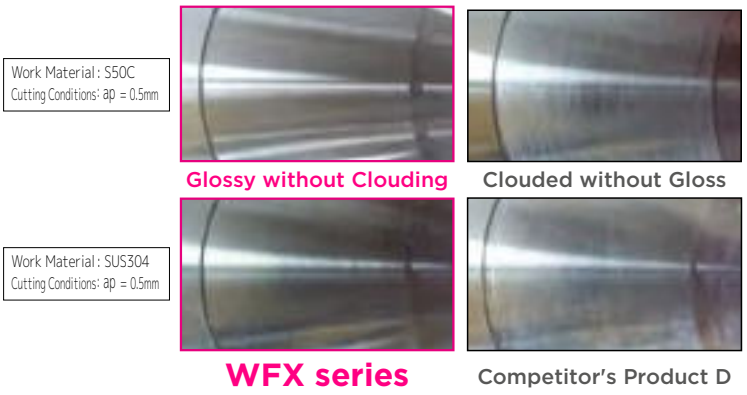
Work Material : S50C Tool: WFX12100R (ø100 x 5 teeth)
Cutting Conditions : vc = 200m/min, fz = 0.15mm/t,
ap = 8.0mm x 3 Passes, ae = 20mm

(2) Comparison of Surface Roughness

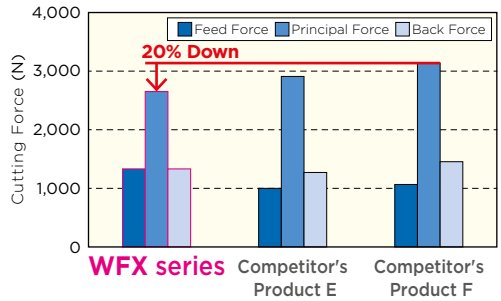


Work Material : SCM440 Tool: WFX12100R (ø100 x 5 teeth)
Cutting Conditions : vc = 200m/min, fz = 0.10mm/t,
ap = 3.0mm, ae = 90mm

(3) Comparison of Surface Properties

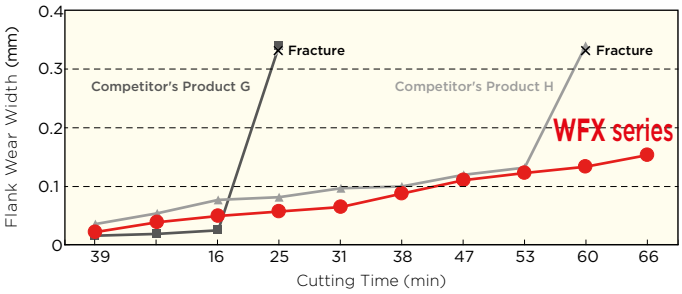


(4) Comparison of Cutting Force



Work Material : S50C Tool: WFX12100R (ø100 x 5 teeth)
Cutting Conditions : vc = 200m/min, fz = 0.15mm/t,
ap = 10mm, ae = 20mm

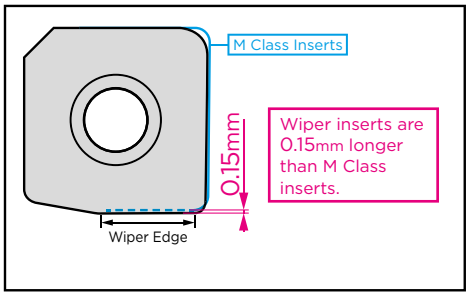
(5) Comparison of Wear Resistance

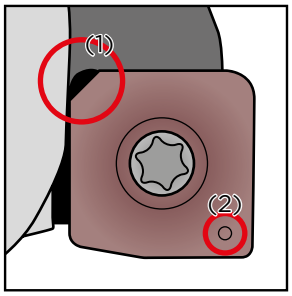


Work Material : SCM440 Tool: WFX12100R (ø100 x 1 tooth evaluation)
Cutting Conditions : vc = 200m/min, fz = 0.15mm/t,
ap = 5.0mm, ae = 30mm

■ Wiper Insert

Optimised wiper edge shape provides superior surface roughness.





Precautions when Using Wiper Inserts

- The wiper insert has a single corner specification.
- Attach the wiper insert so that the chamfered corner is in location (1) shown in the figure.
- Use the corner with the ID mark. (2)
  (08-size inserts have no marks.)
- Refer to page N25 for details about wiper inserts.

WFX 08000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

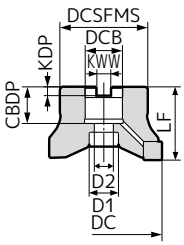


Fig 2

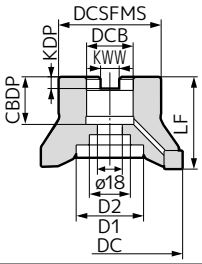
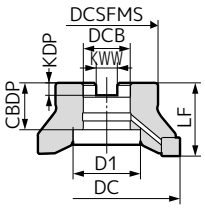


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX 08040RS**	★	**40**	33	40	**16**	8.4	5.6	18	14	9	3	0.2	1
	08050RS	★	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	08063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	5	0.6	1
	08080RS	★	*80	55	50	**27**	12.4	7	22	20	14	6	1.0	1
	08100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	8	1.4	3
Inch	**WFX 08080R**	★	*80	55	50	**25.4**	9.5	6	25	20	14	6	1.0	1
	08100R	★	*100	70	63	**31.75**	12.7	8	32	46	27	8	1.9	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K								N			
	Medium Cutting			P M	P M	K								N	P M		
	Roughing			P M	P M		K								P		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New!	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 080308PZTR-W		★	—	—	—		★						—	—	★	—	2

Fig 1

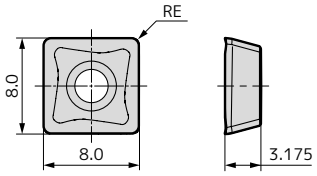
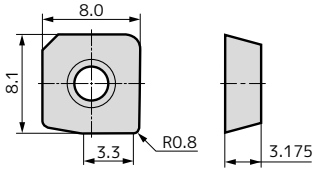


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code | **08** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WFXM 08000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-6°	
Axial	12°	

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

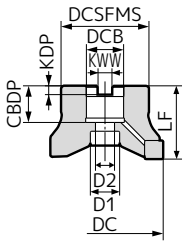


Fig 2

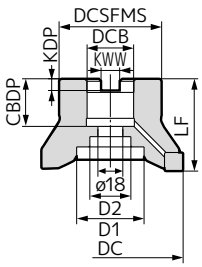
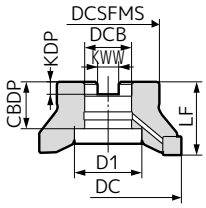


Fig 3



Body (Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXM 08040RS**	★	**40**	33	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	08050RS	★	**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	08063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1
	08080RS	★	***80**	55	50	**27**	12.4	7	22	20	14	8	1.0	1
	08100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	10	1.4	3
Inch	**WFXM 08080R**	★	***80**	55	50	**25.4**	9.5	6	25	20	14	8	1.0	1
	08100R	★	***100**	70	63	**31.75**	12.7	8	32	46	27	10	1.9	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	●	●			●		●	●		●		●	●			
	Medium Cutting	●		●	●	●			●	●	●	●		●	●		
	Roughing	●		●	●		●			●		●			●		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 080308PZTR-W		★	—	—	—		★						—	—	★	—	2

Fig 1

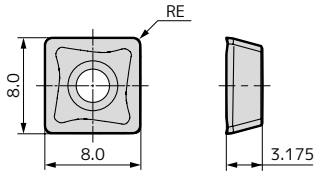
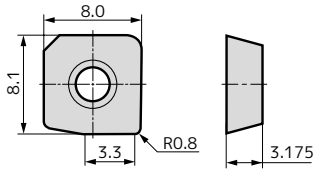


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX **M** **08** **040** **R** **S**

Series Code | Fine Pitch | Insert Size | Dia. | Feed Direction | Metric Bore

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30-**50**-80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WFXF 08000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

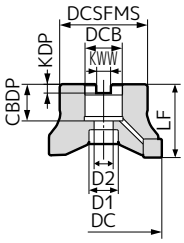


Fig 2

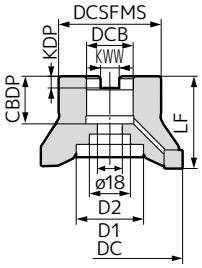
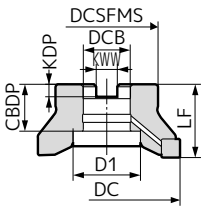


Fig 3



Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF 08040RS**	★	**40**	33	40	**16**	8.4	5.6	18	14	9	6	0.2	1
	08050RS	★	**50**	41	40	**22**	10.4	6.3	20	18	11	7	0.3	1
	08063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	8	0.5	1
	08080RS	★	*80	55	50	**27**	12.4	7	22	20	14	10	0.9	1
	08100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	12	1.4	3
Inch	**WFXF 08080R**	★	*80	55	50	**25.4**	9.5	6	25	20	14	10	1.0	1
	08100R	★	*100	70	63	**31.75**	12.7	8	32	46	27	12	1.9	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K											
	Medium Cutting			P M	P M	K									P M		
	Roughing			P M	P M		K								P		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 080308PZTR-W		★	—	—	—		★						—	—	★	—	2

Fig 1

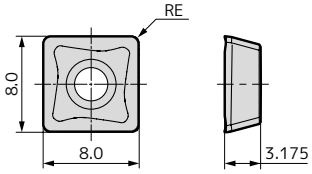
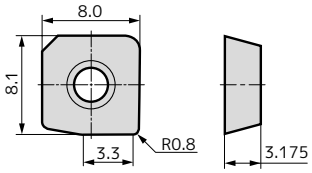


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code | **F** Extra Fine Pitch | **08** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

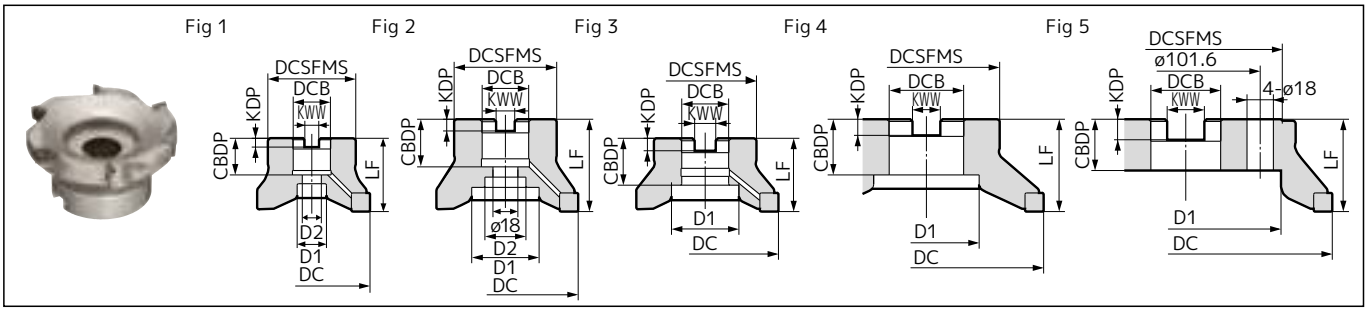
WFX 12000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX 12050RS**	★	**50**	41	40	**22**	10.4	6.3	20	18	11	3	0.3	1
	12063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	12080RS	★	*80	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	12100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	5	1.3	3
	12160RS	★	**160**	130	63	**40**	16.4	9.5	29	88	—	8	4.8	4
Inch	**WFX 12080R**	★	*80	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	12100R	★	*100	70	63	**31.75**	12.7	8	32	46	27	5	1.7	2
	12125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	6	2.4	1
	12160R	★	**160**	100	63	**50.8**	19.1	11	38	72	—	8	3.6	4
	12200R	★	**200**	130	63	**47.625**	25.4	14	35	135	—	10	6.8	5
	12250R	★	**250**	130	63	**47.625**	25.4	14	35	160	—	12	9.5	5

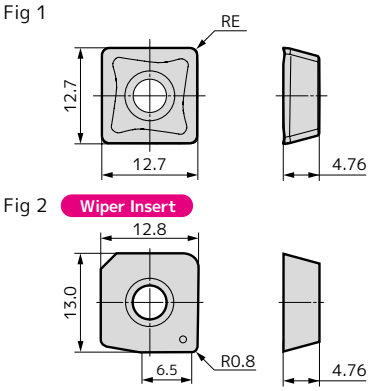
Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	S	P			K		M S	M S		M S		K N	N			
	Medium Cutting	S		P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing	S		P M	P M		K			M S		M S			P		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	1
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	1
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 120408PDTR-W		★	—	—	—	—	★						—	—	★	—	2

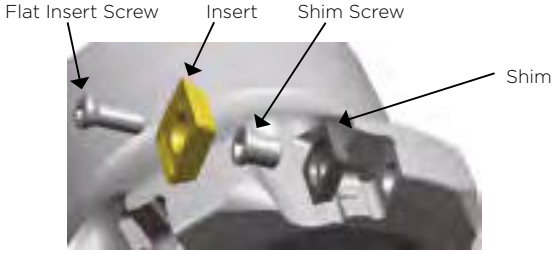


Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX **12** **050** **R** **S**

Series Code | Insert Size | Dia. | Feed Direction | Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WFXS4R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WFXF 12000R(S) type

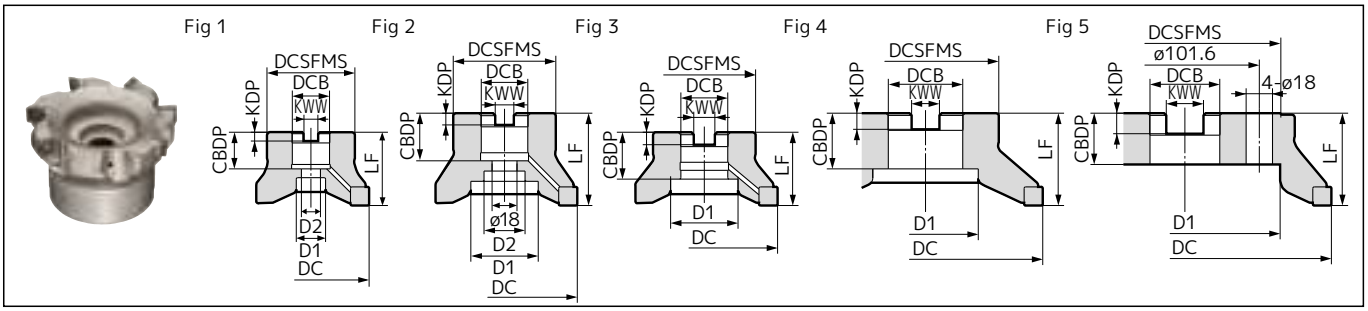
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling

Fig 1 Fig 2 Fig 3 Fig 4 Fig 5



Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF 12050RS**	★	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	5	0.5	1
	12080RS	★	*80	60	50	**27**	12.4	7	25	20	14	6	0.9	1
	12100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	7	1.3	3
	12125RS	★	**125**	90	63	**40**	16.4	9.5	29	52	—	8	2.6	3
Inch	**WFXF 12080R**	★	*80	55	50	**25.4**	9.5	6	25	20	14	6	0.9	1
	12100R	★	*100	70	63	**31.75**	12.7	8	32	46	27	7	1.7	2
	12125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	8	2.3	1
	12160R	★	**160**	100	63	**50.8**	19.1	11	38	72	—	12	3.5	4
	12200R	★	**200**	130	63	**47.625**	25.4	14	35	135	—	16	6.7	5
	12250R		**250**	130	63	**47.625**	25.4	14	35	160	—	18	9.5	5

Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting																
	Medium Cutting																
	Roughing																
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	1
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	1
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 120408PDTR-W		★	—	—	—	—	★						—	—	★	—	2

Fig 1

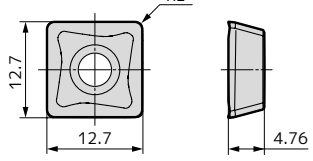
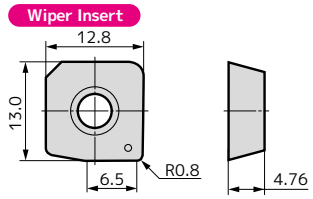


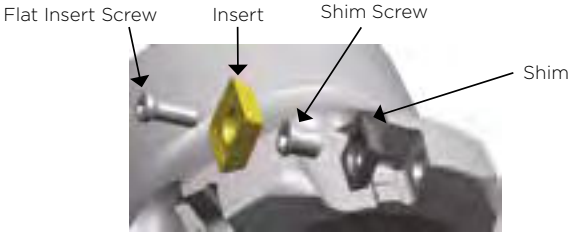
Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code | **F** Extra Fine Pitch | **12** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WFXS4R	BW0507F	LH035	BFTX03512IP	**3.0**	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WFX 08000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

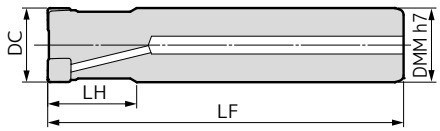
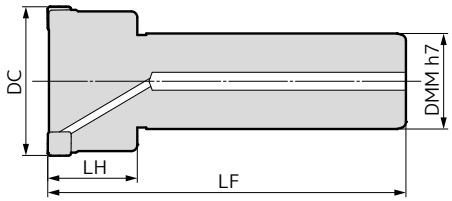


Fig 2



Body (Standard Pitch)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WFX 08020E-16	★	**20**	16	30	110	2	1
08020E	★	**20**	20	30	110	2	1
08022E	★	**22**	20	30	120	2	1
08025E-20	★	**25**	20	30	120	2	1
08025E	★	**25**	25	30	120	2	1
08028E	★	**28**	25	30	120	2	1
08030E	★	**30**	25	30	120	3	1
08032E	★	**32**	32	30	120	3	1
08033E	★	**33**	32	30	120	3	1
08040E	★	**40**	32	30	120	3	2
08050E	★	**50**	32	30	120	4	2
08063E	★	**63**	32	30	120	5	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WFXM 08025E	★	**25**	25	30	120	3	1
08032E	★	**32**	32	30	120	4	1
08040E	★	**40**	32	30	120	4	2
08050E	★	**50**	32	30	120	5	2
08063E	★	**63**	32	30	120	6	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K		M S	M S		M S		K N	N			
	Medium Cutting			P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing			P M	P M		K			M S		M S			P		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 080308PZTR-W		★	—	—	—		★						—	—	★	—	2

Fig 1

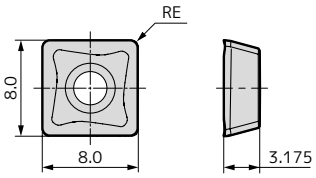
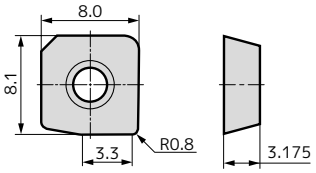


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code | **M** Fine Pitch | **08** Insert Size | **025** Dia. | **E** Shank type

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WFX(F) 12000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

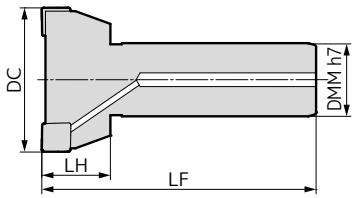
Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling

Fig 1





Body (Standard Pitch)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFX 12040E	★	**40**	32	30	120	3	0.68	1
12050E	★	**50**	32	30	120	3	0.78	1
12063E	★	**63**	32	30	120	4	0.94	1
12080E	★	**80**	32	30	120	4	1.29	1

Inserts are sold separately. ø40mm size does not have shims.

Body (Extra Fine Pitch)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXF 12050E	★	**50**	32	30	120	4	0.78	1
12063E	★	**63**	32	30	120	5	0.96	1
12080E	★	**80**	32	30	120	6	1.22	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	K M N	P			K		M S	M S		M S		K N	N		
	Medium Cutting	K M N		P M	P M	K			M S	M S	M S	M S		N	P M	
	Roughing	K M N		P M	P M		K			M S		M S			P	
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New!)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	1
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	1
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 120408PDTR-W		★	—	—	—	—	★						—	—	★	—	2

Fig 1

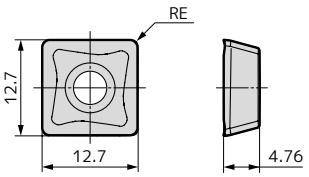
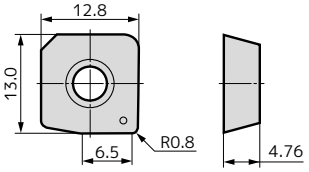
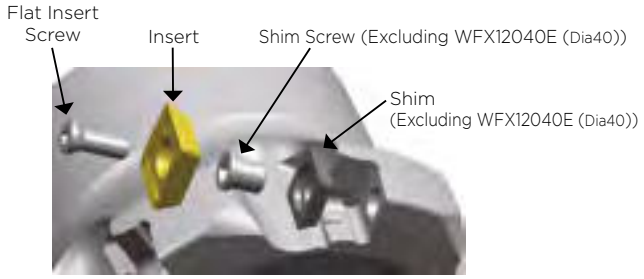


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).



Identification Code

WFX Series Code | **F** Extra Fine Pitch | **12** Insert Size | **050** Dia. | **E** Shank type

Parts

Shim	Shim Screw	Wrench	Flat Insert Screw		Wrench	Anti-seizure Cream
				N·m		
WFXS4R	BW0507F	LH035	BFTX03512IP	**3.0**	TRDR15IP	SUMI-P

ø40mm size does not have shims.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACS2500 ACS3000 ACM200 ACM300

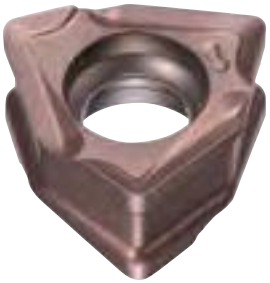
Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

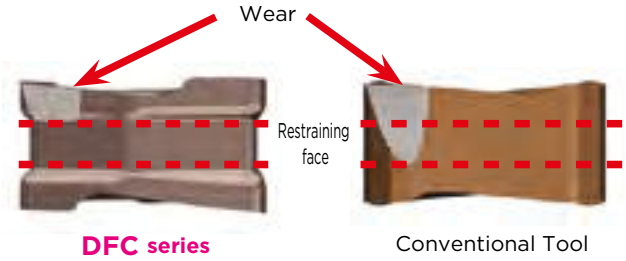


■ Features

- The high-efficiency general-purpose/shoulder milling SEC-Sumi Dual Mill DFC series cutter has a unique insert shape with both excellent sharpness and cutting edge strength, enabling it to be used for a wider range of applications from high-efficiency machining through to finishing.
  Further expansion of the shoulder milling GS type chipbreaker, suitable for a wide range of applications.
- Applicable to various work materials
  Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.



Unique insert shape provides both sharpness and cutting edge strength



Flank wear of inserts for DFC series does not reach the restraining face and thus mounting accuracy does not suffer

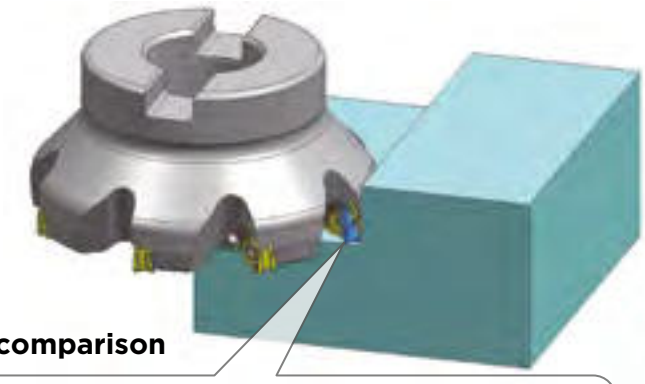


The 90° cutting angle is suitable for both face milling and shoulder milling

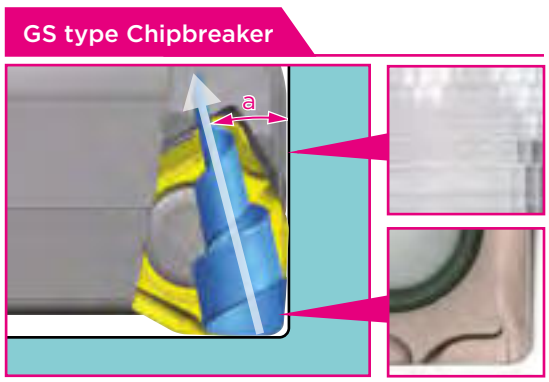
GS type Chipbreaker for Shoulder Milling

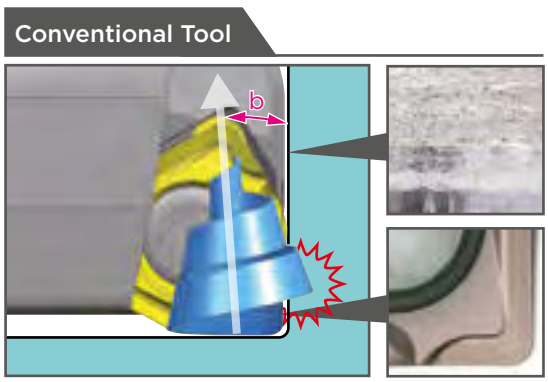
- Excellent chip control
- Suppresses machined surface deterioration due to chip biting

Work Material : S50C, Tool: ø100mm
Cutting Conditions : vc = 200m/min, fz = 0.2mm/t, ae = 50mm, ap = 3mm x 6 Passes, Dry



Chip generation image and machined surface comparison





Chip flow direction control (a > b) → chip biting suppressed

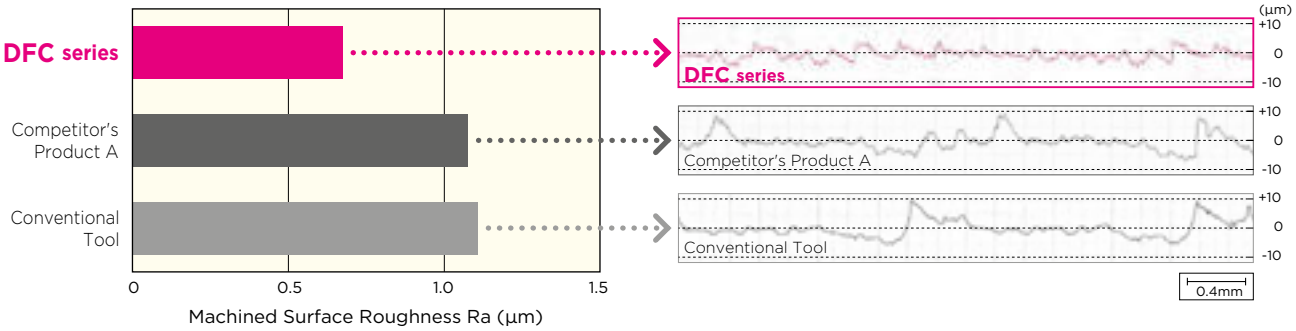
DFC series

■ Cutting Performance



Face Milling

(1) Machined surface roughness:
Better than competitors' products

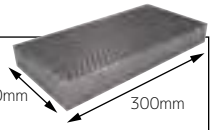


Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: vc=200 m/min, fz=0.2 mm/t, ap=3 mm, ae=85 mm, Dry

(2) Cutting edge strength / Cutting edge damage during heavy interrupted cutting:
Cutting edge strength surpasses competitors' double-sided cutters

	fz(mm/t)		
	0.3	0.4	0.5
DFC series	○	○	○
Competitor's Product B (Double-sided, 6 Corners)	○	Damage (Midway through 2 passes)	
Competitor's Product C (Double-sided, 6 Corners)	Damage (Midway through 3 passes)		
Competitor's Product D (Double-sided tangential)	Damage (Midway through 3 passes)		

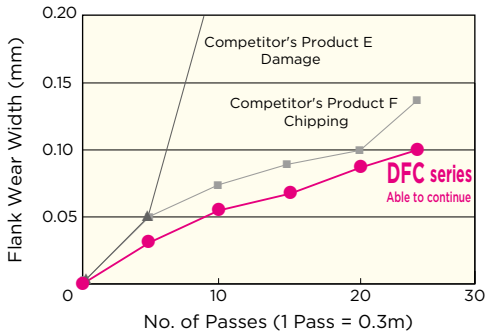
(Cutting Distance: 0.9m)



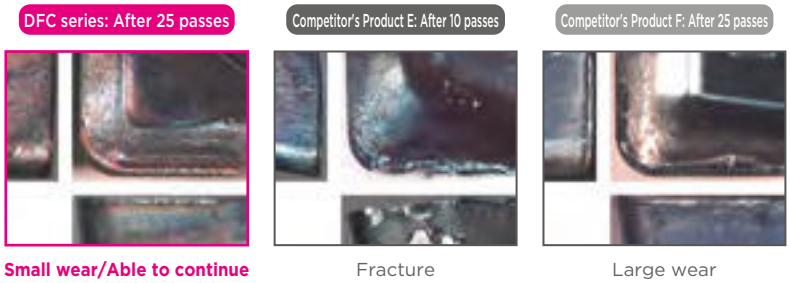
Work Material: S50C (With Holes)
Tool: DFC 09100RS
Insert: XNMU 060608PNER-G Grade: ACP300
Cutting Conditions: vc = 150m/min, ap = 3mm, ae = 50mm, Dry



(3) Wear resistance: **Achieves long tool life thanks to excellent wear resistance**



Comparison of cutting edge damage



Small wear/Able to continue | Fracture | Large wear

Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: vc=200 m/min, fz=0.2 mm/t, ap=3 mm, ae=85 mm, Dry

■ Applications and Recommended Chipbreakers

Face Milling	Shoulder Milling	Side Milling	Helical Milling	Ramping
G	GS	G/GS		



Guidelines for Shoulder Milling Conditions

Maximum Radial Depth of Cut
G type: ae ≦ 10% of cutter diameter
GS type: ae ≦ 50% of cutter diameter

Recommended Axial Depth of Cut
ap = 3mm

Recommended Feed Rate
fz ≦ 0.2mm/t
(for general steel)





⚠ Applications which are not applicable

■ Product Range

Type	Cat. No.	Description	Dia. (mm) ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	Shape
Shell	DFC 09000R (Inch)	Standard Pitch						5	6	7	8	10	
Shell	DFC 09000RS	Standard Pitch				4	4	5	6	7	8	10	
Shell	DFCM 09000R (Inch)	Fine Pitch						7	8	11	12	16	
Shell	DFCM 09000RS	Fine Pitch				5	6	7	8	11	12	16	
Shell	DFCF 09000R (Inch)	Extra Fine Pitch						9	11	14	16	20	
Shell	DFCF 09000RS	Extra Fine Pitch				6	7	9	11	14	16	20	
Shank	DFC 09000E	Standard Pitch	2	2	3	3*	4*	5*					
Shank	DFCM 09000E	Fine Pitch		3	4	5*	6*	7*					

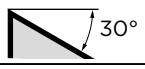
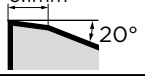
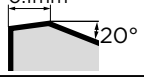
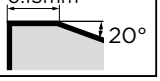
Number in ●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available

■ Insert Grades

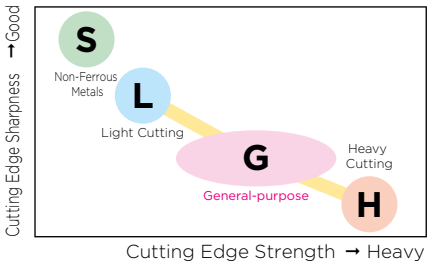
Lineup featuring the general-purpose ACU2500 grade suitable for various work materials.
Lineup of Steel Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more to suit a wide range of work materials.



■ Chipbreaker Selection

Work Material	P M K S			
Application	Light Cutting	General-purpose to Interrupted Milling	Shoulder Milling	Heavy Cutting
Features	Low Rigidity Milling, Reduction of Burrs	Face Milling	Shoulder Milling	Heavy Side Milling, Hardened Steel
Chipbreaker	L type	G type	GS type	H type
Chipbreaker				
Cutting Edge Cross Section	 30°	 0.1mm 20°	 0.1mm 20°	 0.15mm 20°

■ Chipbreaker Selection Guide



■ Insert Mounting Precautions



No Gap

Make sure there is no gap



Gap

Place the insert face flat onto the cutter's insert pocket and tighten the flat insert screw with the recommended torque.

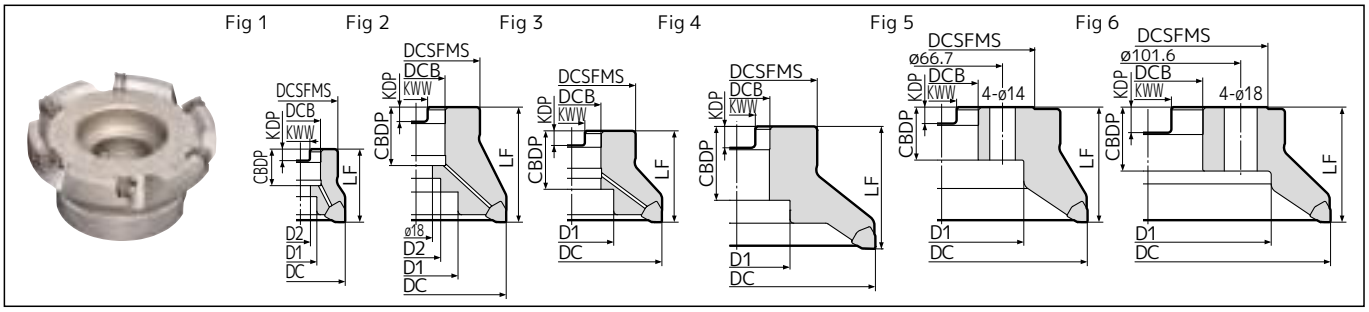
DFC 09000R(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFC 09050RS**	★	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	09063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	09080RS	★	***80**	55	50	**27**	12.4	7	22	20	14	5	1.0	1
	09100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	6	1.4	3
	09125RS	★	**125**	80	63	**40**	16.4	9	29	52	29	7	2.8	1
	09160RS	★	**160**	100	63	**40**	16.4	9	29	90	—	8	4.6	5
	09200RS	★	**200**	130	63	**60**	25.7	14	35	135	—	10	5.7	6
Inch	**DFC 09080R**	★	***80**	55	50	**25.4**	9.5	6	25	20	14	5	1.0	1
	09100R	★	***100**	70	63	**31.75**	12.7	8	32	46	27	6	2.0	2
	09125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	7	2.8	1
	09160R	★	**160**	100	63	**50.8**	19.1	11	38	72	—	8	3.6	4
	09200R	★	**200**	130	63	**47.625**	25.4	14	35	135	—	10	6.0	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

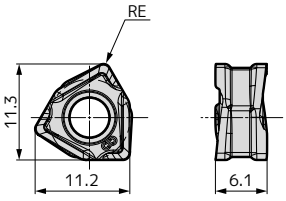
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	P M K S	P M			K		M S	M S		M S			
	Medium Cutting	P M K S	P M	P M		K			M S	M S	M S	M S		
	Roughing	P M K S		P M	P M		K			M S		M S		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		★	—	★	★	—	★				—	▲	0.4	1
060608PNER-L		★	—	★	★	—	★		★	★	—	▲	0.8	1
XNMU 060604PNER-G		★	★	★	★	★	★			★	▲	▲	0.4	1
060608PNER-G		★	★	★	★	★	★		★	★	▲	▲	0.8	1
060612PNER-G		★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-G		★	★	★	★	★	★				▲	▲	1.6	1
XNMU 060604PNER-GS		★	★	★	★						▲	▲	0.4	1
060608PNER-GS		★	★	★	★						▲	▲	0.8	1
060612PNER-GS		★	★	★	★						▲	▲	1.2	1
060616PNER-GS		★	★	★	★						▲	▲	1.6	1
XNMU 060608PNER-H		★	★	★	★	★	★				▲	▲	0.8	1
060612PNER-H		★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-H		★	★	★	★	★	★				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **09** **050** **R** **S**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DC ø50 to 125	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above			TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended.
Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DFCM 09000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
Radial	-9°	
Axial	-5°	

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

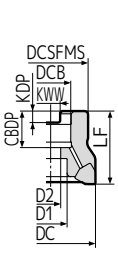


Fig 2

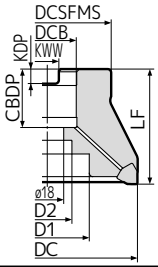


Fig 3

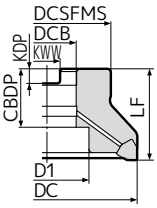


Fig 4

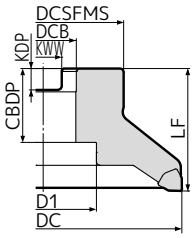


Fig 5

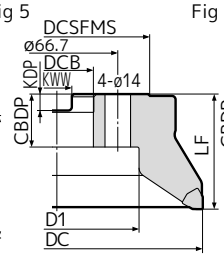
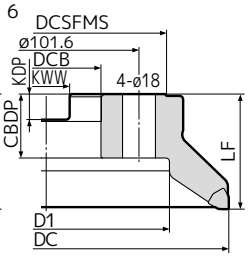


Fig 6



Body (Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCM 09050RS**	★	**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	09063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1
	09080RS	★	*80	55	50	**27**	12.4	7	22	20	14	7	0.9	1
	09100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	8	1.4	3
	09125RS	★	**125**	80	63	**40**	16.4	9	29	52	29	11	2.7	1
	09160RS	★	**160**	100	63	**40**	16.4	9	29	90	—	12	4.5	5
	09200RS	★	**200**	130	63	**60**	25.7	14	35	135	—	16	5.6	6
Inch	**DFCM 09080R**	★	*80	55	50	**25.4**	9.5	6	25	20	14	7	0.9	1
	09100R	★	*100	70	63	**31.75**	12.7	8	32	46	27	8	1.9	2
	09125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	11	2.7	1
	09160R	★	**160**	100	63	**50.8**	19.1	11	38	72	—	12	3.5	4
	09200R	★	**200**	130	63	**47.625**	25.4	14	35	135	—	16	5.9	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

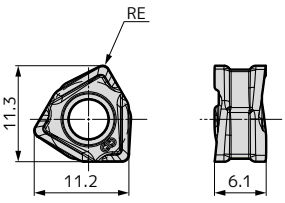
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS			
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS		
	Roughing	MS		PM	PM		K			MS		MS		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		★	—	★	★	—	★				—	▲	0.4	1
060608PNER-L		★	—	★	★	—	★		★	★	—	▲	0.8	1
XNMU 060604PNER-G		★	★	★	★	★	★			★	▲	▲	0.4	1
060608PNER-G		★	★	★	★	★	★		★	★	▲	▲	0.8	1
060612PNER-G		★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-G		★	★	★	★	★	★				▲	▲	1.6	1
XNMU 060604PNER-GS		★	★	★	★						▲	▲	0.4	1
060608PNER-GS		★	★	★	★						▲	▲	0.8	1
060612PNER-GS		★	★	★	★						▲	▲	1.2	1
060616PNER-GS		★	★	★	★						▲	▲	1.6	1
XNMU 060608PNER-H		★	★	★	★	★	★				▲	▲	0.8	1
060612PNER-H		★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-H		★	★	★	★	★	★				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **M** **09** **050** **R** **S**

Series Code	Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DC ø50 to 125	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above			TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended.
Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DFCF 09000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

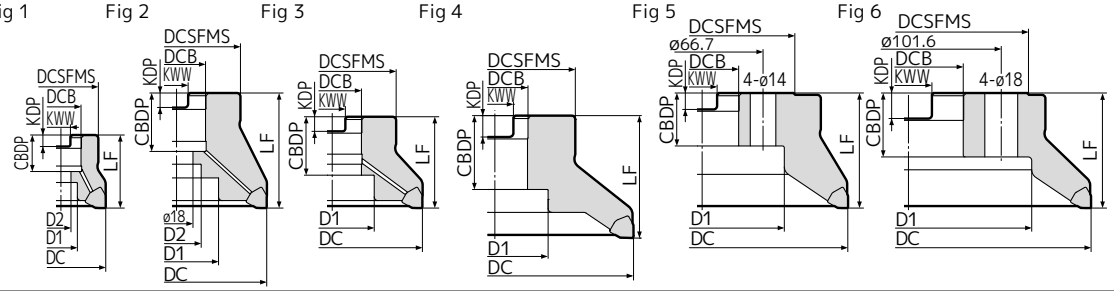
Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6



Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCF 09050RS**	★	**50**	41	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	09063RS	★	**63**	50	40	**22**	10.4	6.3	20	18	11	7	0.5	1
	09080RS	★	*80	55	50	**27**	12.4	7	22	20	14	9	0.9	1
	09100RS	★	**100**	70	50	**32**	14.4	8	32	46	—	11	1.3	3
	09125RS	★	**125**	80	63	**40**	16.4	9	29	52	29	14	2.6	1
	09160RS	★	**160**	100	63	**40**	16.4	9	29	90	—	16	4.5	5
	09200RS	★	**200**	130	63	**60**	25.7	14	35	135	—	20	5.5	6
Inch	**DFCF 09080R**	★	*80	55	50	**25.4**	9.5	6	25	20	14	9	0.9	1
	09100R	★	*100	70	63	**31.75**	12.7	8	32	46	27	11	1.9	2
	09125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	30	14	2.7	1
	09160R	★	**160**	100	63	**50.8**	19.1	11	38	72	—	16	3.5	4
	09200R	★	**200**	130	63	**47.625**	25.4	14	35	135	—	20	5.8	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

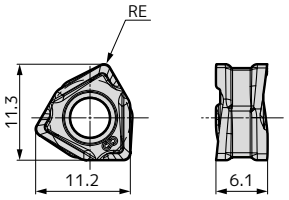
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	●	●			●		●	●		●			
	Medium Cutting	●	●	●		●			●	●	●	●		
	Roughing	●		●	●		●			●		●		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		★	—	★	★	—	★				—	▲	0.4	1
060608PNER-L		★	—	★	★	—	★		★	★	—	▲	0.8	1
XNMU 060604PNER-G		★	★	★	★	★	★			★	▲	▲	0.4	1
060608PNER-G		★	★	★	★	★	★		★	★	▲	▲	0.8	1
060612PNER-G		★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-G		★	★	★	★	★	★				▲	▲	1.6	1
XNMU 060604PNER-GS		★	★	★	★						▲	▲	0.4	1
060608PNER-GS		★	★	★	★						▲	▲	0.8	1
060612PNER-GS		★	★	★	★						▲	▲	1.2	1
060616PNER-GS		★	★	★	★						▲	▲	1.6	1
XNMU 060608PNER-H		★	★	★	★	★	★				▲	▲	0.8	1
060612PNER-H		★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-H		★	★	★	★	★	★				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC Series Code | **F** Extra Fine Pitch | **09** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DC ø50 to 125	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above			TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended. Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Sumi Dual Mill

DFC(M) 09000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

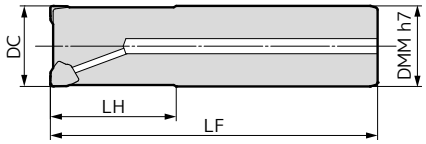
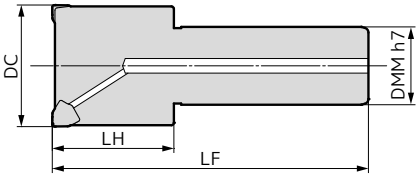


Fig 2



Body (Standard Pitch)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
DFC 09025E	★	**25**	25	40	120	2	1
09032E	★	**32**	32	50	130	2	1
09040E	★	**40**	32	50	130	3	2
09050E	★	**50**	32	50	130	3	2
09050E-42		**50**	42	50	150	3	2
09063E	★	**63**	32	50	130	4	2
09063E-42		**63**	42	50	150	4	2
09080E	★	**80**	32	50	130	5	2
09080E-42		**80**	42	50	150	5	2

Body (Fine Pitch)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
DFCM 09032E	★	**32**	32	50	130	3	1
09040E	★	**40**	32	50	130	4	2
09050E	★	**50**	32	50	130	5	2
09050E-42		**50**	42	50	150	5	2
09063E	★	**63**	32	50	130	6	2
09063E-42		**63**	42	50	150	6	2
09080E	★	**80**	32	50	130	7	2
09080E-42		**80**	42	50	150	7	2

Inserts are sold separately.

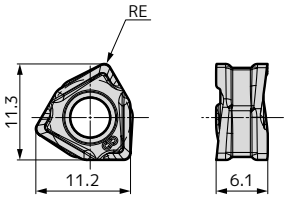
Insert

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	P M K	P M			K		M S	M S		M S			
	Medium Cutting	P M K	P M	P M		K			M S	M S	M S	M S		
	Roughing	P M K		P M	P M		K			M S		M S		

ISO Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L	★	—	★	★	—	★				—	▲	0.4	1
060608PNER-L	★	—	★	★	—	★		★	★	—	▲	0.8	1
XNMU 060604PNER-G	★	★	★	★	★	★			★	▲	▲	0.4	1
060608PNER-G	★	★	★	★	★	★		★	★	▲	▲	0.8	1
060612PNER-G	★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-G	★	★	★	★	★	★				▲	▲	1.6	1
XNMU 060604PNER-GS	★	★	★	★						▲	▲	0.4	1
060608PNER-GS	★	★	★	★						▲	▲	0.8	1
060612PNER-GS	★	★	★	★						▲	▲	1.2	1
060616PNER-GS	★	★	★	★						▲	▲	1.6	1
XNMU 060608PNER-H	★	★	★	★	★	★				▲	▲	0.8	1
060612PNER-H	★	★	★	★	★	★				▲	▲	1.2	1
060616PNER-H	★	★	★	★	★	★				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **M** **09** **025** **E**

Series Code	Fine Pitch	Insert Size	Dia.	Shank type

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX03512IP	**3.0**	TRDR15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended. Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

Expansion



■ Features

- **Excellent Machined Surface Quality**
  Adopts ground type insert for high accuracy to realise excellent machined surface quality.
- **Cutting Edge Designed for High Cutting Edge Strength and Sharpness**
  Adopts tangential insert and optimised cutting edge shape to achieve both high cutting edge strength and sharpness.
- **Wide Ranging Product Lineup**
  An enhanced lineup of grades is available in addition to 2 types of insert sizes and 3 types of chipbreakers. Can be used for a wide variety of machining applications.
- **Applicable to Various Work Materials**
  Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

■ Product Range (Face Mills)

Type	Cat. No.	Description	Dia. (mm) ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	ø315	Shape
Shell	TSX 08000RS/LS	Standard Pitch					4	5	6	7							
Shell	TSX 08000R/L (Inch)	Standard Pitch								7							
Shell	TSXF 08000RS/LS	Extra Fine Pitch					6	8	10	11							
Shell	TSXF 08000R/L (Inch)	Extra Fine Pitch								11							
Shell	TSX 13000RS/LS	Standard Pitch					3	4	5	5	6	7	8	12	14	16	
Shell	TSX 13000R/L (Inch)	Standard Pitch								5	6	7	8	12	14	16	
Shell	TSXM 13000RS/LS	Fine Pitch					4	5	6	7	8	10	12	16	20	24	
Shell	TSXM 13000R/L (Inch)	Fine Pitch								7	8	10	12	16	20	24	
Shell	TSXF 13000RS/LS	Extra Fine Pitch					5	6	7	8	10	14	16				
Shell	TSXF 13000R/L (Inch)	Extra Fine Pitch								8	10	14	16				
Shank	TSX 08000E	Standard Pitch	2	2*	3*	3*	4	5	6	7							
Shank	TSXF 08000E	Extra Fine Pitch		3	4	5	6	8	10	11							
Shank	TSX 13000E	Standard Pitch			2	2	3	4	5	5							
Shank	TSXM 13000E	Fine Pitch				3	4	5	6	7							
Shank	TSXF 13000E	Extra Fine Pitch					5	6	7	8							

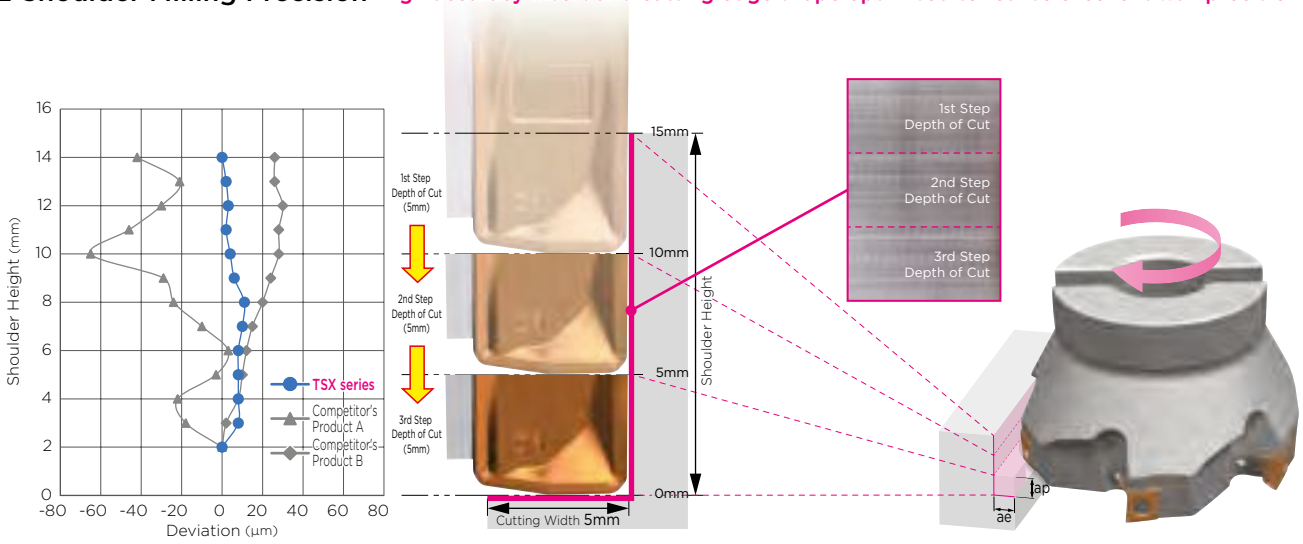
Number in ●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available.
For the shell type, left-handed tools can also be manufactured.

■ Product Range (Repeaters)

Type	Cat. No.	Dia. (mm) ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	Shape
Shell	TSXR 08000RS			2	3	3 4	5				
Shell	TSXR 13000RS				2	3	3 4	4 5	5 6	7	
Shank	TSXR 08000E	1	2	2	3						
Shank	TSXR 13000E				2	3					

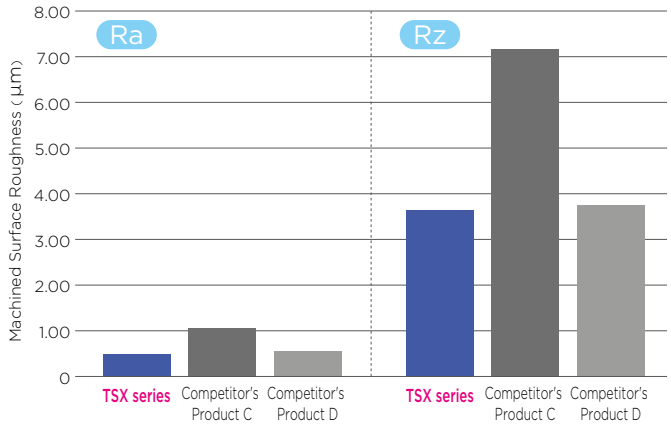
Number in ●● shows the number of teeth

■ Shoulder Milling Precision High accuracy insert and cutting edge shape optimised to realise excellent wall precision



Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: vc = 200m/min, fz = 0.2mm/t, ap = 5mm x 3 Passes, ae = 5mm, Dry

■ Machined Surface Roughness Cutting edge shape optimised to realise excellent machined surface roughness



Machined Surface Comparison

TSX series Without Cloudiness



Competitor's Product Cloudy



Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: vc = 200m/min, fz = 0.2mm/t, ap = 3mm, ae = 60mm, Dry

■ Cutting Edge Strength TSX type has high cutting edge strength and enables high-efficiency machining

1 Pass = 300mm

Cutting Length	4 Passes	8 Passes	12 Passes
TSX series	Continued Machining Possible		
Competitor's Product E	Damage		
Competitor's Product F	Damage		

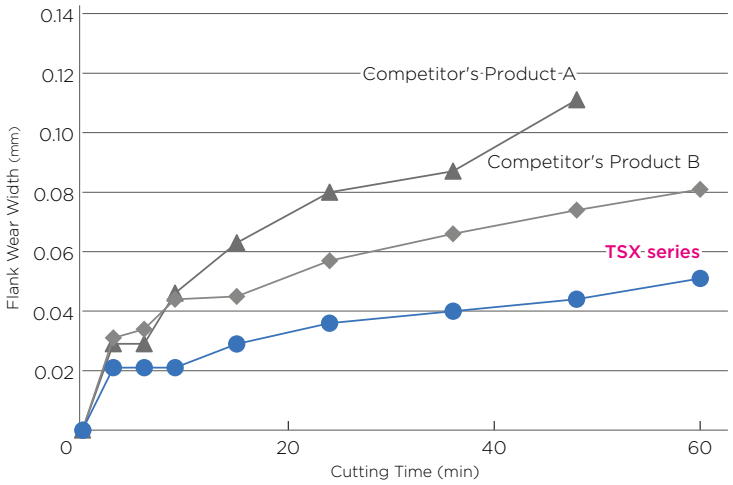


Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: vc = 150m/min, fz = 0.6mm/t (Accelerating), ap = 3mm, ae = 40mm, Dry

TSX series

■ Tool Life

Excellent Wear Resistance Realises Stable Tool Life

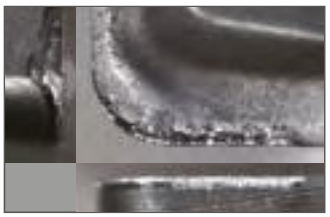


Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 08025E, Insert: LNEX 080408PNER-G (ACP200)
Cutting Conditions	: vc = 200m/min, fz = 0.1mm/t, ap = 2mm, ae = 5mm, Dry

TSX series
(After cutting for 60 minutes)



Competitor's Product A
(After cutting for 48 minutes)

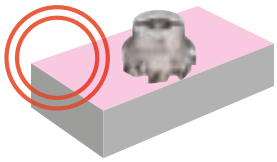


Competitor's Product B
(After cutting for 60 minutes)

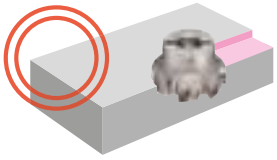


■ Applications

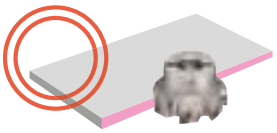
Face Milling



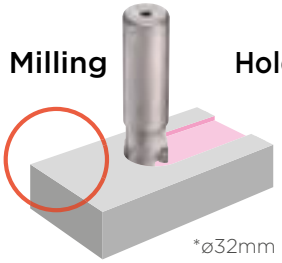
Shoulder Milling



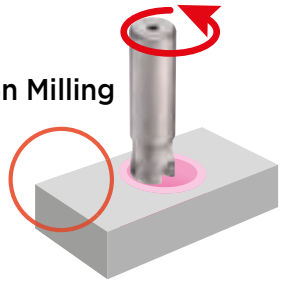
Side Milling



Groove Milling

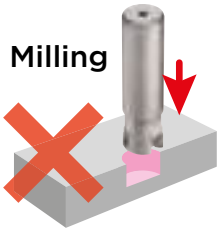


Hole Expansion Milling

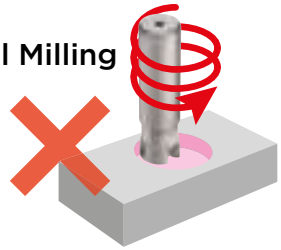


*ø32mm or Less
Standard Pitch Recommended

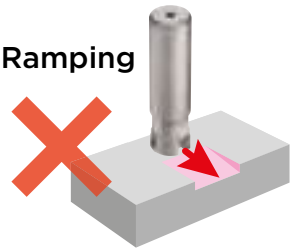
Plunge Milling



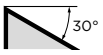
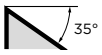
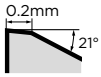
Helical Milling



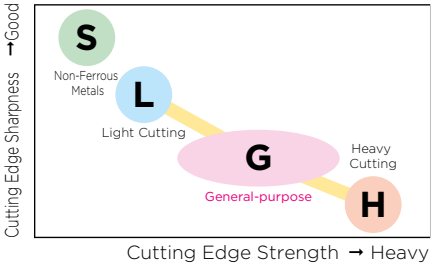
Ramping



■ Chipbreaker Selection

Work Material	P M K S			N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	General-purpose to Interrupted Milling	Heavy Cutting, Heavy Side Milling and Hardened Steel Milling	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose type	High Strength type	High Rake type
Chipbreaker	**L type**	**G type**	**H type**	**S type**
				
LNEX08 type Cross Section			Not Available	
LNEX13 type Cross Section				

■ Chipbreaker Selection Guide



■ Product Range

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 0804○○PNFR/L-S					—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●
LNEX 1306○○PNFR/L-S							

TSX(F) 08000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-20°
	Axial	-6°

8mm 90°

Face Milling | Shoulder Milling | Side Milling



Fig 1

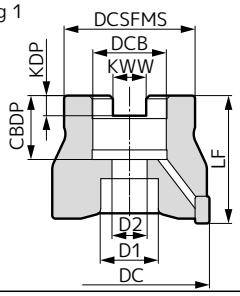


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

ISO Cat. No.		Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08040RS/LS**	★		**40**	33	40	**16**	8.4	5.6	18	14	9	4	0.21	1
	08050RS/LS	★		**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.30	1
	08063RS/LS	★		**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.53	1
	08080RS/LS	★		*80	55	50	**27**	12.4	7.0	22	20	14	7	0.99	1
Inch	**TSX 08080R/L**	★		*80	55	50	**25.4**	9.5	6.0	25	20	14	7	1.00	1

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Body (Extra Fine Pitch)

Dimensions (mm)

ISO Cat. No.		Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08040RS/LS**	★		**40**	33	40	**16**	8.4	5.6	18	14	9	6	0.21	1
	08050RS/LS	★		**50**	41	40	**22**	10.4	6.3	20	18	11	8	0.31	1
	08063RS/LS	★		**63**	50	40	**22**	10.4	6.3	20	18	11	10	0.54	1
	08080RS/LS	★		*80	55	50	**27**	12.4	7.0	22	20	14	11	0.97	1
Inch	**TSXF 08080R/L**	★		*80	55	50	**25.4**	9.5	6.0	25	20	14	11	0.98	1

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Parts

Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
BFTX0308IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

TSX F 08 050 R S

TSX	F	08	050	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSX(F) 0800OR/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC			
Process	High-speed/Light Cutting	●	●			K		●	●		●			N			
	Medium Cutting	●	●	●		K			●	●	●	●	N	N			
	Roughing	●		●	●		K			●		●					
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
080412PNER-L		★		★			★				▲	▲	—	—	1.2	1
080416PNER-L		★		★			★				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
080412PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
080416PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
LNEX 080404PNEL-L				★			★						—	—	0.4	2
080408PNEL-L				★			★						—	—	0.8	2
080412PNEL-L				★			★						—	—	1.2	2
080416PNEL-L				★			★						—	—	1.6	2
LNEX 080404PNEL-G				★		★	★					▲	—	—	0.4	2
080408PNEL-G				★		★	★					▲	—	—	0.8	2
080412PNEL-G				★		★	★						—	—	1.2	2
080416PNEL-G				★		★	★						—	—	1.6	2
LNEX 080402PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
080404PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
080408PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
080412PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
080416PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2

Fig 1 (Right-Hand)

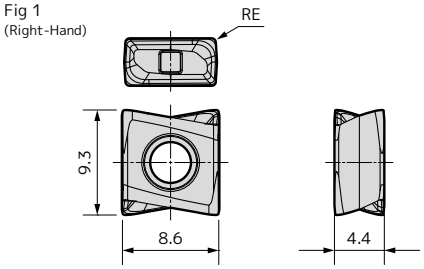
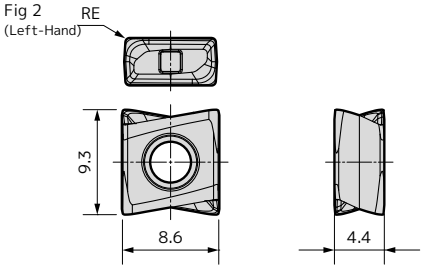


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT40 machine tools.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

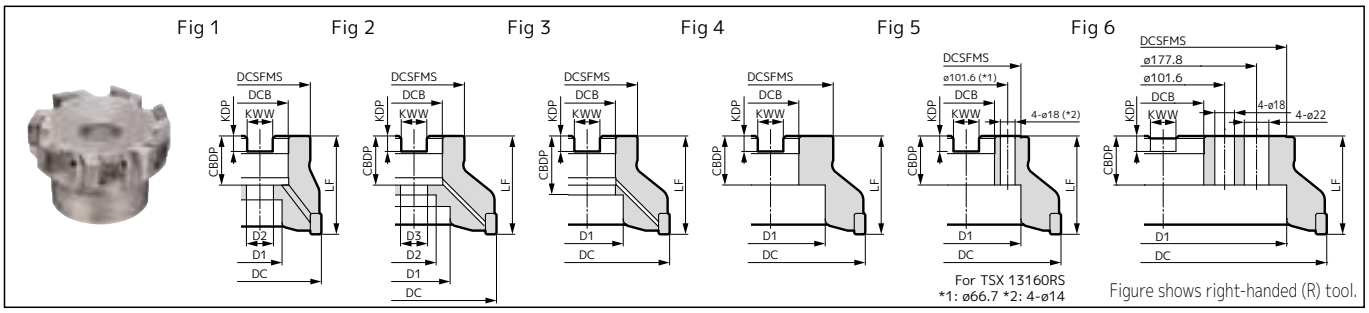
TSX 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-23° to -15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Side Milling



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13040RS/LS**	★		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	3	0.20	1
	13050RS/LS	★		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	4	0.30	1
	13063RS/LS	★		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	5	0.50	1
	13080RS/LS	★		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	5	0.92	1
	13100RS/LS	★		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	6	1.35	3
	13125RS/LS	★		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	7	2.55	1
	13160RS/LS	★		**160**	100	63	**40**	16.4	9.0	29.0	90	—	—	8	4.97	5 -1 -2
	13200RS/LS	★		**200**	130	63	**60**	25.7	14.0	35.0	135	—	—	12	6.20	5
	13250RS/LS	★		**250**	130	63	**60**	25.7	14.0	35.0	160	—	—	14	9.35	5
	13315RS/LS	★		**315**	240	63	**60**	25.7	14.0	35.0	230	—	—	16	16.42	6
Inch	**TSX 13080R/L**	★		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	5	0.93	1
	13100R/L	★		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	6	1.88	2
	13125R/L	★		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	7	2.61	1
	13160R/L	★		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	8	4.18	4
	13200R/L	★		**200**	130	63	**47.625**	25.4	14.0	35.0	135	—	—	12	6.36	5
	13250R/L	★		**250**	130	63	**47.625**	25.4	14.0	35.0	160	—	—	14	9.60	5
	13315R/L	★		**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	16	16.68	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Identification Code

TSX 13 100 R S

TSX	13	100	R	S
Series Code	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

Parts

Applicable Cutter	Shim	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSX 13040RS/LS TSX 13050RS/LS TSX 13063RS/LS TSX 13080RS/LS TSX 13100RS/LS TSX 13125RS/LS TSX 13160RS/LS	—	BFTX03510IP	**3.0**	—	HPS1015	TRB15IP	SUMI-P
TSX 13200RS/LS TSX 13250RS/LS TSX 13315RS/LS	TSXS13R/L			TRDR15IP	—	—	
TSX 13080R/L TSX 13100R/L TSX 13125R/L TSX 13160R/L	—			—	HPS1015	TRB15IP	
TSX 13200R/L TSX 13250R/L TSX 13315R/L	TSXS13R/L			TRDR15IP	—	—	

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSX 13000R/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC		
Process	High-speed/Light Cutting				K								N		
	Medium Cutting				K							N	N		
	Roughing					K									
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
130612PNER-L		★		★			★				▲	▲	—	—	1.2	1
130616PNER-L		★		★			★				▲	▲	—	—	1.6	1
130620PNER-L		★		★			★				▲	▲	—	—	2.0	1
130624PNER-L		★		★			★				▲	▲	—	—	2.4	1
130632PNER-L		★		★			★				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
130612PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
130616PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
130620PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.0	1
130624PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.4	1
130632PNER-G		★	★	★	★	★	★				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		★		★	★	★	★						—	—	0.4	1
130608PNER-H		★		★	★	★	★						—	—	0.8	1
130612PNER-H		★		★	★	★	★						—	—	1.2	1
130616PNER-H		★		★	★	★	★						—	—	1.6	1
130620PNER-H		★		★	★	★	★						—	—	2.0	1
130624PNER-H		★		★	★	★	★						—	—	2.4	1
130632PNER-H		★		★	★	★	★						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1
LNEX 130604PNEL-L				★			★						—	—	0.4	2
130608PNEL-L				★			★						—	—	0.8	2
130612PNEL-L				★			★						—	—	1.2	2
130616PNEL-L				★			★						—	—	1.6	2
130620PNEL-L				★			★						—	—	2.0	2
130624PNEL-L				★			★						—	—	2.4	2
130632PNEL-L				★			★						—	—	3.2	2
LNEX 130604PNEL-G				★		★	★					▲	—	—	0.4	2
130608PNEL-G				★		★	★					▲	—	—	0.8	2
130612PNEL-G				★		★	★						—	—	1.2	2
130616PNEL-G				★		★	★						—	—	1.6	2
130620PNEL-G				★		★	★						—	—	2.0	2
130624PNEL-G				★		★	★						—	—	2.4	2
130632PNEL-G				★		★	★						—	—	3.2	2
LNEX 130602PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
130604PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
130608PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
130612PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
130616PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2
130620PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.0	2
130624PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.4	2
130632PNFL-S		—	—	—	—	—	—	—	—	—	—	—			3.2	2

Fig 1 (Right-Hand)

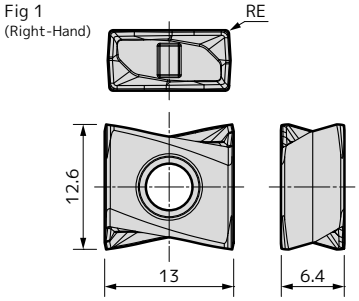
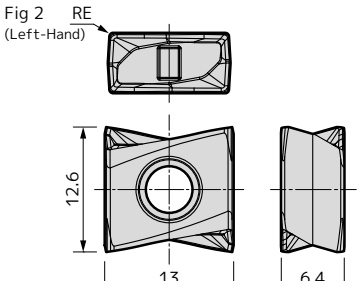


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.

★ mark: Global stocked item
Blank: Made-to-order item
(N·m) Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

TSXM 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-23° to 15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Side Milling



Fig 1

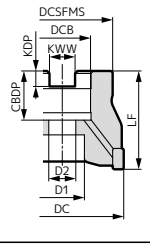


Fig 2

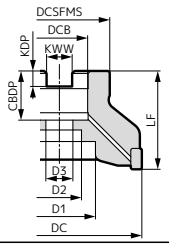


Fig 3

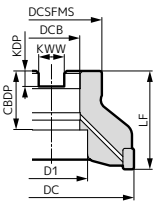


Fig 4

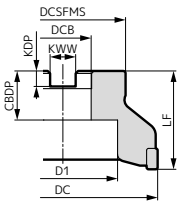
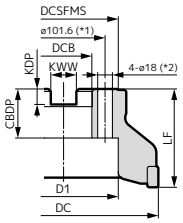


Fig 5



For TSXM 13160RS
*1: ø66.7 *2: 4-ø14

Fig 6

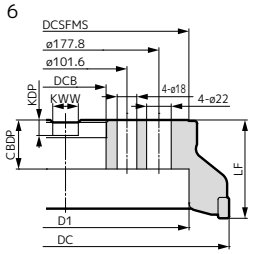


Figure shows right-handed (R) tool.

Body (Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13040RS/LS**	★		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	4	0.19	1
	13050RS/LS	★		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	5	0.28	1
	13063RS/LS	★		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	6	0.50	1
	13080RS/LS	★		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	7	0.92	1
	13100RS/LS	★		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	8	1.36	3
	13125RS/LS	★		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	10	2.57	1
	13160RS/LS	★		**160**	100	63	**40**	16.4	9.0	29.0	90	—	—	12	5.02	5 1/2
	13200RS/LS	★		**200**	130	63	**60**	25.7	14.0	35.0	135	—	—	16	6.32	5
	13250RS/LS	★		**250**	130	63	**60**	25.7	14.0	35.0	160	—	—	20	9.42	5
	13315RS/LS	★		**315**	240	63	**60**	25.7	14.0	35.0	230	—	—	24	16.37	6
Inch	**TSXM 13080R/L**	★		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	7	0.93	1
	13100R/L	★		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	8	1.90	2
	13125R/L	★		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	10	2.62	1
	13160R/L	★		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	12	4.22	4
	13200R/L	★		**200**	130	63	**47.625**	25.4	14.0	35.0	135	—	—	16	6.48	5
	13250R/L	★		**250**	130	63	**47.625**	25.4	14.0	35.0	160	—	—	20	9.68	5
	13315R/L	★		**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	24	16.63	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX M 13 100 R S

TSX	M	13	100	R	S
Series Code	Fine Pitch	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

Parts

Applicable Cutter	Shim	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSXM 13040RS/LS TSXM 13050RS/LS TSXM 13063RS/LS TSXM 13080RS/LS TSXM 13100RS/LS TSXM 13125RS/LS TSXM 13160RS/LS	—	BFTX03510IP	**3.0**	—	HPS1015	TRB15IP	SUMI-P
TSXM 13200RS/LS TSXM 13250RS/LS TSXM 13315RS/LS	TSXS13R/L			TRDR15IP	—	—	
TSXM 13080R/L TSXM 13100R/L TSXM 13125R/L TSXM 13160R/L	—			—	HPS1015	TRB15IP	
TSXM 13200R/L TSXM 13250R/L TSXM 13315R/L	TSXS13R/L			TRDR15IP	—	—	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXM 13000R/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			●		●	●		●			●		
	Medium Cutting	●	●	●		●			●	●	●	●	●	●		
	Roughing	●		●	●		●			●		●				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
130612PNER-L		★		★			★				▲	▲	—	—	1.2	1
130616PNER-L		★		★			★				▲	▲	—	—	1.6	1
130620PNER-L		★		★			★				▲	▲	—	—	2.0	1
130624PNER-L		★		★			★				▲	▲	—	—	2.4	1
130632PNER-L		★		★			★				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
130612PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
130616PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
130620PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.0	1
130624PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.4	1
130632PNER-G		★	★	★	★	★	★				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		★		★	★	★	★						—	—	0.4	1
130608PNER-H		★		★	★	★	★						—	—	0.8	1
130612PNER-H		★		★	★	★	★						—	—	1.2	1
130616PNER-H		★		★	★	★	★						—	—	1.6	1
130620PNER-H		★		★	★	★	★						—	—	2.0	1
130624PNER-H		★		★	★	★	★						—	—	2.4	1
130632PNER-H		★		★	★	★	★						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1
LNEX 130604PNEL-L				★			★						—	—	0.4	2
130608PNEL-L				★			★						—	—	0.8	2
130612PNEL-L				★			★						—	—	1.2	2
130616PNEL-L				★			★						—	—	1.6	2
130620PNEL-L				★			★						—	—	2.0	2
130624PNEL-L				★			★						—	—	2.4	2
130632PNEL-L				★			★						—	—	3.2	2
LNEX 130604PNEL-G				★		★	★					▲	—	—	0.4	2
130608PNEL-G				★		★	★					▲	—	—	0.8	2
130612PNEL-G				★		★	★						—	—	1.2	2
130616PNEL-G				★		★	★						—	—	1.6	2
130620PNEL-G				★		★	★						—	—	2.0	2
130624PNEL-G				★		★	★						—	—	2.4	2
130632PNEL-G				★		★	★						—	—	3.2	2
LNEX 130602PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
130604PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
130608PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
130612PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
130616PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2
130620PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.0	2
130624PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.4	2
130632PNFL-S		—	—	—	—	—	—	—	—	—	—	—			3.2	2

Fig 1 (Right-Hand)

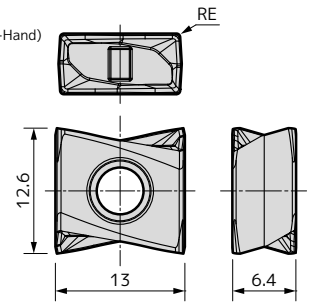
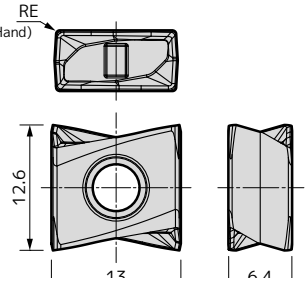


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.

★ mark: Global stocked item

Blank: Made-to-order item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

— mark: Not available

N·m Recommended Tightening Torque (N·m)

TSXF 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-23 to -15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Side Milling



Fig 1

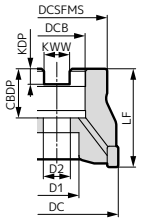


Fig 2

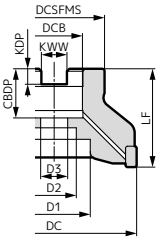


Fig 3

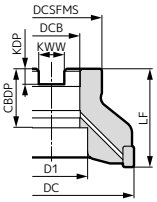


Fig 4

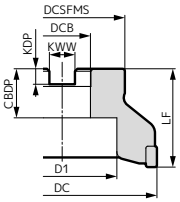


Fig 5

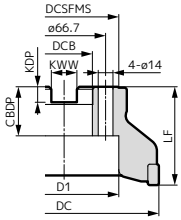


Figure shows right-handed (R) tool.

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040RS/LS**	★		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	5	0.18	1
	13050RS/LS	★		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	6	0.29	1
	13063RS/LS	★		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	7	0.50	1
	13080RS/LS	★		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	8	0.92	1
	13100RS/LS	★		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	10	1.34	3
	13125RS/LS	★		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	14	2.58	1
	13160RS/LS	★		**160**	130	63	**40**	16.4	9.0	29.0	90	—	—	16	5.08	5
Inch	**TSXF 13080R/L**	★		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	8	0.93	1
	13100R/L	★		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	10	1.88	2
	13125R/L	★		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	14	2.60	1
	13160R/L	★		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	16	4.28	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX Series Code | **F** Extra Fine Pitch | **13** Insert Size | **100** Dia. | **R** R: Right-Hand L: Left-Hand | **S** Metric Bore

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSXF 13040RS/LS	BFTX03510IP	**3.0**	—	HPS1015	TRB15IP	SUMI-P
TSXF 13050RS/LS						
TSXF 13063RS/LS						
TSXF 13080RS/LS						
TSXF 13100RS/LS						
TSXF 13125RS/LS						
TSXF 13160RS/LS			TRDR15IP	—	—	
TSXF 13080R/L			—	HPS1015	TRB15IP	
TSXF 13100R/L						
TSXF 13125R/L						
TSXF 13160R/L			TRDR15IP	—	—	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXF 13000R/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	○	○			○		○	○		○			○		
	Medium Cutting	○	○	○		○			○	○	○	○	○	○		
	Roughing	○		○	○		○			○		○				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
130612PNER-L		★		★			★				▲	▲	—	—	1.2	1
130616PNER-L		★		★			★				▲	▲	—	—	1.6	1
130620PNER-L		★		★			★				▲	▲	—	—	2.0	1
130624PNER-L		★		★			★				▲	▲	—	—	2.4	1
130632PNER-L		★		★			★				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
130612PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
130616PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
130620PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.0	1
130624PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.4	1
130632PNER-G		★	★	★	★	★	★				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		★		★	★	★	★						—	—	0.4	1
130608PNER-H		★		★	★	★	★						—	—	0.8	1
130612PNER-H		★		★	★	★	★						—	—	1.2	1
130616PNER-H		★		★	★	★	★						—	—	1.6	1
130620PNER-H		★		★	★	★	★						—	—	2.0	1
130624PNER-H		★		★	★	★	★						—	—	2.4	1
130632PNER-H		★		★	★	★	★						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1
LNEX 130604PNEL-L				★			★						—	—	0.4	2
130608PNEL-L				★			★						—	—	0.8	2
130612PNEL-L				★			★						—	—	1.2	2
130616PNEL-L				★			★						—	—	1.6	2
130620PNEL-L				★			★						—	—	2.0	2
130624PNEL-L				★			★						—	—	2.4	2
130632PNEL-L				★			★						—	—	3.2	2
LNEX 130604PNEL-G				★		★	★					▲	—	—	0.4	2
130608PNEL-G				★		★	★					▲	—	—	0.8	2
130612PNEL-G				★		★	★						—	—	1.2	2
130616PNEL-G				★		★	★						—	—	1.6	2
130620PNEL-G				★		★	★						—	—	2.0	2
130624PNEL-G				★		★	★						—	—	2.4	2
130632PNEL-G				★		★	★						—	—	3.2	2
LNEX 130602PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
130604PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
130608PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
130612PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
130616PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2
130620PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.0	2
130624PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.4	2
130632PNFL-S		—	—	—	—	—	—	—	—	—	—	—			3.2	2

Fig 1 (Right-Hand)

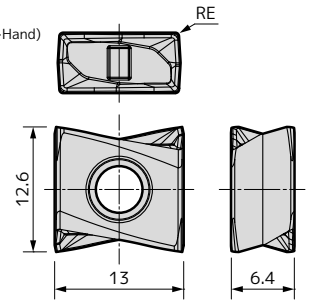
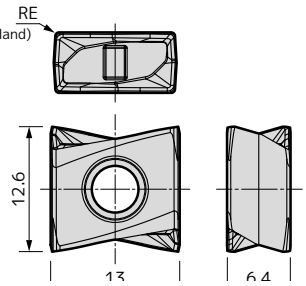


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.

★ mark: Global stocked item
Blank: Made-to-order item
(N·m) Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

TSX(F) 08000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-36 to -20°
	Axial	-6°

8mm 90°

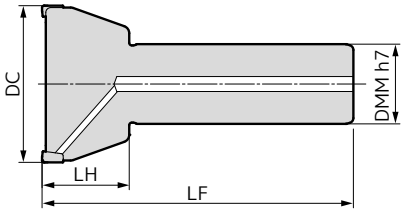
Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1



Fig 2



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08016E**	★	**16**	16	25	100	2	0.13	1
	08020E	★	**20**	20	30	110	2	0.22	1
	08020E-16	★	**20**	16	30	110	2	0.15	2
	08025E	★	**25**	25	30	120	3	0.40	1
	08025E-20	★	**25**	20	30	120	3	0.26	2
	08032E	★	**32**	32	30	120	3	0.67	1
	08032E-25	★	**32**	25	30	120	3	0.43	2
	08040E	★	**40**	32	30	120	4	0.72	2
	08050E	★	**50**	32	30	120	5	0.85	2
	08063E	★	**63**	32	35	125	6	1.09	2
	08080E	★	**80**	32	35	125	7	1.44	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08020E**	★	**20**	20	30	110	3	0.22	1
	08025E	★	**25**	25	30	120	4	0.40	1
	08032E	★	**32**	32	30	120	5	0.67	1
	08040E	★	**40**	32	30	120	6	0.73	2
	08050E	★	**50**	32	30	120	8	0.85	2
	08063E	★	**63**	32	35	125	10	1.10	2
	08080E	★	**80**	32	35	125	11	1.42	2

Inserts are sold separately.

Identification Code

TSX	F	08	032	E	(-25)
Series Code	Extra Fine Pitch	Insert Size	Dia.	Shank type	Shank Dia.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
TSX 08016E, TSX 08020E, TSXF 08020E	BFTX0306IP	2.0	TRDR08IP	SUMI-P
TSX 08025E to 80E, TSXF 08025E to 80E	BFTX0308IP			

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSX(F) 0800OE type

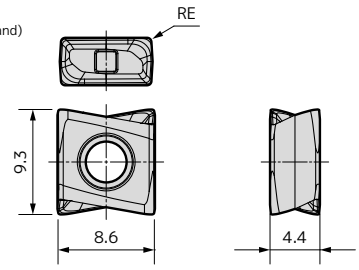
P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS			N		
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS	N	N		
	Roughing	MS		PM	PM		K			MS		MS				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
080412PNER-L		★		★			★				▲	▲	—	—	1.2	1
080416PNER-L		★		★			★				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
080412PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
080416PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1

Fig 1
(Right-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT40 machine tools.
- For groove milling, adjust the feed rate to around 70% of the above values.
  * For goove milling, use ø32mm or less; standard pitch is recommended.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSX(M/F) 13000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-31 to -15°
	Axial	-6°

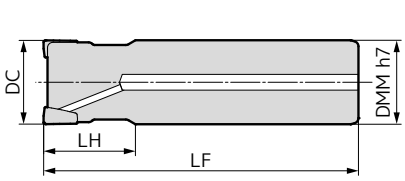
12mm 90°

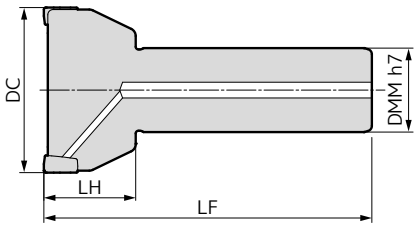
Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1



Fig 2





Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13025E**	★	**25**	25	35	120	2	0.38	1
	13032E	★	**32**	32	35	120	2	0.66	1
	13040E	★	**40**	32	30	120	3	0.71	2
	13050E	★	**50**	32	30	120	4	0.81	2
	13063E	★	**63**	32	35	125	5	1.08	2
	13080E	★	**80**	32	35	125	5	1.40	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13032E**	★	**32**	32	35	120	3	0.65	1
	13040E	★	**40**	32	30	120	4	0.71	2
	13050E	★	**50**	32	30	120	5	0.80	2
	13063E	★	**63**	32	35	125	6	1.07	2
	13080E	★	**80**	32	35	125	7	1.41	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040E**	★	**40**	32	30	120	5	0.70	2
	13050E	★	**50**	32	30	120	6	0.80	2
	13063E	★	**63**	32	35	125	7	1.07	2
	13080E	★	**80**	32	35	125	8	1.42	2

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03510IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

TSX M 13 050 E

TSX	M	13	050	E
Series Code	M: Fine Pitch F: Extra Fine Pitch	Insert Size	Dia.	Shank type

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSX(M/F) 13000E type

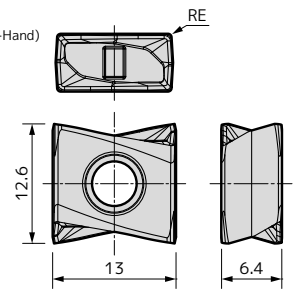
P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			K		MS	MS		MS			N		
	Medium Cutting	●	●	PM		K			MS	MS	MS	MS	N	N		
	Roughing	●		PM	PM		K			MS		MS				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
130612PNER-L		★		★			★				▲	▲	—	—	1.2	1
130616PNER-L		★		★			★				▲	▲	—	—	1.6	1
130620PNER-L		★		★			★				▲	▲	—	—	2.0	1
130624PNER-L		★		★			★				▲	▲	—	—	2.4	1
130632PNER-L		★		★			★				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
130612PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
130616PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
130620PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.0	1
130624PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.4	1
130632PNER-G		★	★	★	★	★	★				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		★		★	★	★	★						—	—	0.4	1
130608PNER-H		★		★	★	★	★						—	—	0.8	1
130612PNER-H		★		★	★	★	★						—	—	1.2	1
130616PNER-H		★		★	★	★	★						—	—	1.6	1
130620PNER-H		★		★	★	★	★						—	—	2.0	1
130624PNER-H		★		★	★	★	★						—	—	2.4	1
130632PNER-H		★		★	★	★	★						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1

Fig 1
(Right-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- For groove milling, adjust the feed rate to around 70% of the above values.
  * For goove milling, use ø32mm or less; standard pitch is recommended.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

TSXR 08000RS type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

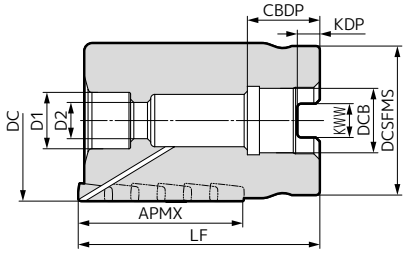
Rake Angle	Radial	-20 to -15°
	Axial	-6 to -3°

34-60mm 90°

Shoulder Milling | Side Milling



Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 08032RS3416Z02**	★	**32**	34	33	55	**16**	8.4	5.6	18.0	14	9	10	5	2	0.17	1
	08040RS4016Z03	★	**40**	40	37	60	**16**	8.4	5.6	18.0	14	9	18	6	3	0.32	1
	08050RS5422Z03	★	**50**	54	47	75	**22**	10.4	6.3	20.0	18	11	24	8	3	0.70	1
	08050RS5422Z04	★	**50**	54	47	75	**22**	10.4	6.3	20.0	18	11	32	8	4	0.68	1
	08063RS6027Z05	★	**63**	60	60	80	**27**	12.4	7.0	22.0	20	14	45	9	5	1.25	1

Inserts are sold separately.

Identification Code

TSXR Series Code | **08** Insert Size | **050** Dia. | **R** Right Hand | **S** Metric Bore | **54** Max. Depth of Cut | **22** Mounting Size | **Z03** Effective No. of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Bolt	Anti-seizure Cream
TSXR 08032RS3416Z02	BFTX0308IP	**2.0**	TRDR08IP	BX0845	SUMI-P
TSXR 08040RS4016Z03				BX0850	
TSXR 08050RS5422Z03				BX1060	
TSXR 08050RS5422Z04					
TSXR 08063RS6027Z05				BX1265	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXR 08000RS type

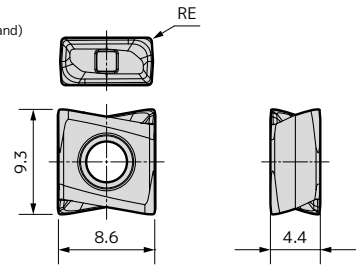
P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	PKMS	PM			K		MS	MS		MS			N		
	Medium Cutting	PKMS	PM	PM		K			MS	MS	MS	MS	N	N		
	Roughing	PKMS		PM	PM		K			MS		MS				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
080412PNER-L		★		★			★				▲	▲	—	—	1.2	1
080416PNER-L		★		★			★				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
080412PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
080416PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1

Fig 1
(Right-Hand)



Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXR 13000RS type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

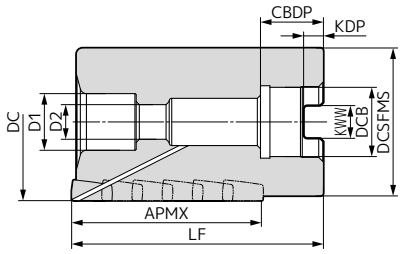
Rake Angle	Radial	-23 to -15°
	Axial	-6 to -3°

41-60mm 90°

Shoulder Milling | Side Milling



Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040RS4116Z02**	★	**40**	41	37	60	**16**	8.4	5.6	18.0	14	9	8	4	2	0.31	1
	13050RS6022Z03	★	**50**	60	47	80	**22**	10.4	6.3	20.0	18	11	18	6	3	0.66	1
	13063RS5027Z03	★	**63**	50	60	75	**27**	12.4	7.0	22.0	20	14	15	5	3	1.12	1
	13063RS6027Z04	★	**63**	60	60	80	**27**	12.4	7.0	22.0	20	14	24	6	4	1.15	1
	13080RS6032Z04	★	**80**	60	77	80	**32**	14.4	8.0	26.0	25	18	24	6	4	2.06	1
	13080RS6032Z05	★	**80**	60	77	80	**32**	14.4	8.0	26.0	25	18	30	6	5	2.04	1
	13100RS6040Z05	★	**100**	60	88	85	**40**	16.4	9.0	29.0	32	21	30	6	5	3.45	1
	13100RS6040Z06	★	**100**	60	88	85	**40**	16.4	9.0	29.0	32	21	36	6	6	3.44	1
	13125RS6040Z07	★	**125**	60	100	85	**40**	16.4	9.0	29.0	32	21	42	6	7	5.63	1

Inserts are sold separately.

Identification Code

TSXR Series Code | **13** Insert Size | **050** Dia. | **R** Right Hand | **S** Metric Bore | **60** Max. Depth of Cut | **22** Mounting Size | **Z03** Effective No. of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seizure Cream
TSXR 13040RS4116Z02	BFTX03510IP	**3.0**	—	HPS1015	TRB15IP	BX0850	SUMI-P
TSXR 13050RS6022Z03						BX1060	
TSXR 13063RS5027Z03						BX1260	
TSXR 13063RS6027Z04						BX1265	
TSXR 13080RS6032Z04			TRDR15IP	—	—	BX1660	
TSXR 13080RS6032Z05							
TSXR 13100RS6040Z05						BX2065	
TSXR 13100RS6040Z06							
TSXR 13125RS6040Z07							

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXR 1300ORS type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

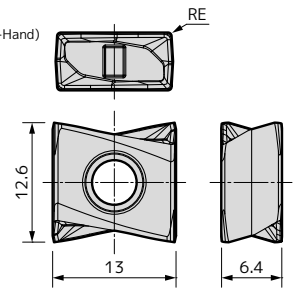
Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	MS PM			K		MS	MS		MS			N			
	Medium Cutting	MS PM	PM		K			MS	MS	MS	MS	MS	N	N		
	Roughing	MS		PM	PM		K			MS		MS				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
130612PNER-L		★		★			★				▲	▲	—	—	1.2	1
130616PNER-L		★		★			★				▲	▲	—	—	1.6	1
130620PNER-L		★		★			★				▲	▲	—	—	2.0	1
130624PNER-L		★		★			★				▲	▲	—	—	2.4	1
130632PNER-L		★		★			★				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
130612PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
130616PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
130620PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.0	1
130624PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.4	1
130632PNER-G		★	★	★	★	★	★				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		★		★	★	★	★						—	—	0.4	1
130608PNER-H		★		★	★	★	★						—	—	0.8	1
130612PNER-H		★		★	★	★	★						—	—	1.2	1
130616PNER-H		★		★	★	★	★						—	—	1.6	1
130620PNER-H		★		★	★	★	★						—	—	2.0	1
130624PNER-H		★		★	★	★	★						—	—	2.4	1
130632PNER-H		★		★	★	★	★						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1

Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Fig 1
(Right-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXR 08000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-33 to -18°
	Axial	-6° to -3°

21-40mm 90°

Shoulder Milling | Side Milling



Fig 1

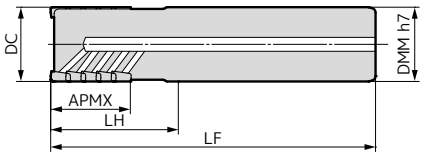
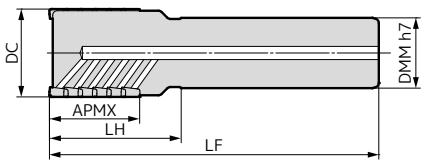


Fig 2



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 08020E2120Z01**	★	**20**	21	20	30	110	3	3	1	0.22	1
	08025E2725Z02	★	**25**	27	25	35	125	8	4	2	0.39	1
	08032E3432Z02	★	**32**	34	32	50	140	10	5	2	0.74	1
	08040E4032Z03	★	**40**	40	32	60	150	18	6	3	0.92	2

Inserts are sold separately.

Identification Code

TSXR Series Code | **08** Insert Size | **025** Dia. | **E** Shank type | **27** Max. Depth of Cut | **25** Shank Dia. | **Z02** Effective No. of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0308IP	**2.0**	TRDR08IP	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

TSXR 08000E type

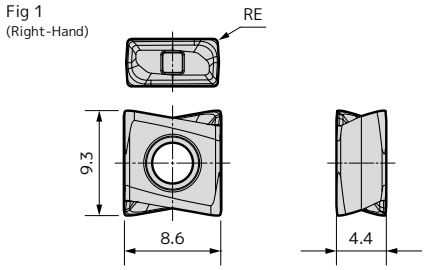
P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	MS PM			K		MS	MS		MS			N			
	Medium Cutting	MS PM	PM		K			MS	MS	MS	MS		N	N		
	Roughing	MS		PM	PM		K			MS		MS				
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
080412PNER-L		★		★			★				▲	▲	—	—	1.2	1
080416PNER-L		★		★			★				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
080408PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
080412PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
080416PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1

Fig 1 (Right-Hand)



Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

TSXR 13000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

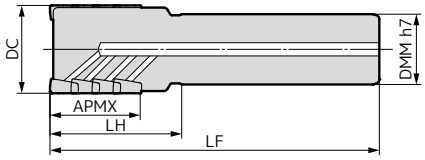
Rake Angle	Radial	-23 to -18°
	Axial	-6° to -3°

41-60mm 90°

Shoulder Milling | Side Milling

Fig 1





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040E4132Z02**	★	**40**	41	32	60	150	8	4	2	0.91	1
	13050E6042Z03	★	**50**	60	42	80	170	18	6	3	1.74	1

Inserts are sold separately.

Identification Code

TSXR 13 050 E 60 42 Z03

TSXR	13	050	E	60	42	Z03
Series Code	Insert Size	Dia.	Shank type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03510IP	**3.0**	TRDR15IP	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

TSXR 13000E type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

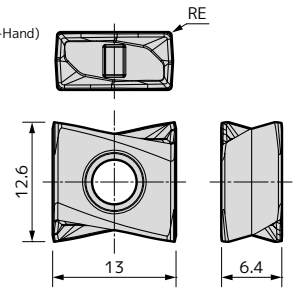
Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			●		●	●		●			●		
	Medium Cutting	●	●	●		●			●	●	●	●	●	●		
	Roughing	●		●	●		●			●		●				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		★		★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-L		★		★	★	★	★				▲	▲	—	—	0.8	1
130612PNER-L		★		★			★				▲	▲	—	—	1.2	1
130616PNER-L		★		★			★				▲	▲	—	—	1.6	1
130620PNER-L		★		★			★				▲	▲	—	—	2.0	1
130624PNER-L		★		★			★				▲	▲	—	—	2.4	1
130632PNER-L		★		★			★				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		★	★	★	★	★	★				▲	▲	—	—	0.4	1
130608PNER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	0.8	1
130612PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.2	1
130616PNER-G		★	★	★	★	★	★				▲	▲	—	—	1.6	1
130620PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.0	1
130624PNER-G		★	★	★	★	★	★				▲	▲	—	—	2.4	1
130632PNER-G		★	★	★	★	★	★				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		★		★	★	★	★						—	—	0.4	1
130608PNER-H		★		★	★	★	★						—	—	0.8	1
130612PNER-H		★		★	★	★	★						—	—	1.2	1
130616PNER-H		★		★	★	★	★						—	—	1.6	1
130620PNER-H		★		★	★	★	★						—	—	2.0	1
130624PNER-H		★		★	★	★	★						—	—	2.4	1
130632PNER-H		★		★	★	★	★						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1

Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Fig 1 (Right-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

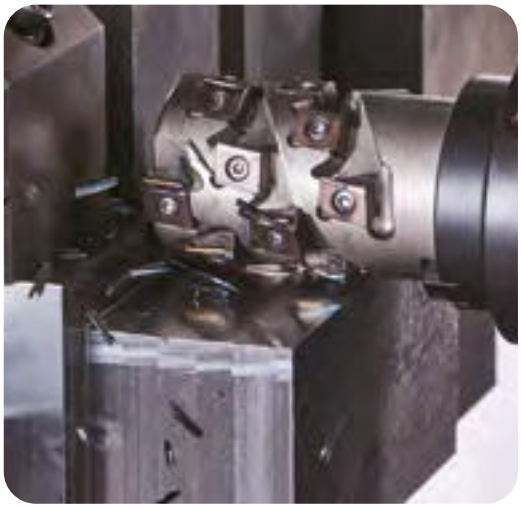
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

SEC-Sumi Dual Mill TSX series Repeater Made-to-Order Request Sheet (1)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

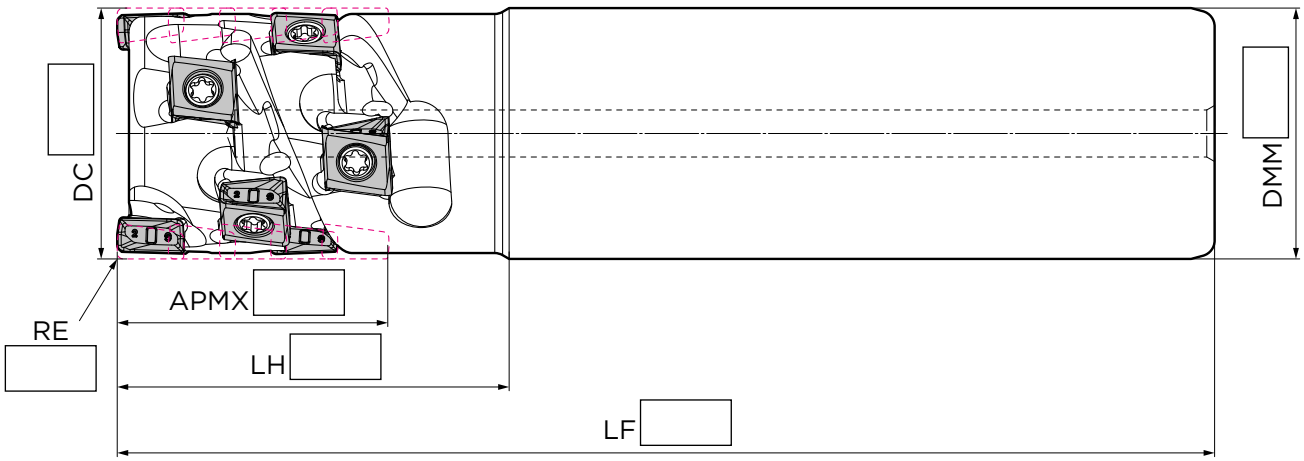
Company Name/Contact



Reference Specifications

Applicable Inserts	Dia. (mm) DC	Max. Depth of Cut (mm) APMX	Total No. of Teeth	No. of Stages	Max. Effective No. of Teeth	Specifications Shell	Specifications Shank
LNEX08 (Refer to page H141)	20	21	3	3	1		○
	25	27	8	4	2		○
	32	34	10	5	2	○	○
	40	40	18	6	3	○	○
	50	54	32	8	4	○	
	63	60	45	9	5	○	
LNEX13 (Refer to page H143)	40	41	8	4	2	○	○
	50	60	18	6	3	○	○
	63	60	24	6	4	○	
	80	60	30	6	5	○	
	100	60	36	6	6	○	
	125	60	42	6	7	○	

☑ **Shank** Refer to the reference specifications above when completing.



■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

- The tip insert corner radius (RE) can be selected. (Applicable size: Refer to page H127 ■ Product Range)
  Other inserts are all RE = 0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☑ No ☑

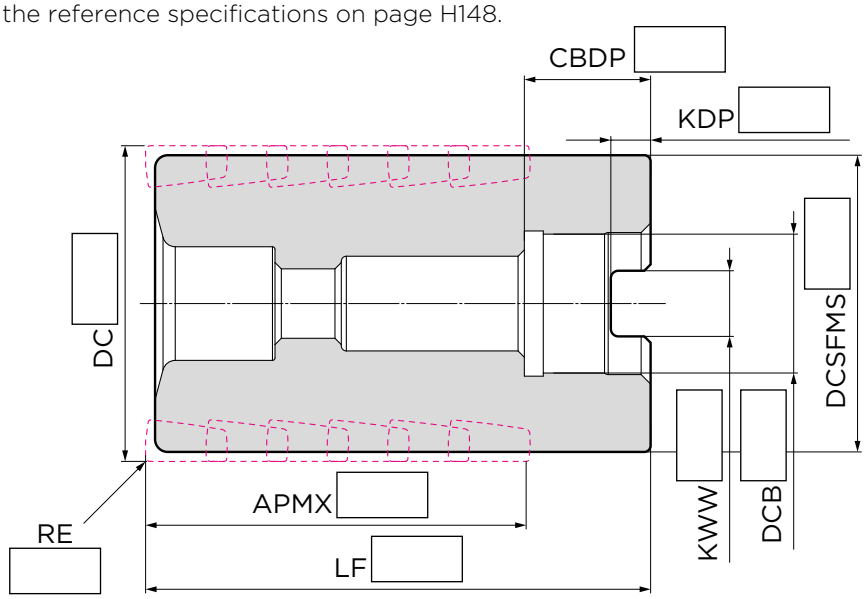
SEC-Sumi Dual Mill TSX series Repeater Made-to-Order Request Sheet (2)

Select a cutter design and enter the dimensions in ☐.

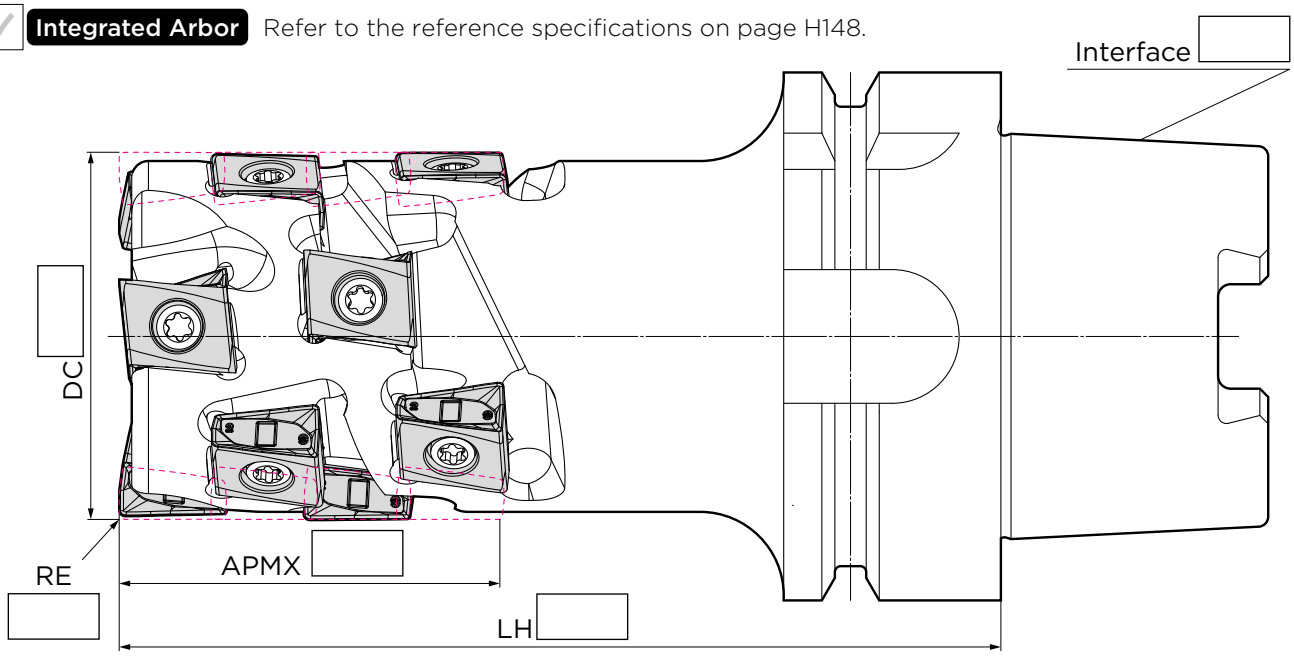
After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

☑ **Shell** Refer to the reference specifications on page H148.



☑ **Integrated Arbor** Refer to the reference specifications on page H148.



■ Accessories

Flat Insert Screw	Wrench	Bolt	Anti-seizure Cream
		 *Shell type Only	

- The tip insert corner radius (RE) can be selected. (Applicable size: Refer to page H127 ■ Product Range)
  Other inserts are all RE = 0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☑ No ☑

SEC-Sumi Dual Mill TSX series Side Cutter Made-to-Order Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert series Configuration

ISO Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804OOPNER/L-L	★	★	★	★	—	—	—
LNEX 0804OOPNER/L-G	★	★	★	★	—	—	—
LNEX 1306OOPNER/L-L	★	★	★	★	★	★	★
LNEX 1306OOPNER/L-G	★	★	★	★	★	★	★
LNEX 1306OOPNER-H	★	★	★	★	★	★	★

— mark: Not available

[Insert Special Orders]
LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm
LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.
(Radius shape after machining may differ from the mounted insert corner radius RE size.)
LNEX1306OOPNEL-H (left-handed H type chipbreaker) is not available.

CW Size Reference Specification	
14mm	LNEX08 (Refer to page H141)
18 to 22mm	LNEX13 (Refer to page H143)

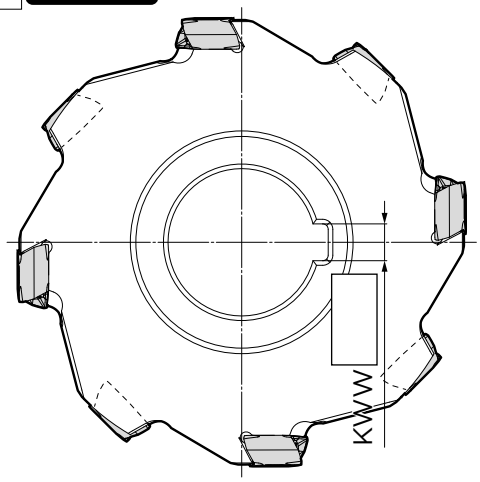
A multi-stage design is required if the CW size exceeds the above.

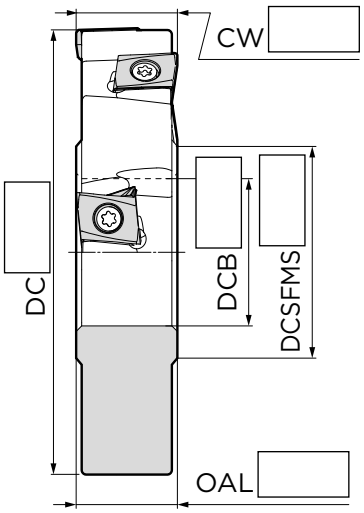
■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

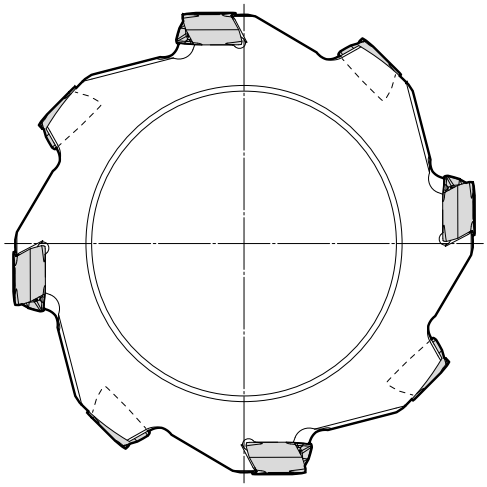


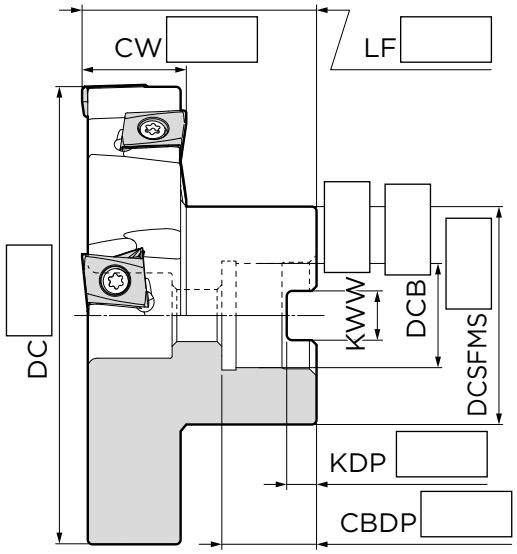
☑ **Disc type**





☑ **Boss type**





· Effective No. of Teeth Desired: ☐

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SEC-Sumi Dual Mill TSX series Made-to-Order Request Sheet

Company Name/Contact

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

■ Insert series Configuration

ISO Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804〇〇PNER/L-L	★	★	★	★	—	—	—
LNEX 0804〇〇PNER/L-G	★	★	★	★	—	—	—
LNEX 1306〇〇PNER/L-L	★	★	★	★	★	★	★
LNEX 1306〇〇PNER/L-G	★	★	★	★	★	★	★
LNEX 1306〇〇PNER-H	★	★	★	★	★	★	★

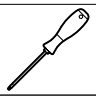
— mark: Not available

[Insert Special Orders]
LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm
LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.
(Radius shape after machining may differ from the mounted insert corner radius RE size.)
LNEX1306〇〇PNEL-H (left-handed H type chipbreaker) is not available.

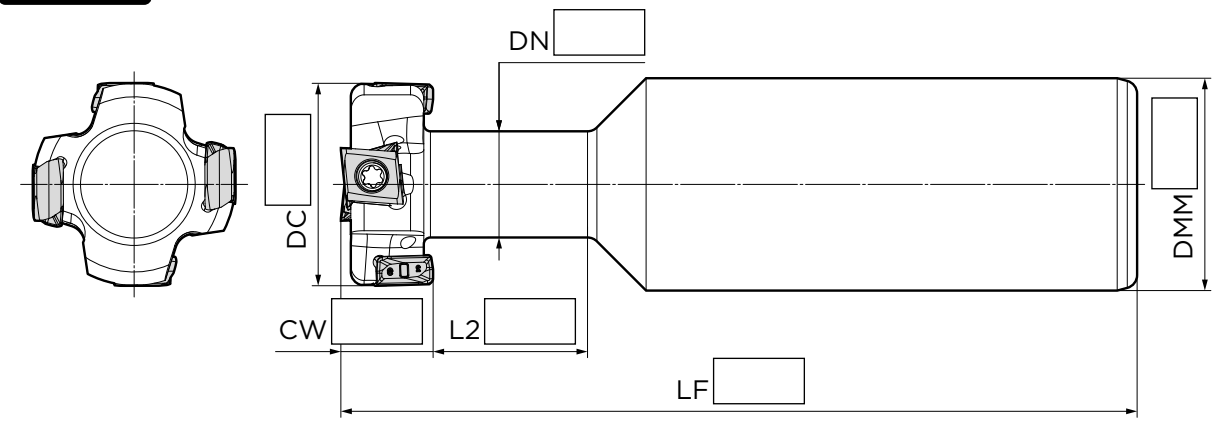
CW Size Reference Specification	
14mm	LNEX08 (Refer to page H141)
18 to 22mm	LNEX13 (Refer to page H143)

A multi-stage design is required if the CW size exceeds the above.

■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

☑ **T-Slot type**



· Effective No. of Teeth Desired: ☐ · Coolant Hole: Yes ☑ No ☑

■ Angled cutters, high-feed cutters and bore cutters can be designed. For details, please contact us.





★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

PWC(F) 4000 type

K Cast Iron

Rake Angle	Radial	-15°
	Axial	-5°

15mm 88°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

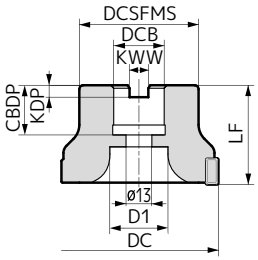


Fig 2

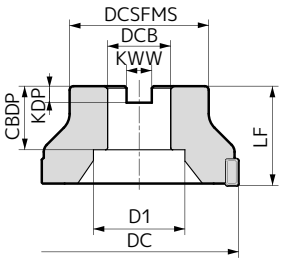


Fig 3

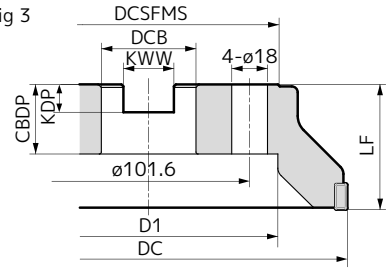


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWC 4080R/L**	★		*80	60	50	**25.4**	9.5	6	25	29.5	7	0.9	1
	4100R/L	★		**100**	70	50	**31.75**	12.7	8	32	46	8	1.3	2
	4125R/L	★		**125**	80	63	**38.1**	15.9	10	38	56	10	2.5	2
	4160R/L	★		**160**	100	63	**50.8**	19.1	11	38	72	12	4.2	2
	4200R/L	★		**200**	150	63	**47.625**	25.4	14	35	130	16	7.2	3

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWCF 4080R/L**	★		*80	60	50	**25.4**	9.5	6	25	29.5	9	0.9	1
	4100R/L	★		**100**	70	50	**31.75**	12.7	8	32	46	12	1.4	2
	4125R/L	★		**125**	80	63	**38.1**	15.9	10	38	56	15	2.6	2
	4160R/L	★		**160**	100	63	**50.8**	19.1	11	38	72	18	4.3	2
	4200R/L	★		**200**	150	63	**47.625**	25.4	14	35	130	24	7.4	3

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing			K

ISO Cat. No.	ACK100	ACK200	ACK300	Applications	Remarks	Fig
LNMX 160608PNSN-G		★	★	General-purpose machining	1st Recommendation	1
160608PNSN-H	★	★	★	Heavy interrupted cutting and other unstable applications		2

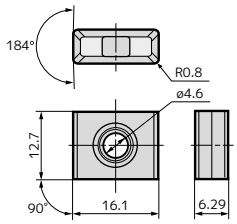


Fig 1
(General-purpose G type)

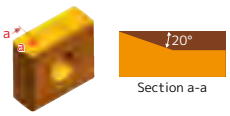
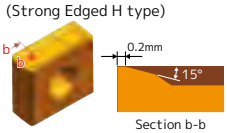


Fig 2
(Strong Edged H type)



Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0412N	**3.0**	TTX15W	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	150-**250**-350	0.10-**0.23**-0.35	ACK200/ACK300
	Ductile Cast Iron	250HB	100-**200**-300	0.05-**0.18**-0.30	ACK100/ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

PWS(F) series/PWSR series



■ Features

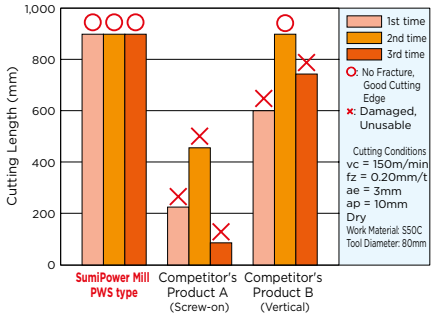
A highly reliable cutter equipped with tangentially-mounted inserts that combines unprecedented high cutting edge strength and sharpness.
PWSR type, with a 2-stage insert array structure supporting large depths of cut, has been added to the lineup.

- **Tangential inserts with excellent cutting edge strength and optimised breaker provide superb cutting edge and sharpness.**
- **Nicked insert design created with high-precision molding technology allows stable milling and low chatter even in applications with large tool overhang.**

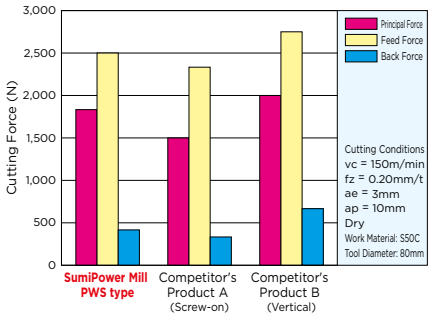
■ Performance

● General-purpose G type Insert Performance Comparison

Comparison of Cutting Edge Strength
Strong cutting edge delivers superb stability

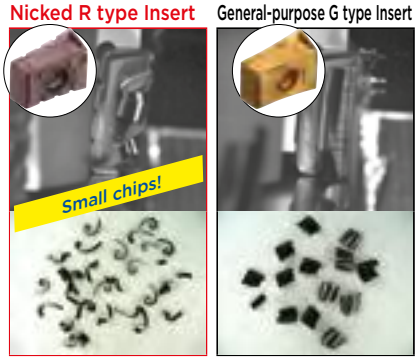


Comparison of Cutting Force
Sharpness approaching that of screw-on inserts

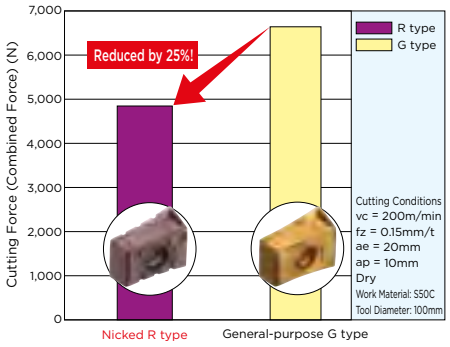


● Nicked R type Insert Performance Comparison

Nicked R type Insert | General-purpose G type Insert



Comparison of Cutting Force
Reduced cutting power and excellent chatter resistance



■ Product Range

Type	Cat. No.	Dia. (mm) ø80	ø100	ø125	ø160	ø200	ø250
Shell	PWS 4000R (inch)	4	6	6	8	10	12
	PWSF 4000R (inch)	6	8	8	10	12	14
	PWSR 4000	④	⑥	⑥	⑧	⑩	

Number in ●○ shows the number of teeth (inch) Inch Bore

⚠ Nicked R type Insert Usage Precautions







1) Precautions when Mounting
When using the nicked R type indexable inserts, mount them so that the nicked grooves alternate as shown in the image on the left.

2) Precautions for Cutting Conditions
When the inserts are mounted as shown in the left figure, the feed rate per tooth is doubled that of mounting inserts with the same edge design. As such, set feed rate

fz = 0.25mm/t

as the upper limit and adjust accordingly.

Ex.) For use with fz = 0.2mm/t
With all regular inserts : feed rate per tooth 0.2mm/t
With nicked type inserts : feed rate per tooth 0.4mm/t

Using inserts incorrectly may damage tools.

PWS(F) 4000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	-15°
	Axial	-6°

16mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



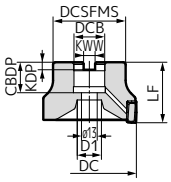
Fig 1


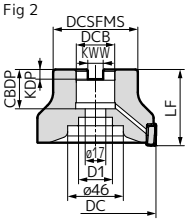
Fig 2


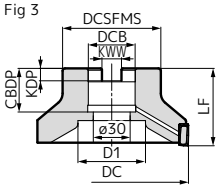
Fig 3


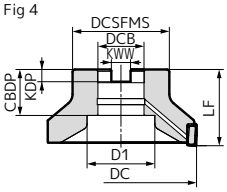
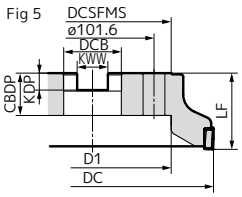
Fig 4


Fig 5


Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWS 4080R**	★	*80	60	50	**25.4**	9.5	6	25	20	4	1.0	1
	4100R	★	*100	70	63	**31.75**	12.7	8	32.5	28	6	1.8	2
	4125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	6	2.4	3
	4160R	★	**160**	100	63	**50.8**	19.1	11	41.5	72	8	4.0	4
	4200R	★	**200**	130	63	**47.625**	25.4	14	35	130	10	6.6	5
	4250R	★	**250**	130	63	**47.625**	25.4	14	35	160	12	12.4	5

Cutters ø200mm or larger do not have coolant holes but come with shims.
Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWSF 4080R**	★	*80	60	50	**25.4**	9.5	6	25	20	6	0.9	1
	4100R	★	*100	70	63	**31.75**	12.7	8	32.5	28	8	1.7	2
	4125R	★	**125**	80	63	**38.1**	15.9	10	35.5	55	8	2.3	3
	4160R	★	**160**	100	63	**50.8**	19.1	11	41.5	72	10	3.9	4
	4200R	★	**200**	130	63	**47.625**	25.4	14	35	130	12	6.6	5
	4250R	★	**250**	130	63	**47.625**	25.4	14	35	160	14	12.5	5

Cutters ø200mm or larger do not have coolant holes but come with shims.
Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	P			K	
	Medium Cutting		PM	PM	K	
	Roughing		PM	PM		K

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Applications	Remarks	Fig
LNMX 170808PNSR-L	★	★	★	★	★	Light Cutting		1
170808PNSR-G	★	★	★	★	★	General-purpose	1st Recommendation	1
170808PNSR-R	★	★	★	★	★	Heavy Cutting	Nicked	2

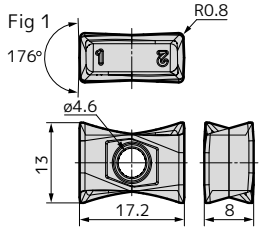
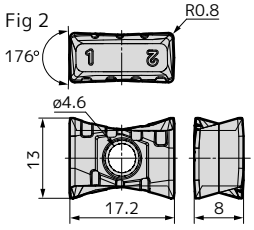
Fig 1


Fig 2


Parts

Flat Head Screw (For Inserts/Shims)		Wrench	Anti-seizure Cream	Shim (*)
				
BFTX0412IP	**3.0**	TTR15IP	SUMI-P	PWSS4R

* For cutters ø200mm or larger.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	—	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Sumi Power Mill

PWSR 4000 type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	-15°
	Axial	-6°

31mm 90°

Face Milling Shoulder Milling Groove Milling Side Milling



Fig 1

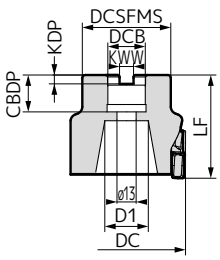


Fig 2

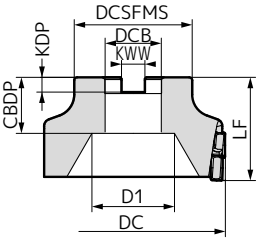


Fig 3

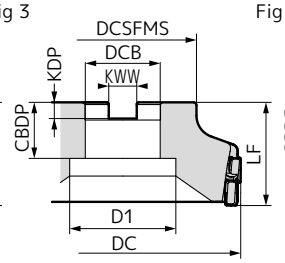
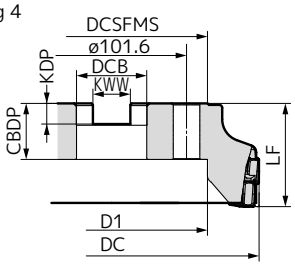


Fig 4



Body (2-Step type)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Inch	**PWSR 4080R**		*80	60	70	**25.4**	9.5	6	25	29.5	8	2	4	1.4	1
	4100R		*100	70	70	**31.75**	12.7	8	32	46	12	2	6	2.0	2
	4125R		125	80	70	**38.1**	15.9	10	38	56	12	2	6	3.0	2
	4160R		160	100	70	**50.8**	19.1	11	38	72	16	2	8	5.2	3
	4200R		200	130	70	**47.625**	25.4	14	38	160	20	2	10	8.0	4

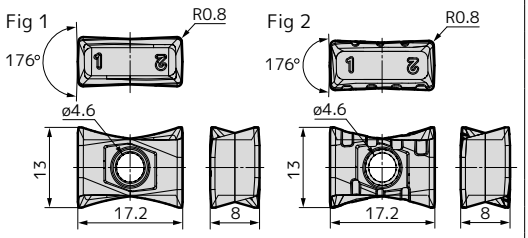
Cutters ø200mm or larger do not have coolant holes but come with shims.
Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting	P			K				
	Medium Cutting		P M	P M	K				
	Roughing		P M	P M		K			
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	Applications	Remarks	Fig
LNMX 170808PNSR-L		★	★	★	★	★	Light Cutting		1
170808PNSR-G		★	★	★	★	★	General-purpose	1st Recommendation	1
170808PNSR-R		★	★	★	★	★	Heavy Cutting	Nicked	2



Parts

Flat Head Screw (For Inserts/Shims)		Wrench	Anti-seizure Cream	Shim (*)
				
BFTX0412IP	**3.0**	TTR15IP	SUMI-P	PWSS4R

* For cutters ø200mm or larger.

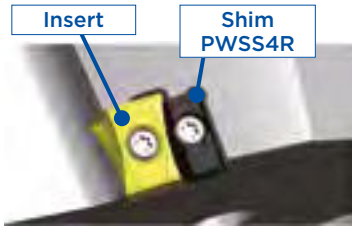
Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	—	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Large Diameter Size (ø200mm or larger) Body Structure

Safety Shim Design to Protect the Body



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

CHG 4000 type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	4°
	Axial	15°

16mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

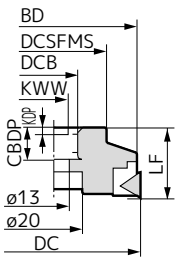


Fig 2

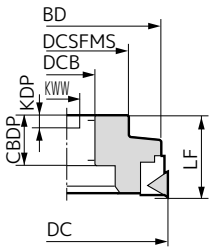


Fig 3

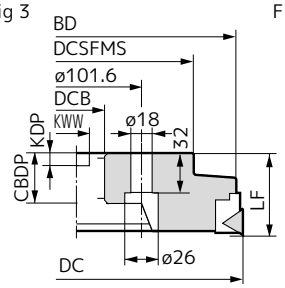
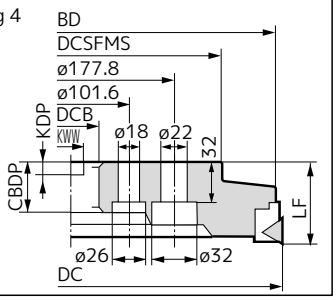


Fig 4



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**CHG 4080R**	★	*80	78	60	50	**25.4**	9.5	6	25	4	1.3	1
	4100R	★	**100**	96	70	63	**31.75**	12.7	8	32	5	2.0	2
	4125R	★	**125**	120	80	63	**38.1**	15.9	10	38	6	3.1	2
	4160R	★	**160**	154	100	63	**50.8**	19.1	11	38	8	5.3	2
	4200R	★	**200**	193	130	63	**47.625**	25.4	13.5	38	10	8.1	3
	4250R		**250**	242	180	63	**47.625**	25.4	13.5	40	12	13.8	3
	4315R		**315**	307	240	63	**47.625**	25.4	13.5	40	14	21.9	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light Cutting	P			K		M			K N		N	N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	N	
	Roughing		P M	P M		K						N	N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	T250A	DA150	DA1000	DA2200	Fig
TEEN 43R*									★	★		★	—	—	1-A
NF-TEEN 43R		—	—	—	—	—	—	—	—	—	—	—	★	▲	1-A
TEEN 43TR		★	★	★				★			★	—	—	—	2(1)-B
TEKN 43R					★	★			★			—	—	—	2(1)-A
43TR		★	★	★				★			★	—	—	—	2(1)-B

Fig 1

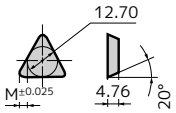
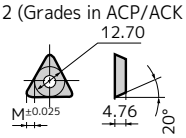


Fig 2 (Grades in ACP/ACK series)



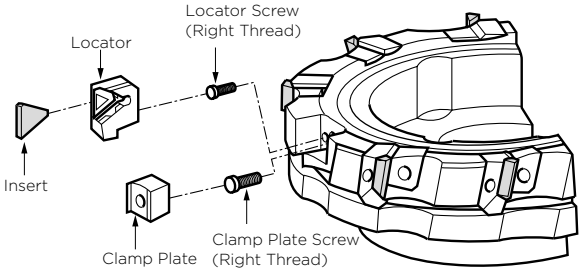


Cutting Edge A



Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Top face and wiper edge of H1 insert have a mirror finish.
E class precision inserts have some difference in shape.



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	80-**115**-150	0.10-**0.18**-0.25	ACP200
P	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Die Steel	200 to 220HB	60- **80** -100	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	80-**115**-150	0.05-**0.10**-0.15	ACP300
K	Cast Iron	250HB	60- **90** -120	0.10-**0.18**-0.25	ACK200
N	Non-Ferrous Metal	—	300-**650**-1,000	0.10-**0.20**-0.30	DA1000 H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw	Size	N·m	Wrench
CHG 4080R to CHG 4125R	LCH4R	FBH0512	**M5**	**5.0**	CHWR	FBX0811	**M8**	**8.0**	TH030
CHG 4160R to CHG 4315R						FBX0817			TH040

The wrench for locator screw is TH030 and for clamp plate screw is TH040.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Multi Use Endmill

CHE 2000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

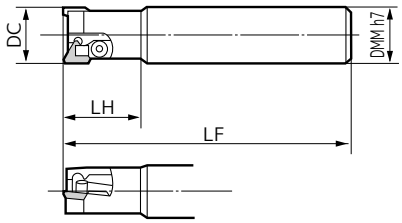
Rake Angle	Radial	-3° to 0°
	Axial	6° to 15°

8mm 90°

Face Milling Shoulder Milling Groove Milling Side Milling

Fig 1





Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 2016R	★	**16**	16	25	100	1	+6°	-3°	1
2018R	★	**18**	20	30	110	1	+8°	-2°	1
2020R	★	**20**	20	30	110	2	+10°	-2°	1
2022R	★	**22**	20	30	110	2	+12°	-1°	1
2025R	★	**25**	25	35	120	2	+15°	-1°	1
2028R	★	**28**	25	35	120	2	+15°	0°	1

Inserts are sold separately.

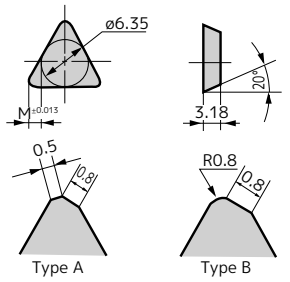
Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide			Cermet	SUMIDIA	
Process	High-speed/Light Cutting				K N		N	N
	Medium Cutting	P M	P	K		P	N	N
	Roughing	P M					N	N

ISO Cat. No.	ACP200	A30N	G10E	H1	T250A	DA1000	DA2200	Cutting Edge Shape	Fig
TEEN 22R	—	—	—	—	—	—	—	A	1
NF-TEEN 22R	—	—	—	—	—	★	▲	A	1
TECN 22R			★	★		—	—	A	1
22TR		★				—	—	B	1
TEKN 22R			★			—	—	A	1
22TR		★			★	—	—	B	1

Fig 1



Parts

Clamp Plate	Bolt		Retaining Ring	Wrench
		N·m		
CCH4R	BHE0407	**1.8**	ER03	TH025

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	50- **75** -100	0.03-**0.06**-0.10	A30N
P	Alloy Steel	180 to 280HB	50- **75** -80	0.03-**0.05**-0.06	A30N
K	Cast Iron	250HB	40- **70** -100	0.03-**0.10**-0.15	G10E
N	Non-Ferrous Metal	—	40- **90** -150	0.03-**0.10**-0.15	DA1000 H1

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

CHE 3000 type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

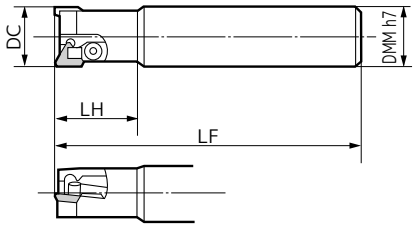
Rake Angle	Radial	-3° to 0°
	Axial	15°

13mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1





Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 3030R	★	**30**	32	45	160	2	+15°	-3°	1
3032R	★	**32**	32	45	160	2	+15°	-2°	1
3036R	★	**36**	32	45	160	2	+15°	-1°	1
3040R	★	**40**	32	45	160	2	+15°	0°	1

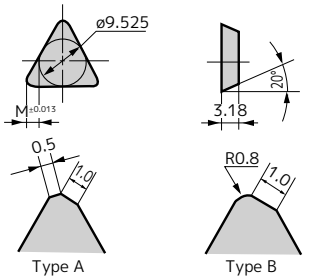
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light Cutting		K			K N		N	N		
	Medium Cutting	P M	K	P	K		P	N	N		
	Roughing	P M						N	N		
ISO Cat. No.		ACP200	ACK200	A30N	G10E	H1	T250A	DA1000	DA2200	Cutting Edge Shape	Fig
TEEN 32R		—	—	—	—	—	—	—	—	A	1
NF-TEEN 32R		—	—	—	—	—	—	★	▲	A	1
TECN 32R					★	★		—	—	A	1
32TR				★				—	—	B	1
TEKN 32R			★		★			—	—	A	1
32TR		★		★			★	—	—	B	1

Fig 1



Parts

Clamp Plate	Bolt		Retaining Ring	Wrench
		N·m		
CCH5R	BHE0510	**2.7**	ER04	LH030

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	60- **90** -120	0.04-**0.08**-0.15	ACP200
P	Alloy Steel	180 to 280HB	60- **80** -100	0.04-**0.08**-0.13	ACP200
K	Cast Iron	250HB	60- **90** -120	0.04-**0.12**-0.20	ACK200
N	Non-Ferrous Metal	—	60-**130**-200	0.04-**0.12**-0.20	DA1000 H1

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

CHE 4000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

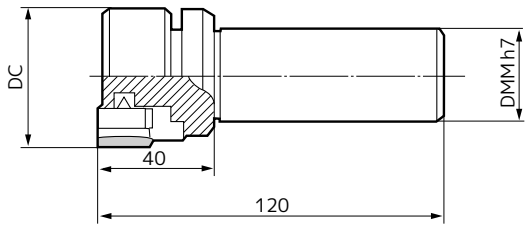
Rake Angle	Radial	2° to 4°
	Axial	15°

16mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1





Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Number of Teeth	Axial Rake	Radial Rake	Approach Angle	Fig
CHE 4050R	★	**50**	32	3	+15°	+2°	0°	1
4063R	★	**63**	32	4	+15°	+3°	0°	1
4080R	★	**80**	32	4	+15°	+4°	0°	1
4080RS42		**80**	42	4	+15°	+4°	0°	1
4100R		**100**	32	5	+15°	+4°	0°	1
4100RS42		**100**	42	5	+15°	+4°	0°	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide			Cermet	SUMIDIA			Fig
Process	High-speed/Light Cutting	P			K		M			K N		N	N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	N	
	Roughing		P M	P M		K						N	N	N	
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	T250A	DA150	DA1000	DA2200	
TEEN 43R*									★	★		★	—	—	1-A
NF-TEEN 43R		—	—	—	—	—	—	—	—	—	—	—	★	▲	1-A
TEEN 43TR		★	★	★				★			★	—	—	—	2(1)-B
TEKN 43R					★	★			★			—	—	—	2(1)-A
43TR		★	★	★				★			★	—	—	—	2(1)-B

Fig 1

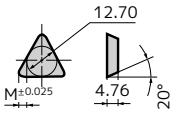
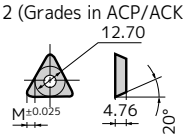


Fig 2 (Grades in ACP/ACK series)





Cutting Edge A



Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Top face and wiper edge of H1 insert have a mirror finish.
E class precision inserts have some difference in shape.

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw	Size	N·m	Wrench
CHE4050R CHE4063R	LCE4R	FBH0512	**M5**	**5.0**	CEWR	WB8R-16T	**M8**	**8.0**	TT27

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw	Size	N·m	Wrench
CHE4080R CHE4100R CHE4080RS42 CHE4100RS42	LCH4R	FBH0512	**M5**	**5.0**	CHWR	FBX0811	**M8**	**5.0**	TH040

* The above includes a TH030 wrench for locator screw.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	125-**100**-150	0.10-**0.15**-0.20	ACP200
	Alloy Steel	180 to 280HB	80-**100**-120	0.10-**0.20**-0.30	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK200
N	Non-Ferrous Metal	—	60-**130**-200	0.05-**0.20**-0.30	DA1000 H1

Note
· The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
Blank: Made-to-order item
(N·m) Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

CPG 4000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	0°
	Axial	6°

18mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

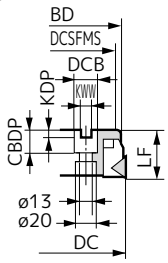


Fig 2

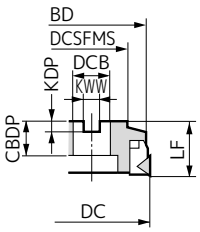


Fig 3

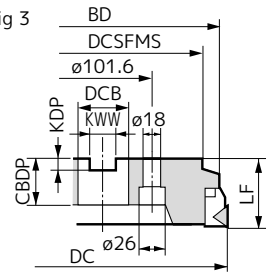


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**CPG 4080R/L**	★		***80**	77	60	50	**25.4**	9.5	6	25	5	1.2	1
	4100R/L	★		**100**	97	75	60	**31.75**	12.7	8	32	6	2.0	2
	4125R/L	★		**125**	121	75	60	**38.1**	15.9	10	38	8	3.3	2
	4160R/L	★		**160**	155	100	60	**50.8**	19.1	11	38	10	5.5	2
	4200R/L	★		**200**	194	130	60	**47.625**	25.4	13.5	38	12	8.6	3
	4250R/L			**250**	243	200	70	**47.625**	25.4	13.5	52	14	17.9	3
	4315R/L			**315**	308	240	70	**47.625**	25.4	13.5	52	18	25.5	3

Inserts are sold separately.

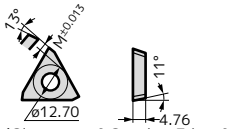
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet			
Process	High-speed/Light Cutting	P			K		M					P	P		
	Medium Cutting		P M	P M	K			P	P	K	K			P	
	Roughing		P M	P M		K									
ISO Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30	A30N	H10E	G10E	T1500A	T130A	T250A	Fig
TPCH 43R					★	★	▲				★				1(2)
43L											★				2
43TR		★	★	★					★	★		★		★	1(2)
43TL									★						2
TPMN 432								★			★	★	★		3
433								★			★				3

Fig 1 (Grades in ACP/ACK series)



(Close-up of Cutting Edge for Figures 1 & 2)

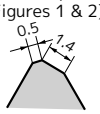


Fig 2

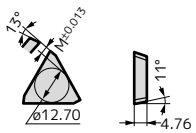
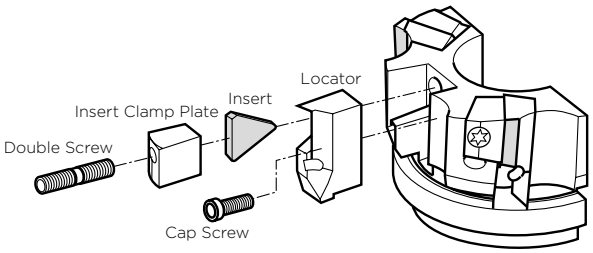


Fig 3





Parts

Applicable Cutter	Locator	Cap Screw	Clamp Plate	Double Screw	Wrench
CPG4080R	LCP40R	BX0508	PTW40R	WB8-22T	TT27 LH040
CPG4100R up to CPG4125R	LCP40R	BX0510	PTW41R	WB8-22T	TT27 LH040
CPG4160R up to CPG4315R	LCP40R	BX0510	PTW41R	WB8-30T	TT27 LH040
CPG4080L	LCP40L	BX0508	PTW40L	WB8-22T	TT27 LH040
CPG4100L up to CPG4125L	LCP40L	BX0510	PTW41L	WB8-22T	TT27 LH040
CPG4160L up to CPG4315L	LCP40L	BX0510	PTW41L	WB8-30T	TT27 LH040

Of the wrenches, TT27 is for double screw while LH040 is for cap screw.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	80-**110**-140	0.10-**0.18**-0.25	ACP200
P	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Die Steel	200 to 220HB	60- **80** -100	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	100-**125**-150	0.10-**0.18**-0.25	ACP300
K	Cast Iron	250HB	60- **90** -120	0.10-**0.18**-0.25	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

FMS type

P Steel | M Stainless Steel | K Cast Iron

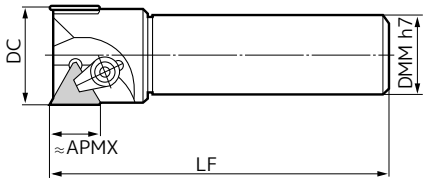
Rake Angle	Radial	-4° to -6°
	Axial	3° to 7°

8-19mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1





Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
FMS 216	★	**16**	8	16	70	1	+3°	-6°	1
220	★	**20**	8	20	100	2	+3°	-4°	1
225	★	**25**	8	25	110	2	+7°	-4°	1
FMS 330	★	**30**	13	32	160	2	+7°	-4°	1
332	★	**32**	13	32	160	2	+7°	-4°	1
335	★	**35**	13	32	160	2	+7°	-4°	1
FMS 440	★	**40**	19	32	160	2	+7°	-4°	1
450	★	**50**	19	32	160	2	+7°	-4°	1
460	★	**60**	19	32	160	3	+7°	-4°	1
440B		**40**	19	42	160	2	+7°	-4°	1

Inserts are sold separately.

Insert

Common to Figs. 1 to 3

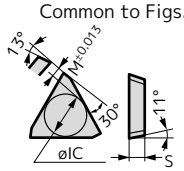
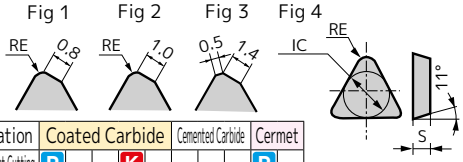


Fig 1 Fig 2 Fig 3 Fig 4



Grade Classification		Coated Carbide					Cemented Carbide			Cermet					
Process	High-speed/Light Cutting	P			K					P					
	Medium Cutting		P M	P M	K		P		K		P				
	Roughing		P M	P M		K									

Dimensions (mm)

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	A30N	A30	G10E	T1500A	T250A	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig	Applicable Cutter
TPKN 22TR						★				★	6.35	3.18	0.8	1	FMS 216
22R								★			6.35	3.18	0.8	1	to
TPMN 222							★	★			6.35	3.18	0.8	4	FMS 225
TPKN 32TR						★				★	9.525	3.18	0.8	2	FMS 330
32R								★			9.525	3.18	0.8	2	to
TPMN 322							★	★	★		9.525	3.18	0.8	4	FMS 335
TPCH 43TR	★	★	★			★			★	★	12.70	4.76	—	3	FMS
43R				★	★			★			12.70	4.76	—	3	440(B)
TPMN 432							★	★	★		12.70	4.76	0.8	4	to
433							★	★			12.70	4.76	1.2	4	FMS 460

H10E is also in stock for TPCH43TR.
EH10Z is also in stock for TPCH43R.

Recommended Cutting Conditions

Diameter ø16 to ø25mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	50- **75** -100	0.03-**0.06**-0.10	ACP200
	Alloy Steel	180 to 280HB	50- **65** -80	0.03-**0.05**-0.08	ACP200
K	Cast Iron	250HB	40- **70** -100	0.03-**0.10**-0.15	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø30 to ø35mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	60- **90** -120	0.04-**0.08**-0.15	ACP200
	Alloy Steel	180 to 280HB	60- **80** -100	0.04-**0.08**-0.13	ACP200
K	Cast Iron	250HB	60- **90** -120	0.04-**0.12**-0.20	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø40 to ø60mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	60-**100**-150	0.05-**0.15**-0.20	ACP200
	Alloy Steel	180 to 280HB	60- **90** -120	0.05-**0.12**-0.18	ACP200
K	Cast Iron	250HB	60- **90** -120	0.05-**0.15**-0.25	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Parts

Applicable Cutter	Clamp Plate	Double Screw			Shim	Spring Pin	Wrench
			Size	N·m			
FMS216 / FMS220	CCM5BSL	WB5-10	**M5**	**5.0**	—	—	TH025
FMS225	CCM5BSL	WB5-12	**M5**	**5.0**	—	—	TH025
FMS330 to FMS335	CCM6BL	WB6-16	**M6**	**5.0**	—	—	LH030
FMS440(B) to FMS460	CCM8UL	WB8-20	**M8**	**8.0**	STPL42	SPP308	LH040

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WMM series

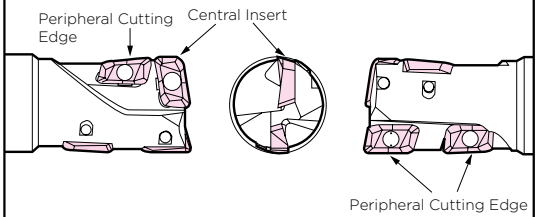


■ Features

A multi-functional cutter that performs a variety of operations such as groove milling, shoulder milling, ramping, pocketing, drilling, helical milling, etc., using WaveMill inserts.
With low cutting force and excellent chip evacuation, it is also effective for consolidating tools.

★ The WMM series alone can perform a number of operations such as shoulder milling, groove milling and drilling
★ Excellent for high-efficiency ramping, helical drilling and pocketing
★ Uses WaveMill inserts for sharpness and cutting edge strength
★ The reduction in cutting force enables the same chip evacuation as conventional tools but with less force required
★ Easy tool management as only 1 type of insert is used
★ Also ideal for stainless steel machining

★ WMM series insert arrangement

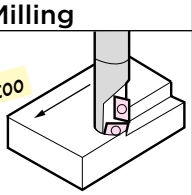


■ Applications: WMM2025E

● Shoulder Milling

SUS304

Cuts stainless steel too

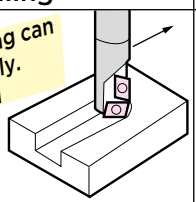


Diameter of Tool: ø25
Insert: APMT1035O4PDER (ACZ350)
Depth of Cut: ap = 25mm, ae = 5mm
Cutting Speed: vc = 120m/min, Feed Rate: fz = 0.15mm/t
Air Blow

● Groove Milling

FC250

Deep groove milling can be performed easily. Easy chip removal

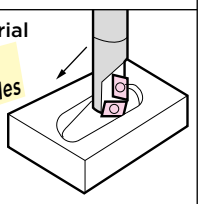


Diameter of Tool: ø25
Insert: APMT1035O4PDER (ACZ310)
Depth of Cut: ap = 15mm, ae = 25mm
Cutting Speed: vc = 180m/min, Feed Rate: fz = 0.12mm/t
Air Blow

● Ramping

S50C Block Material

Capable of ramping without prepared holes

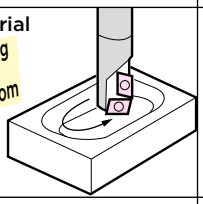


Diameter of Tool: ø25
Insert: APMT1035O4PDER (ACZ350)
Cutting Width: ae = 25mm, Depth: ap = 15mm
Cutting Speed: vc = 200m/min, Feed Rate: fz = 0.1mm/t
Ramp Angle: θ=15°
Air Blow

● Pocketing

S50C Block Material

Capable of traverse cutting and pocketing with continuous lateral feed from the initial drilling or ramping process

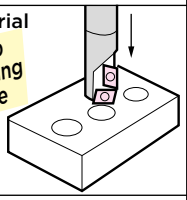


Diameter of Tool: ø25
Insert: APMT1035O4PDER (ACZ350)
Machining done continuously from a deep drilling process with a depth of 15mm
Cutting Width: ae = 25mm, Depth ap = 15mm
Cutting Speed: vc = 200m/min, Feed Rate: fz = 0.1mm/t
Air Blow

● Drilling

S50C Block Material

Capable of easy chip evacuation and drilling without tool damage

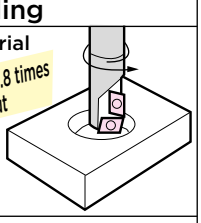


Diameter of Tool: ø25
Insert: APMT1035O4PDER (ACZ350)
Hole Diameter: ø25mm, Depth: ap = 15mm
Cutting Speed: vc = 200m/min, Feed Rate: f = 0.1mm/rev
Step Feed: 0.5mm
Air Blow

● Helical Milling

S50C Block Material

Capable of large boring with diameters 1.2-1.8 times the cutter diameter without prepared holes



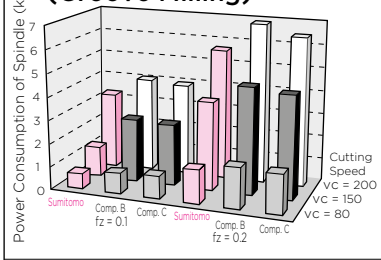
Diameter of Tool: ø25
Insert: APMT1035O4PDER (ACZ350)
Hole Diameter: ø40mm, Depth: ap = 20mm
Cutting Speed: vc = 300m/min, Feed Rate: f = 0.1mm/rev
Axial Feed: 15mm/Pitch
Air Blow

■ Product Range and Performance

Type	Cat. No.	Description	Dia. (mm)												
			ø20	ø21	ø22	ø24.7	ø25	ø26	ø27	ø28	ø30	ø32	ø33	ø35	ø40
Shank	WMM 2000E	Standard type	①	①			①	①			①				
	WMM 2000EL	Long type	①	①			①	①			①				
	WMM 2000ELH	Long type w/ Coolant Hole	①	①			①	①			①				
	WMM 2000EXLH	Extra-Long type w/ Coolant Hole			⓵				⓵		⓵				
	WMM 3000E	Standard type										①	①	①	①
	WMM 3000EL	Long type										①	①	①	①
	WMM 3000ELH	Long type w/ Coolant Hole										①	①	①	①
	WMM 3000EXLH	Extra-Long type w/ Coolant Hole												⓵	⓵

Number in ●○ shows the number of teeth

● Performance Comparison (Groove Milling)



Diameter of Tool: ø25
Work Material: S50C
Cutting Conditions: vc = 80,150,200m/min,
fz = 0.1, 0.2mm/t
ap = 15mm, Tool Overhang = 40mm

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

SEC-WaveMulti

WMM 2000E/EL/ELH/EXLH type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	15° to 16°
	Axial	7° to 11°

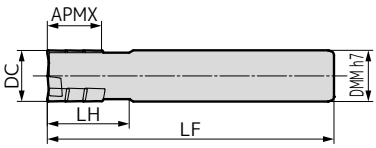
17-35mm 90°

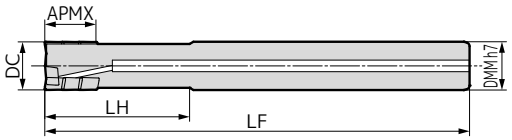
Face Milling · Shoulder Milling · Groove Milling · Ramping · Drilling · Profiling · Plunge Milling · Helical Milling

Fig 1



Fig 2





Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020E	★	**20**	17	20	35	130	3	1	2
2021E	★	**21**	17	20	35	130	3	1	1
2025E	★	**25**	26	25	40	140	4	1	2
2026E	★	**26**	26	25	40	140	4	1	1
2030E	★	**30**	35	25	50	150	5	1	1

Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020EL	★	**20**	17	20	60	185	3	1	2
2021EL	★	**21**	17	20	35	185	3	1	1
2025EL	★	**25**	26	25	75	220	4	1	2
2026EL	★	**26**	26	25	40	220	4	1	1
2030EL	★	**30**	35	25	50	230	5	1	1

Body (Long Shank type / With Coolant Holes)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020ELH	★	**20**	17	20	60	185	3	1	2
2021ELH	★	**21**	17	20	35	185	3	1	2
2025ELH	★	**25**	26	25	75	220	4	1	2
2026ELH	★	**26**	26	25	40	220	4	1	2
2030ELH	★	**30**	35	25	50	230	5	1	2

Body (Extra Long Shank type / With Coolant Holes)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2022EXLH		**22**	17	20	35	250	3	1	2
2027EXLH		**27**	26	25	40	320	4	1	2
2030EXLH		**30**	35	25	50	350	5	1	2

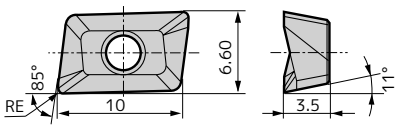
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide			Cemented Carbide	DLC		
Process	High-speed/Light Cutting				K N	N		
	Medium Cutting	M	P	K		N		
	Roughing							
ISO Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Corner Radius RE	Fig
APMT 103504PDER		★	★	★	—	—	0.4	1
103508PDER		★	★	★	—	—	0.8	1
103512PDER		★	★	★	—	—	1.2	1
APMT 103504PDER-H		★	★	★	—	—	0.4	1
103508PDER-H		★	★	★	—	—	0.8	1
103512PDER-H		★	★	★	—	—	1.2	1
APET 103504PDER-F		★	★	★	—	—	0.4	1
APET 103504PDFR-S		—	—	—	★	★	0.4	1

Fig 1



-H: Strong-edged type, -F: Ground type Insert, -S: For Aluminum Alloy.

Parts (Common)

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
WMM 2000E/EL/ELH/EXLH type	BFTX02506N	N·m 1.5	TRD08	SUMI-P

Recommended Cutting Conditions Diameter ø20 to ø26mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed Vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t)	Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80-**120**-160	Shoulder Milling	0.05-**0.13**-0.20	ACZ330
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
M	Stainless Steel	—	80-**100**-120	Shoulder Milling	0.05-**0.10**-0.15	ACZ350
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.09**-0.12	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.13**-0.20	ACZ310
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
N	Aluminum Alloy	—	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

Note · The cutting conditions are guidelines. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed Vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t)	Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80-**120**-160	Shoulder Milling	0.05-**0.15**-0.25	ACZ330
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
M	Stainless Steel	—	80-**100**-120	Shoulder Milling	0.05-**0.13**-0.20	ACZ350
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.15**-0.25	ACZ310
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
N	Aluminum Alloy	—	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

Note · The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
· For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WMM 3000E/EL/ELH/EXLH type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	17° to 19°
	Axial	7° to 11°

39mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Drilling | Profiling | Plunge Milling | Helical Milling



Fig 1

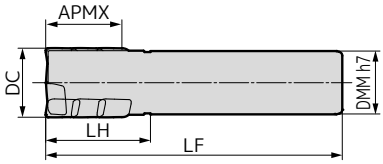
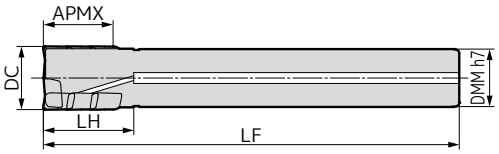


Fig 2



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032E	★	**32**	39	32	50	150	4	1	1
3033E	★	**33**	39	32	50	150	4	1	1
3035E	★	**35**	39	32	50	150	4	1	1
3040E	★	**40**	39	32	55	160	4	1	1

Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032EL	★	**32**	39	32	90	230	4	1	2
3033EL	★	**33**	39	32	50	230	4	1	1
3035EL	★	**35**	39	32	50	230	4	1	1
3040EL	★	**40**	39	32	55	240	4	1	1

Body (Long Shank type / With Coolant Holes)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032ELH	★	**32**	39	32	90	230	4	1	1
3033ELH	★	**33**	39	32	50	230	4	1	2
3035ELH	★	**35**	39	32	50	230	4	1	2
3040ELH	★	**40**	39	32	55	240	4	1	2

Body (Extra Long Shank type / With Coolant Holes)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3035EXLH		**35**	39	32	50	370	4	1	2
3040EXLH		**40**	39	32	55	420	4	1	2

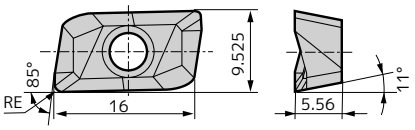
Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide			Cemented Carbide	DLC		
Process	High-speed/Light Cutting				K N	N		
	Medium Cutting	M	P	K		N		
	Roughing							
ISO Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Corner Radius RE	Fig
APMT 160508PDER		★	★	★	—	—	0.8	1
160512PDER		★	★	★	—	—	1.2	1
160516PDER		★	★	★	—	—	1.6	1
APMT 160508PDER-H		★	★	★	—	—	0.8	1
160512PDER-H		★	★	★	—	—	1.2	1
160516PDER-H		★	★	★	—	—	1.6	1
160520PDER-H*		★	★	★	—	—	2.0	1
160530PDER-H*		★	★	★	—	—	3.0	1
160540PDER-H*		★	★	★	—	—	4.0	1
160550PDER-H*		★	★	★	—	—	5.0	1
160560PDER-H*		★	★	★	—	—	6.0	1
APET 160508PDER-F		★	★	★	—	—	0.8	1
APET 160508PDFR-S		—	—	—	★	★	0.8	1

Fig 1



-H: Strong-edged type, -F: Ground type Insert, -S: For Aluminum Alloy.

* marked inserts require modification of the cutter body. Correct the tool diameter by +0.5mm before use.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WMM 3000E/EL/ELH/EXLH type	BFTX03584	**3.0**	TRD15	SUMI-P

Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t)	Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80-**120**-160	Shoulder Milling	0.05-**0.15**-0.25	ACZ330
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
M	Stainless Steel	—	80-**100**-120	Shoulder Milling	0.05-**0.13**-0.20	ACZ350
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.15**-0.25	ACZ310
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
N	Aluminum Alloy	—	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

MEMO

DMSL series / DMSW series

VIDEO OF CUTTING



■ Features

- Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible
- Small cutting angle controls cutting force toward the back force direction
  Stable machining without chatter even with long tool overhang amount
- Introducing the small diameters DMSL series
  Lineup of diameters ø16mm and up
  (Shell type/Shank type/Modular type)

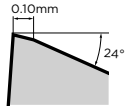
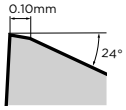
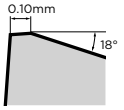
■ Product Range

Type	Cat. No.	Max. Diameter (mm)																			
		ø16	ø18	ø20	ø22	ø25	ø26	ø28	ø30	ø32	ø35	ø40	ø42	ø50	ø52	ø63	ø66	ø80	ø100	ø125	ø160
Shell	DMSL 06000RS											5 6 7	6 7	5 8	6 8	8 9	8 9	9			
Shell	DMSL 06000R (Inch)													5 8		9		9			
Shell	DMSW 08000RS													4 5	4 5	4 5* 6*	5 6	6 8	6 8 9	8	10
Shell	DMSW 08000R (Inch)													4 5		4 5 6		6* 8*	6 8	8	10
Shank	DMSL 06000E	2	2	3 4	3 4	4 5		4 5	5	5 6	5 6	6									
Shank	DMSL 06000EL	2	2	3	3	4		4	5	5	5	6									
Shank	DMSW 08000E										2	3		3							
Shank	DMSW 08000EL										2	3		3							
Modular	DMSL 06000M	2	2	3 4	3 4	4 5	4	4 5	5	5 6	5 6	6	6 7								
Modular	DMSW 08000M										2	3									

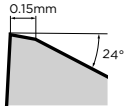
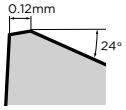
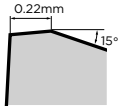
○○○ Shows expanded items Number in ●●● shows the number of teeth (Inch) Inch Bore *mark: Different-diameter mounting sizes in stock

Modular type ☞H265

■ Chipbreaker (DMSL type)

Work Material	P M K S		P M K H
Applications	Low-rigidity Milling	General-purpose to Interrupted Milling	Heavy Interrupted Milling, High-hardness
Features	Low Cutting Force	General-purpose	High Strength
	L type	G type	H type
Chipbreaker			
Cutting Edge Cross Section	 0.10mm 24° 4 corners	 0.10mm 24° 4 corners	 0.10mm 18° 4 corners

■ Chipbreaker (DMSW type)

Work Material	P M K S		P M K H
Applications	Low-rigidity Milling	General-purpose to Interrupted Milling	Heavy Interrupted Milling, High-hardness
Features	Low Cutting Force	General-purpose	High Strength
	L type	G type	H type
Chipbreaker			
Cutting Edge Cross Section	 0.15mm 24° 6 corners	 0.12mm 24° 6 corners	 0.22mm 15° 6 corners

DMSL series / DMSW series

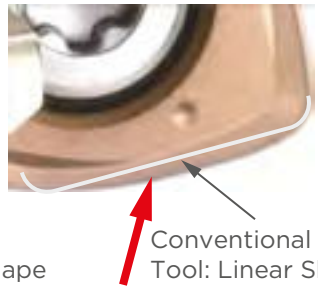
● **Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously. High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible.**

DMSL type

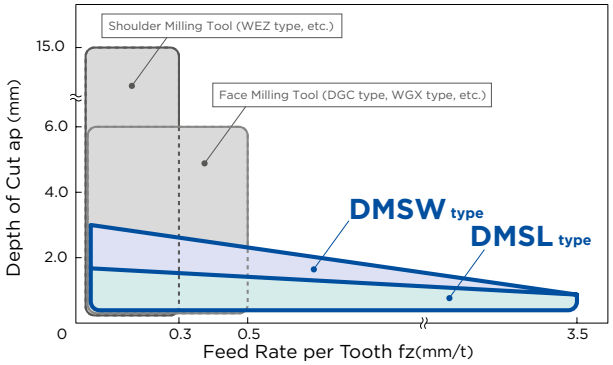


Complex Arc Shape

DMSW type



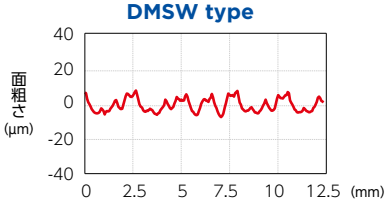
Complex Arc Shape



● **Even at high feed rates of 2.0mm/t or more, a reasonable surface finish can be attained without a wiper insert.**

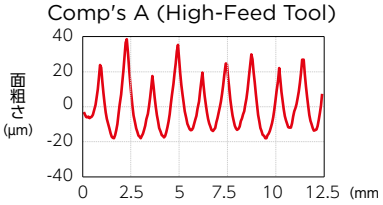


DMSW type



Ra 3.3μm Rz 14.1μm

Comp's A (High-Feed Tool)



Ra 11.2μm Rz 51.0μm

Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: DMSW 08063RS04 (ø63, 4-teeth)
Insert: WNMU0807ZNER-G (ACU2500)
Cutting Conditions: vc = 150m/min, fz = 2.5mm/t, ap = 0.5mm, ae = 40mm Dry

● **Small cutting angle controls cutting force toward the back force direction Suppresses chatter in long tool overhang machining, increasing efficiency**

DMSL type / DMSW type

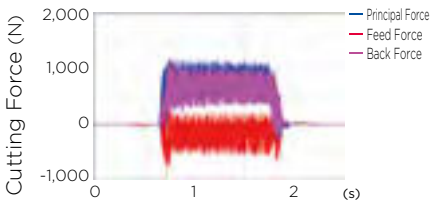


(Reference) Shoulder Milling Tool



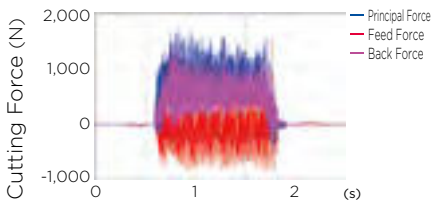


DMSL type



No Chattering

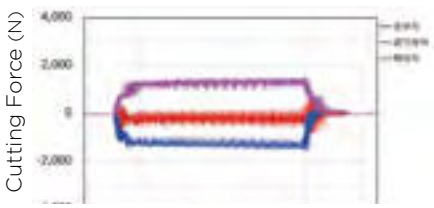
Comp's B (High-Feed Tool)



Heavy Chattering

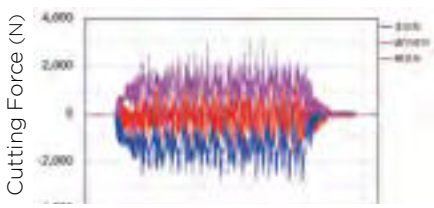
Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: DMSL06020E03 (D = ø20, 3 teeth)
Insert: LNMU06T3ZNER-G (ACU2500)
Cutting Conditions: vc = 160m/min, fz = 0.60mm/t, ap = 0.8mm, ae = 20mm, L = 100mm,Dry

DMSW type



No Chattering

Comp's C (High-Feed Tool)



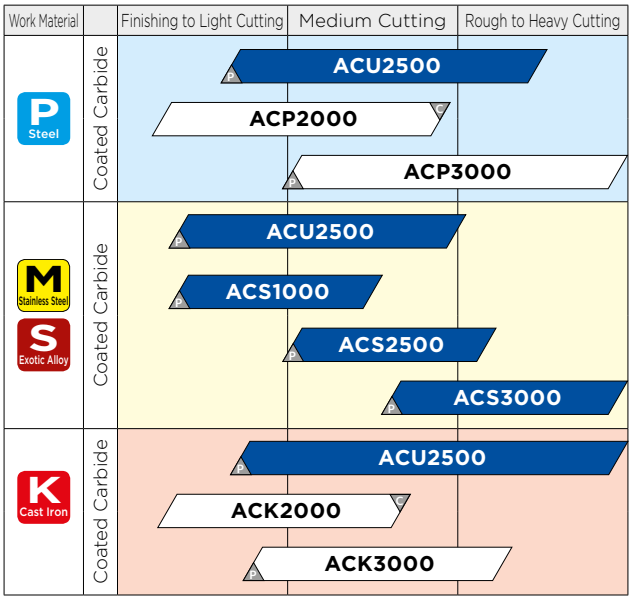
Heavy Chattering

Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: DMSW08050RS04 (D = ø50, 4 teeth)
Insert: WNMU0807ZNER-G (ACU2500)
Cutting Conditions: vc = 160m/min, fz = 0.65mm/t, ap = 0.8mm, ae = 45mm, L = 340mm,Dry

DMSL series / DMSW series

■ Grade Features

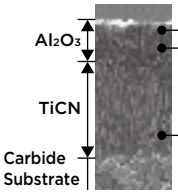
In addition to ACU2500 (applicable to various work materials), the lineup includes **ACS1000/ACS2500/ACS3000** grades, ideal for machining titanium alloys, heat-resistant alloys, and stainless steel.



The letters "C" and "P" at the end of each grade indicate the coating type. ▽: CVD △: PVD

New coating technology that realises absolute stability
ABSOTECH™ (Absolute Technology)

ABSOTECH CVD



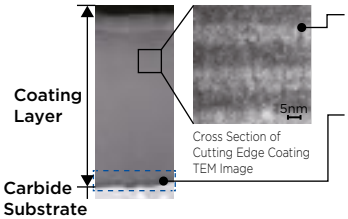
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice that of conventional coatings

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice that of conventional coatings

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice that of conventional coatings

Applicable Grades: ACP2000, ACK2000

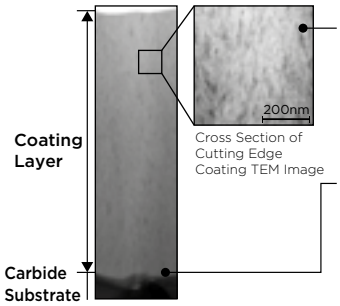
ABSOTECH PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACU2500, ACP3000, ACK3000



Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACS1000, ACS2500, ACS3000

Characteristic Values of Grade

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features
P Steel	**ACU2500**	91.6	3.8	ABSOTECH	3	· General-purpose grade covering steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials
	ACP2000	89.5	3.2	ABSOTECH	10	· For high-speed machining of steel · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance
	ACP3000	89.5	3.2	ABSOTECH	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions
M Stainless Steel S Exotic Alloy	**ACS1000**	91.6	3.8	ABSOTECH	3	· For high-efficiency milling of exotic alloys · High-hardness carbide substrate coupled with a chipping-resistant coating provides long, stable tool life in high-speed, high-efficiency machining applications
	ACS2500	90.8	4.2	ABSOTECH	3	· First recommendation for titanium alloy applications · Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance
	ACS3000	89.8	3.4	ABSOTECH	3	· Suitable for a wide range of exotic alloy machining applications · Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating
K Cast Iron	**ACK2000**	91.7	3.1	ABSOTECH	10	· For high-speed cast iron milling · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance
	ACK3000	91.7	3.1	ABSOTECH	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations

■ Precautions for Corner Finishing

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

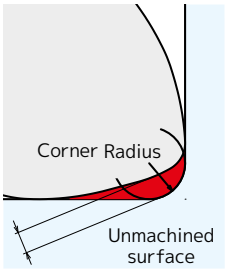
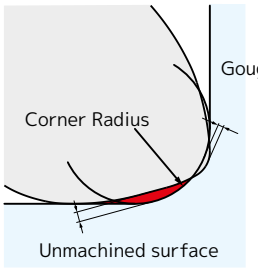


Fig 2



DMSL type			
Corner Radius	Unmachined surface	Gouging	Fig
0.5	0.88	0	1
1.0	0.69	0	1
1.5	0.54	0	1
2.0	0.41	0.02	2

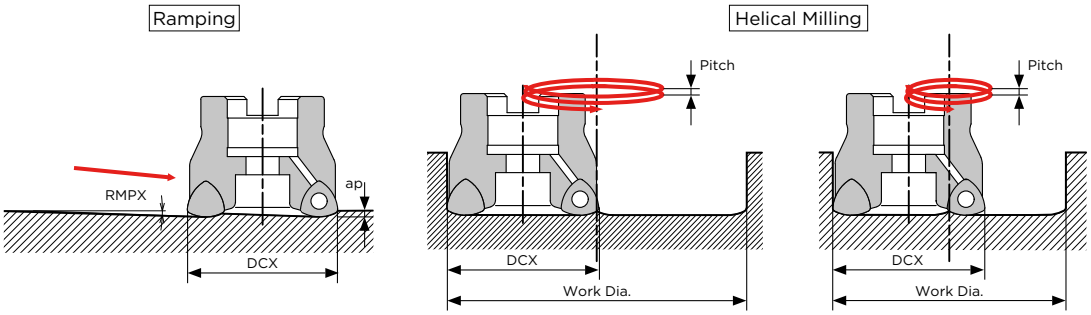
(mm)

DMSW type			
Corner Radius	Unmachined surface	Gouging	Fig
2.0	1.22	0	1
2.5	1.08	0	1
3.0	0.95	0	1
3.5	0.83	0.04	2

(mm)

DMSL series / DMSW series

■ Ramping/Helical Milling Upper Limit



Precautions for Helical Milling

- Above the max. machining diameter, the centre uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the centre uncut portion cannot be removed with the same cutter.

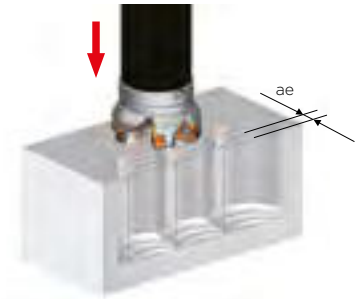
DMSL type

Max. Dia. DCX (mm)	Ramping	Helical Milling					
	Max. Ramping Angle RMPX (°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Dia. (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
16	0.6	31.3	0.6	24.4	0.3	23.8	0.25
18	0.8	35.3	0.8	28.3	0.4	27.2	0.3
20	1.0	39.3	1.0	32.3	0.6	30.5	0.3
22	1.0	43.3	1.0	36.3	0.7	34.3	0.3
25	1.0	49.3	1.0	42.3	0.9	39.9	0.3
26	1.0	51.3	1.0	44.3	0.9	41.8	0.3
28	0.9	55.3	1.0	48.2	0.9	45.7	0.3
30	0.8	59.3	1.0	52.2	1.0	49.6	0.3
32	0.7	63.3	1.0	56.2	1.0	53.6	0.3
35	0.6	69.3	1.0	62.2	1.0	59.5	0.3
40	0.5	79.3	1.0	72.2	1.0	69.6	0.3
42	0.5	83.3	1.0	76.2	1.0	73.5	0.3
50	Not recommended						
52							
63							
66							
80							

DMSW type

Max. Dia. DCX (mm)	Ramping	Helical Milling					
	Max. Ramping Angle RMPX (°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Dia. (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
35	0.5	69.3	1.3	53.5	0.5	52.0	0.5
40	0.8	79.3	2.0	63.4	1.0	60.2	0.5
50	1.4	99.3	2.0	83.3	2.0	79.1	1.0
52	1.4	103.3	2.0	87.3	2.0	82.8	1.0
63	1.2	125.3	2.0	109.3	2.0	103.6	1.0
66	1.2	131.3	2.0	115.3	2.0	109.4	1.0
80	1.2	159.3	2.0	143.2	2.0	134.0	1.0
100	0.8	199.3	2.0	183.2	2.0	174.0	1.0
125	Not recommended						
160							

■ Plunge Cutting Upper Limit



	Max. ae (mm)	Max. fz (mm/t)
DMSL type	4	0.2
DMSW type	10	0.2

DMSL 06000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

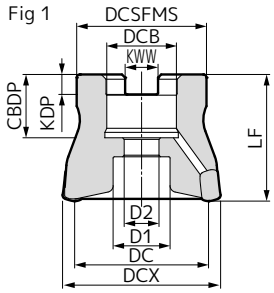
Rake Angle	Radial	-8° to -12.5°
	Axial	-8°

1.5mm, 17°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DMSL 06040RS05**	★	**40**	32.3	33	40	16	8.4	5.6	18	14	9	5	0.20	1
	06040RS06	★	**40**	32.3	33	40	16	8.4	5.6	18	14	9	6	0.20	1
	06040RS07	★	**40**	32.3	33	40	16	8.4	5.6	18	14	9	7	0.19	1
	06042RS06	★	**42**	34.3	33	40	16	8.4	5.6	18	14	9	6	0.21	1
	06042RS07	★	**42**	34.3	33	40	16	8.4	5.6	18	14	9	7	0.21	1
	06050RS05	★	**50**	42.3	41	40	22	10.4	6.3	20	18	11	5	0.31	1
	06050RS08	★	**50**	42.3	41	40	22	10.4	6.3	20	18	11	8	0.30	1
	06052RS06	★	**52**	44.3	41	40	22	10.4	6.3	20	18	11	6	0.32	1
	06052RS08	★	**52**	44.3	41	40	22	10.4	6.3	20	18	11	8	0.31	1
	06063RS08	★	**63**	55.3	50	40	22	10.4	6.3	20	18	11	8	0.52	1
	06063RS09	★	**63**	55.3	50	40	22	10.4	6.3	20	18	11	9	0.52	1
	06066RS08-27	★	**66**	58.3	55	50	27	12.4	7	22	20	14	9	0.69	1
	06066RS09-27	★	**66**	58.3	55	50	27	12.4	7	22	20	14	9	0.77	1
	06080RS09	★	*80	72.3	55	50	27	12.4	7	22	20	14	9	0.94	1
Inch	**DMSL 06050R05**	★	**50**	42.3	41	40	22.225	8.4	5	20	18	11	5	0.32	1
	06050R08	★	**50**	42.3	41	40	22.225	8.4	5	20	18	11	8	0.30	1
	06063R09	★	**63**	55.3	50	40	22.225	8.4	5	20	18	11	9	0.52	1
	06080R09	★	*80	72.3	70	63	31.75	12.7	8	32	27	18	9	1.39	1

Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note To mount the cutters marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (metric specification: M12 x 30 to 35mm, inch specification: M16 x 40 to 45mm).

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX02507IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

DMSL Series Code | **06** Insert Size | **066** Max. Dia. | **R** Feed Direction | **S** Metric Bore | **09** Number of Teeth | **-27** Mounting Size

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DMSL 06000R(S) type

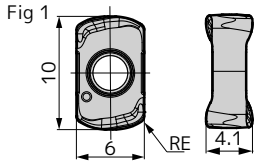
P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									
Process	High-speed/Light Cutting		P		K		M S	M S			
	Medium Cutting	M S P	P	P	K	K		M S	M S		
	Roughing	M S P		P		K			M S		
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU 06T3ZNER-L		★	★	★			★	★	★	1.0	1
LNMU 06T3ZNER-G		★	★	★	★	★	★	★	★	1.0	1
LNMU 06T3ZNER-H		★	★	★			★	★	★	1.0	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 0.75mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

DMSW 08000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

Rake Angle	Radial	-7° to -10°
	Axial	-6°

3mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1

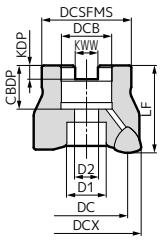


Fig 2

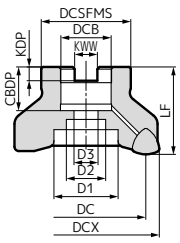


Fig 3

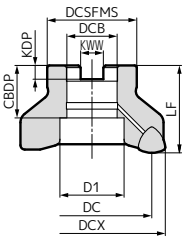


Fig 4

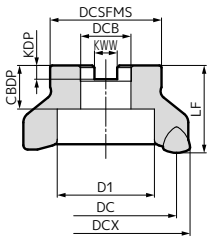
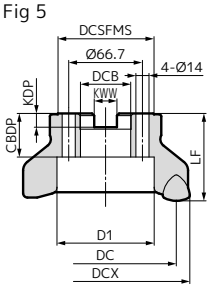


Fig 5



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**DMSW 08050RS04**	★	**50**	33.4	41	40	**22**	10.4	6.3	20	16.7	11	—	4	0.25	1
	08050RS05	★	**50**	33.4	41	40	**22**	10.4	6.3	20	16.7	11	—	5	0.24	1
	08052RS04	★	**52**	35.4	41	40	**22**	10.4	6.3	20	16.7	11	—	4	0.27	1
	08052RS05	★	**52**	35.4	41	40	**22**	10.4	6.3	20	16.7	11	—	5	0.25	1
	08063RS04	★	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	4	0.46	1
	08063RS05	★	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	5	0.46	1
	08063RS06	★	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	6	0.44	1
	08063RS05-27	★	**63**	46.4	50	50	**27**	12.4	7	22	20	14	—	5	0.55	1
	08063RS06-27	★	**63**	46.4	50	50	**27**	12.4	7	22	20	14	—	6	0.53	1
	08066RS05-27	★	**66**	49.4	50	50	**27**	12.4	7	22	20	14	—	5	0.60	1
	08066RS06-27	★	**66**	49.4	50	50	**27**	12.4	7	22	20	14	—	6	0.58	1
	08080RS06	★	***80**	63.3	55	50	**27**	12.4	7	22	20	14	—	6	0.88	1
	08080RS08	★	***80**	63.3	55	50	**27**	12.4	7	22	20	14	—	8	0.84	1
	08100RS06	★	**100**	83.3	70	50	**32**	14.4	8	32	46	—	—	6	1.29	3
	08100RS08	★	**100**	83.3	70	50	**32**	14.4	8	32	46	—	—	8	1.29	3
	08100RS09	★	**100**	83.3	70	50	**32**	14.4	8	32	46	—	—	8	1.29	3
	08125RS08	★	**125**	108.3	80	63	**40**	16.4	9	29	52	29	—	8	2.41	1
	08160RS10	★	**160**	143.3	100	63	**40**	16.4	9	29	90	—	—	10	4.73	5
Inch	**DMSW 08050R04**	★	**50**	33.4	41	40	**22.225**	8.4	5	20	16.7	11	—	4	0.25	1
	08050R05	★	**50**	33.4	41	40	**22.225**	8.4	5	20	16.7	11	—	5	0.24	1
	08063R04	★	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	4	0.46	1
	08063R05	★	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	5	0.46	1
	08063R06	★	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	6	0.44	1
	08080R06	★	***80**	63.3	70	63	**31.75**	12.7	8	32	27	18	—	6	1.32	1
	08080R08	★	***80**	63.3	70	63	**31.75**	12.7	8	32	27	18	—	8	1.28	1
	08080R06-25.4	★	**80**	63.3	55	50	**25.4**	9.5	6	25	20	14	—	6	0.91	1
	08080R08-25.4	★	**80**	63.3	55	50	**25.4**	9.5	6	25	20	14	—	8	0.87	1
	08100R06	★	***100**	83.3	70	63	**31.75**	12.7	8	32	46	27	18	6	1.75	2
	08100R08	★	***100**	83.3	70	63	**31.75**	12.7	8	32	46	27	18	8	1.76	2
	08125R08	★	**125**	108.3	80	63	**38.1**	15.9	10	35.5	55	30	—	8	2.55	1
	08160R10	★	**160**	143.3	100	63	**50.8**	19.1	11	38	72	—	—	10	4.18	4

Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note To mount the cutters marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (metric specification: M12 x 30 to 35mm, inch specification: M16 x 40 to 45mm).

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
		N·m				
DMSW08160R(S)10	BFTX0513IP	**5.0**	TRDR20IP	—	—	SUMI-P
Other than above			—	HPL2025	TRB20IP	

Identification Code

DMSW 08 063 R S 05 - 27

Series Code	Insert Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth	Mounting Size

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DMSW 08000R(S) type

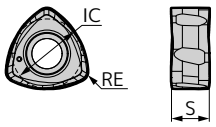
P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										
Process	High-speed/Light Cutting		P		K		M S	M S				
	Medium Cutting	K P M S	P	P	K	K		M S	M S			
	Roughing	K P M S		P		K			M S			
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-L		★	★	★			★	★	★	13	7	1.6	1
WNMU 0807ZNER-G		★	★	★	★	★	★	★	★	13	7	1.6	1
WNMU 0807ZNER-H		★	★	★			★	★	★	13	7	1.6	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
P	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
P	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
S	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

DMSL 06000E(L) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

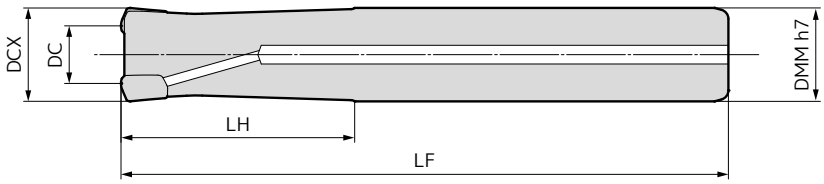
Rake Angle		
	Radial	-12.5° to -16.5°
	Axial	-8°

1.5mm, 17°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSL 06016E02	★	**16**	8.4	16	30	110	2	0.15	1
06018E02	★	**18**	10.4	16	30	110	2	0.15	1
06020E03	★	**20**	12.4	20	50	130	3	0.27	1
06020E04	★	**20**	12.4	20	50	130	4	0.27	1
06022E03	★	**22**	14.3	20	50	130	3	0.29	1
06022E04	★	**22**	14.3	20	50	130	4	0.29	1
06025E04	★	**25**	17.3	25	60	140	4	0.46	1
06025E05	★	**25**	17.3	25	60	140	5	0.46	1
06028E04	★	**28**	20.3	25	60	140	4	0.49	1
06028E05	★	**28**	20.3	25	60	140	5	0.48	1
06030E05	★	**30**	22.3	32	70	150	5	0.81	1
06032E05	★	**32**	24.3	32	70	150	5	0.82	1
06032E06	★	**32**	24.3	32	70	150	6	0.82	1
06035E05	★	**35**	27.3	32	50	150	5	0.88	1
06035E06	★	**35**	27.3	32	50	150	6	0.88	1
06040E06	★	**40**	32.3	32	50	150	6	0.91	1

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSL 06016EL02	★	**16**	8.4	16	70	150	2	0.19	1
06018EL02	★	**18**	10.4	16	50	150	2	0.21	1
06020EL03	★	**20**	12.4	20	80	160	3	0.33	1
06022EL03	★	**22**	14.3	20	60	160	3	0.36	1
06025EL04	★	**25**	17.3	25	100	170	4	0.54	1
06028EL04	★	**28**	20.3	25	60	170	4	0.60	1
06030EL05	★	**30**	22.3	32	120	200	5	1.01	1
06032EL05	★	**32**	24.3	32	120	200	5	1.06	1
06035EL05	★	**35**	27.3	32	60	210	5	1.21	1
06040EL06	★	**40**	32.3	32	60	210	6	1.24	1

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX02507IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

DMSL Series Code | **06** Insert Size | **025** Max. Dia. | **E** Shank type | **L** Long Shank | **04** Number of Teeth

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DMSL 06000E(L) type

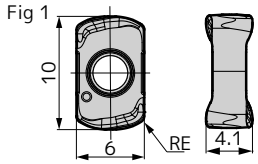
P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									
Process	High-speed/Light Cutting		P		K		M S	M S			
	Medium Cutting	M S P	P	P	K	K		M S	M S		
	Roughing	M S P		P		K			M S		
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU 06T3ZNER-L		★	★	★			★	★	★	1.0	1
LNMU 06T3ZNER-G		★	★	★	★	★	★	★	★	1.0	1
LNMU 06T3ZNER-H		★	★	★			★	★	★	1.0	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 0.75mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

DMSW 08000E(L) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

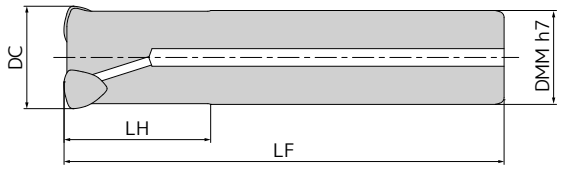
Rake Angle	Radial	-10° to -13°
	Axial	-6°

3mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035E02	★	**35**	18.6	32	50	150	2	0.85	1
08040E03	★	**40**	23.5	32	50	150	3	0.86	1
08050E03-42	★	**50**	33.4	42	50	150	3	1.51	1

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035EL02	★	**35**	18.6	32	60	210	2	1.21	1
08040EL03	★	**40**	23.5	32	60	210	3	1.22	1
08050EL03-42	★	**50**	33.4	42	50	250	3	2.54	1

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0513IP	**5.0**	TRDR20IP	SUMI-P

Identification Code

DMSW **08** **050** **E** **L** **03** - **42**

Series Code	Insert Size	Max. Dia.	Shank type	Long Shank	Number of Teeth	Shank Dia.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DMSW 08000E(L) type

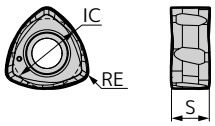
P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting		P		K		M S	M S					
	Medium Cutting	S P	P	P	K	K		M S	M S				
	Roughing	S P		P		K			M S				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-L		★	★	★			★	★	★	13	7	1.6	1
WNMU 0807ZNER-G		★	★	★	★	★	★	★	★	13	7	1.6	1
WNMU 0807ZNER-H		★	★	★			★	★	★	13	7	1.6	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
P	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	ACU2500/ACP2000/ACP3000
P	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	ACU2500/ACP2000/ACP3000
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
S	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	ACU2500/ACS1000/ACS2500/ACS3000
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WFXH series

VIDEO OF CUTTING



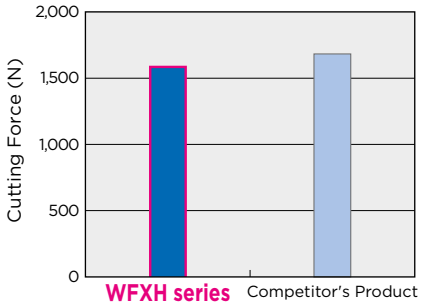
■ Features

SEC-WaveMill WFXH series are high performance multi-functional cutters that use WFX series inserts to support roughing at high feed rates and other milling applications.

(1) Stable, high-efficiency machining due to their superior sharpness
(2) Various milling applications are supported (ramping, helical milling)
(3) Various inserts for the WFX series can be used
(4) Applicable to various work materials
Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

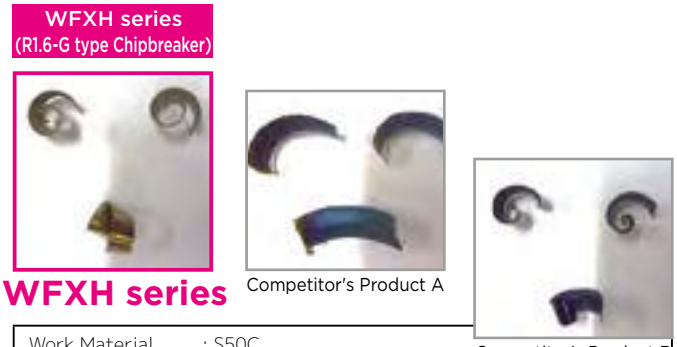
Modular type H267

Cutting force: High sharpness realises stable milling



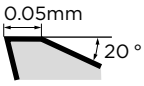
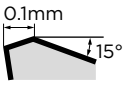
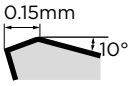
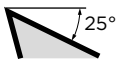
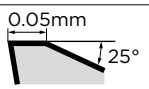
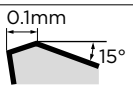
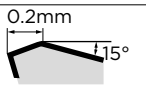
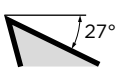
Work Material : S50C
Tool : WFXH12063RS (5 fluted)
Cutting Conditions : vc = 200m/min, fz = 1.0mm/t, ap = 0.5mm, ae = 44mm, Dry

Chips: Small and curled, low cutting temperatures

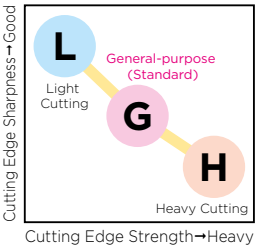


Work Material : S50C
Tool : WFXH12063RS, SOMT120416PDER-G (ACP200)
Cutting Conditions : vc = 200m/min, fz = 1.0mm/t, ap = 1mm, ae = 35mm, Dry

■ Chipbreaker Selection

Work Material	P M K S			N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose type	High Strength type	Sharp Edge
Chipbreaker	L type	G type	H type	S type
				
08 type Cross Section	 0.05mm, 20°	 0.1mm, 15°	 0.15mm, 10°	 25°
12 type Cross Section	 0.05mm, 25°	 0.1mm, 15°	 0.2mm, 15°	 27°

■ Chipbreaker Selection Guide



■ Precautions for Use (1) Precautions for corner milling

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

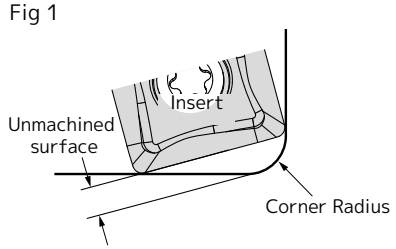
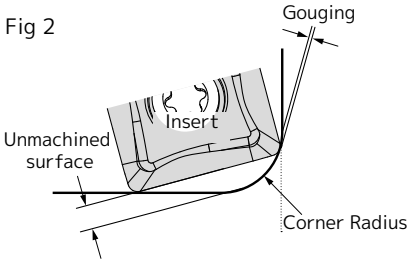


Fig 2



WFXH08000RS type

Dimensions (mm)

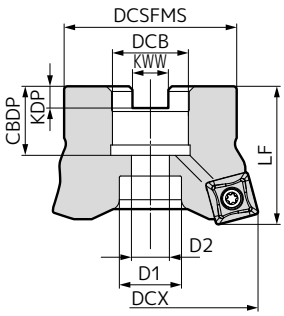
Corner Radius	SOMT08OO04-□ (RE0.4)			SOMT08OO08-□ (RE0.8)			SOMT08OO12-□ (RE1.2)		
	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig
2.0	1.41	0	1	1.30	0	1	1.21	0	1
2.5	1.30	0.02	2	1.19	0.01	2	1.09	0	1
3.0	—	—	—	—	—	—	0.98	0.05	2

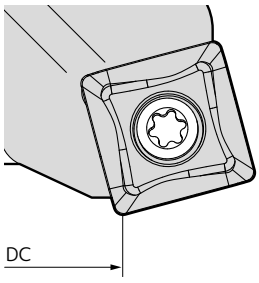
WFXH12000RS type

Dimensions (mm)

Corner Radius	SOMT12OO04-□ (RE0.4)			SOMT12OO08-□ (RE0.8)			SOMT12OO12-□ (RE1.2)			SOMT12OO16-□ (RE1.6)		
	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig
2.0	2.58	0	1	2.48	0	1	2.37	0	1	2.25	0	1
2.5	2.47	0	1	2.37	0	1	2.25	0	1	2.14	0	1
3.0	2.36	0	1	2.26	0	1	2.14	0	1	2.11	0	1
3.5	2.24	0.01	2	2.14	0	1	2.03	0	1	1.91	0	1
4.0	—	—	—	2.03	0.04	2	1.91	0.03	2	1.8	0.01	2

■ Precautions for Use (2) The cutting diameter DC differs depending on the insert used. We recommend using WFXH type with large corner radius inserts.





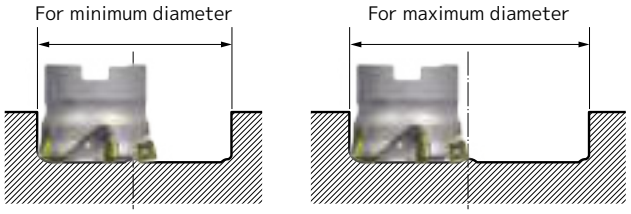
	Body Cat. No.	DCX	DC			
			R0.4	R0.8	R1.2	R1.6
*	WFXH 08025M12Z2	25	10.4	10.9	11.5	—
*	08032M12Z3	32	17.4	17.9	18.5	—
	WFXH 08040RS	40	25.4	25.9	26.5	—
	08050RS	50	35.4	35.9	36.5	—
	08050RS-Z6	50	35.4	35.9	36.5	—
	08063RS	63	48.4	48.9	49.5	—
*	WFXH 12040M12Z3	40	16.6	17.1	17.5	18.1
*	WFXH 12050RS	50	26.6	27.2	27.7	28.2
	12063RS	63	39.5	40.0	40.4	41.1

* mark: Modular Tools ☞H267

WFXH series

■ Helical Milling and Ramping

Helical Milling



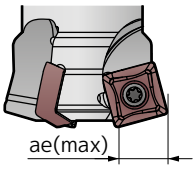
Ramping



Insert Cat. No.	DC	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramp Angle
SOMT08○○04-□	**25**	35	49	1.5°
	32	49	63	0.5°
	40	65	79	0.5°
	50	Impossible	Impossible	Impossible
	63	Impossible	Impossible	Impossible
SOMT08○○08-□	**25**	35	48	3°
	32	49	62	1.5°
	40	65	78	1.0°
	50	85	98	0.5°
	63	111	124	0.5°
SOMT08○○12-□	**25**	34	47	4.5°
	32	48	61	2.5°
	40	64	77	1.5°
	50	84	97	1.0°
	63	110	123	0.5°

Insert Cat. No.	DC	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramp Angle
SOMT12○○04-□	**40**	56	79	1.0°
	50	76	99	0.5°
	63	Impossible	Impossible	Impossible
SOMT12○○08-□	**40**	56	78	1.5°
	50	76	98	1.0°
	63	102	124	0.5°
SOMT12○○12-□	**40**	55	77	2.5°
	50	75	97	1.5°
	63	101	123	1.0°
SOMT12○○16-□	**40**	55	76	3.5°
	50	75	96	2.0°
	63	101	122	1.5°

■ Maximum Depth of Cut when Plunging



Insert Cat. No.	Max. Depth of Cut ae(max)
SOMT08	6mm
SOMT12	10mm

Lower the feed rate when plunging.

■ Recommended Cutting Conditions

Work Material	Insert Grades	Cutting Speed vc(m/min)	Insert Cat. No.	ø25		ø32		ø40		ø50		ø63	
				ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)
P General Steel Below 200HB	ACU2500 ACP200	100-**150**-200	**SOMT08**	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			SOMT12	—	—	—	—	1.0	1.0	1.0	1.0	1.0	1.0
P Alloy Steel Below 45HRC		80-**130**-180	**SOMT08**	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8
			SOMT12	—	—	—	—	0.8	1.0	0.8	1.0	0.8	1.0
M Stainless Steel SUS304, etc.	ACU2500 ACS3000 ACM300	80-**120**-150	**SOMT08**	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7
			SOMT12	—	—	—	—	1.0	0.8	1.0	0.8	1.0	0.8
K Cast Iron FC, FCD	ACU2500 ACK200	100-**150**-200	**SOMT08**	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0
			SOMT12	—	—	—	—	1.0	1.2	1.0	1.2	1.0	1.2
H Hardened Steel Below 50HRC	ACK300	40-**80**-100	**SOMT08**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
			SOMT12	—	—	—	—	0.6	0.8	0.6	0.8	0.6	0.8

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity. The above figures are guidelines for use with BT50 machine tools.
- The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
  When tool overhang is more than L/D = 3 and less than or equal to L/D = 5, settings should be adjusted to approximately **70 to 80%** of those indicated in the above recommended cutting conditions (ap, fz).
  When tool overhang is more than L/D = 5 and less than or equal to L/D = 8, settings should be adjusted to approximately **50 to 60%** of those indicated in the above recommended cutting conditions (ap, fz).
- For groove milling, adjust the feed rate to around 70% of the above values.

SEC-WaveMill

WFXH 08000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy | H Hardened Steel

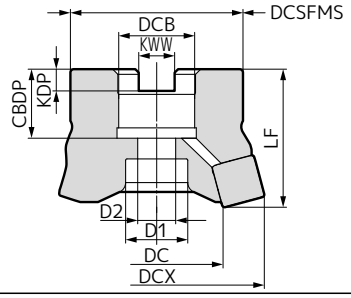
Rake Angle	Radial	-6°
	Axial	6°

1.5mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH 08040RS**	★	**40**	*26.5	33	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	08050RS	★	**50**	*36.5	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	08050RS-Z6	★	**50**	*36.5	41	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	08063RS	★	**63**	*49.5	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1

Inserts are sold separately.

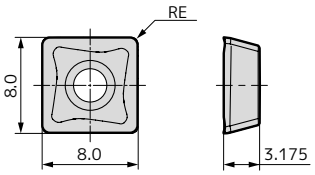
* indicates value with corner radius 1.2 inserts mounted. Refer to page H179 for details.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
	Medium Cutting																
	Roughing																
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S*		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S*		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S*		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1

Fig 1



*If the cutting edge strength for high-efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H180 | Precautions for Use H179

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

WFXH 08 040 RS - Z6

Series Code	Insert Size	Max. Dia.	Metric Bore	Fine Pitch type (with no. of teeth)

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WFXH 12000RS type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

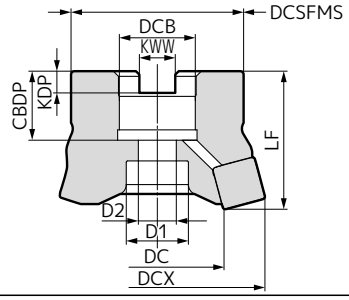
Rake Angle	Radial	-6°
	Axial	6°

2.5mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH 12050RS**	★	**50**	*28.2	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	★	**63**	*41.1	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1

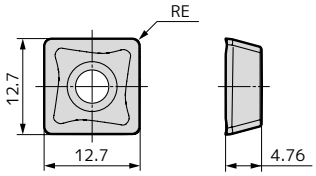
Inserts are sold separately.
* indicates value with corner radius 1.6 inserts mounted. Refer to page H179 for details.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	PS P			K		MS	MS		MS		KN	N			
	Medium Cutting	PS		PM	PM K			MS	MS	MS	MS		N	PM		
	Roughing	PS		PM	PM	K			MS		MS			P		
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	1
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	1
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S*		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1

Fig 1



*If the cutting edge strength for high-efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H180 | Precautions for Use H179

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
				
BFTX03512IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

WFXH 12 050 RS

WFXH	12	050	RS
Series Code	Insert Size	Max. Dia.	Metric Bore

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

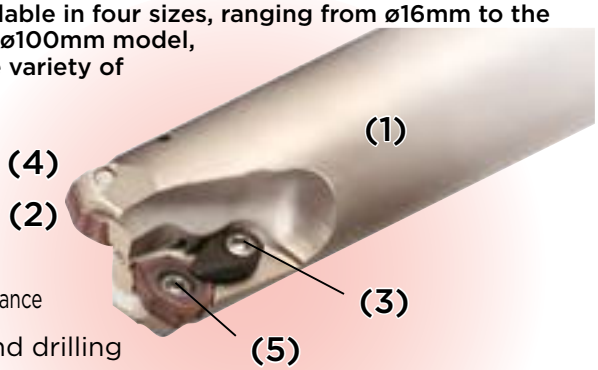
MEMO

MSX series



■ Features

**The SEC-Metal Slash Mill MSX series is a multi-purpose cutter capable of roughing at ultra-high feeds.
Its wide application range dramatically boosts efficiency.
Inserts are available in four sizes, ranging from ø16mm to the large diameter ø100mm model, to cover a wide variety of milling needs.**



(1) **Highly Durable Body** Special surface treatment improves scratch resistance

(2) **Versatile Machining Operations** Enables ramping, helical milling, and drilling

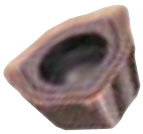
(3) **Double Clamp** Stable milling with a strong clamp is possible (ø22mm or smaller MSX06000 type and MSX08000 type cutters only use a single clamp)

(4) **With Coolant Hole** Improved chip evacuation with air or coolant supply hole and specially shaped pocket design

(5) **Insert Shape** Unique tool shape combines sharpness and cutting edge strength

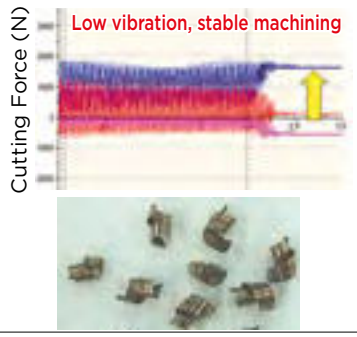
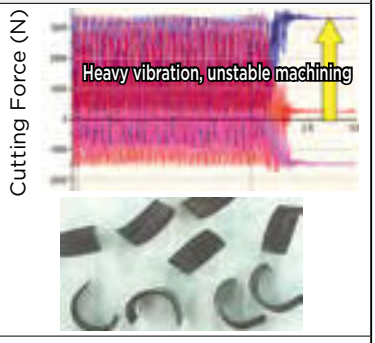
■ Insert Applications and Types

· Insert utilises a special cutting edge profile
· Economical, three-cornered insert

Type	General-purpose type	Strong Edged
Applications	General Milling (First Recommendation)	Interrupted Cutting
Appearance / Features	 Sharper Edge	 Emphasis on Fracture Resistance

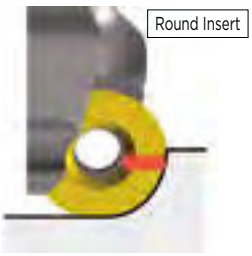
■ Cutting Performance

● Comparison of Cutting Force

MSX series	Conventional Tool
	

Work Material: S50C
Cutting Conditions: vc = 150m/min, fz = 1.0mm/t, ae = 25mm, ap = 2mm

● Shoulder Milling Comparison of MSX type and Conventional Tool

MSX series	Conventional Tool
Performs under high conditions	Prone to chatter
	
Cutting force is consistent even when depth of cut is increased, enabling stable cutting performance.	Greater depth of cut increases contact length, which increases cutting force.

■ Product Range

Type	Cat. No.	Max. Diameter (mm) ø16	ø17	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	Applicable Inserts
Shell	MSX 08000RS											4					WDMT 08 type
Shell	MSX 12000RS												4	5			WDMT 12 type
Shell	MSX 14000R (inch)														5	6	WDMT 12 type
Shell	MSX 14000RS												3	4	5	6	WDMT 14 type
Shank	MSX 06000E(S/M)	2	2	2	3	3	3										WDMT 06 type
Shank	MSX 08000E(S/M)				2	2	2	2		3	3						WDMT 08 type
Shank	MSX 12000E(S/M)									2	2	3	4				WDMT 12 type
Shank	MSX 14000E(S/M)											2	3	4			WDMT 14 type
Modular	MSX 06000M	2		2	3	3	3										WDMT 06 type
Modular	MSX 08000M						2	2	3	3	3						WDMT 08 type
Modular	MSX 12000M									2	2	3					WDMT 12 type

Number in ●●● shows the number of teeth (inch) Inch Bore

Modular type ☞ H268

■ Precautions for Corner Finishing

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

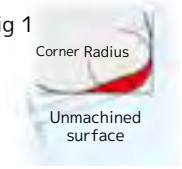


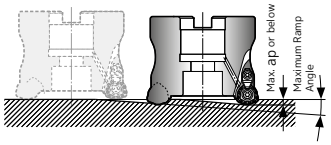
Fig 2



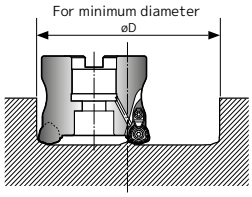
Corner Radius	MSX06000			MSX08000			MSX12000			MSX14000		
	Unmachined surface	Amount of Engagement	Fig	Unmachined surface	Amount of Engagement	Fig	Unmachined surface	Amount of Engagement	Fig	Unmachined surface	Amount of Engagement	Fig
2.0	0.403	0	1	0.735	0	1	1.312	0	1	1.642	0	1
2.5	0.263	0.087	2	0.593	0	1	1.171	0	1	1.501	0	1
3.0				0.451	0.031	2	1.030	0	1	1.360	0	1
3.5							0.888	0.001	2	1.219	0	1
4.0										1.078	0.016	2
	(mm)			(mm)			(mm)			(mm)		

■ Ramping and Helical Milling

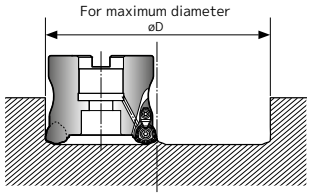
Ramping



Helical Milling



Centre uncut portion cannot be removed by traverse cutting with the same cutter.



Centre uncut portion can be removed by traverse cutting with the same cutter.

DC (mm)	MSX06000			MSX08000			MSX12000			MSX14000		
	Ramping (°)	Helical Milling (mm)		Ramping (°)	Helical Milling (mm)		Ramping (°)	Helical Milling (mm)		Ramping (°)	Helical Milling (mm)	
	Maximum Ramp Angle	Min. Dia.	Max. Dia.	Maximum Ramp Angle	Min. Dia.	Max. Dia.	Maximum Ramp Angle	Min. Dia.	Max. Dia.	Maximum Ramp Angle	Min. Dia.	Max. Dia.
16	6	21	30									
17	5	23	32									
18	4.5	25	34									
20	3.5	29	38	7.5	25	38						
22	3	33	42	5.5	29	42						
25	2	39	48	4	35	48						
28				3	41	54						
32				2.5	49	62	6.5	42	62			
35				2	55	68	5	48	68			
40				2	65	78	4	58	78	6	53	78
50							2.5	78	98	3.5	73	98
63							2	103	124	2	99	124
80										1.5	133	158
100										1	173	198

■ Recommended Cutting Conditions

(mm)

Insert Cat. No.	Max. ap	RE	Approx. RE
WDMT 0603	1.0	1.5	2.0
WDMT 0804	1.5	2.0	2.5
WDMT 1205	2.0	2.0	3.0
WDMT 1406	2.5	2.0	3.5

(ap: Depth of Cut fz: Feed Rate)

Work Material	Insert Grades	Cutting Speed vc (m/min)	Insert Cat. No.	Shank type										Shell type			
				ø16		ø20		ø25		ø32		ø40		ø50 / ø63		ø80 / ø100	
				ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)
P General Steel Below 200HB	ACP200	100-**150**-200	**WDMT 0603**	0.8	0.8	0.8	0.8	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	1.0	1.0	1.0	1.2	1.0	1.2	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.2	1.4	1.2	1.4	1.2	1.4	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.5	1.5	1.5	1.5	1.5	1.5
P Alloy Steel Below 45HRC	ACP200	80-**130**-180	**WDMT 0603**	0.7	0.8	0.7	0.8	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	0.8	1.0	0.8	1.2	0.8	1.2	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.0	1.4	1.0	1.4	1.0	1.4	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.3	1.5	1.3	1.5	1.3	1.5
M Stainless Steel SUS304, etc.	ACP300	80-**120**-150	**WDMT 0603**	0.8	0.7	0.8	0.7	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	1.0	0.8	1.0	0.8	1.0	0.8	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.2	1.2	1.2	1.2	1.2	1.2	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.5	1.3	1.5	1.3	1.5	1.3
K Cast Iron FC, FCD	ACK200 ACK300	100-**150**-200	**WDMT 0603**	0.8	1.0	0.8	1.0	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	1.0	1.2	1.0	1.4	1.0	1.4	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.2	1.5	1.2	1.5	1.2	1.5	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.5	1.8	1.5	1.8	1.5	1.8
H Hardened Steel Below 50HRC	ACK200 ACK300	40-**80**-100	**WDMT 0603**	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	0.5	0.6	0.5	0.8	0.5	0.8	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	0.6	1.0	0.6	1.0	0.6	1.0	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.0	1.2	1.0	1.2	1.0	1.2

Note

- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
  The above figures are guidelines for use with BT50 machine tools.
- The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
  When tool overhang is more than L/D = 3 and less than or equal to L/D = 5, settings should be adjusted to approximately **70 to 80%** of those indicated in the above recommended cutting conditions (ap, fz).
  When tool overhang is more than L/D = 5 and less than or equal to L/D = 8, settings should be adjusted to approximately **50 to 60%** of those indicated in the above recommended cutting conditions (ap, fz).
- For groove milling, adjust the feed rate to around 70% of the above values.

MSX 08000RS/12000RS/14000R(S) type

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle	Radial	-3° to -8°
	Axial	8°

1.5mm 20° (08000 type) | 2.0mm 20° (12000 type) | 2.5mm 20° (14000 type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1

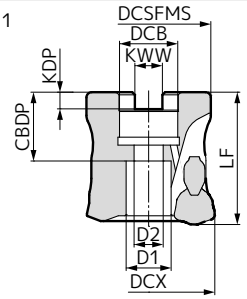
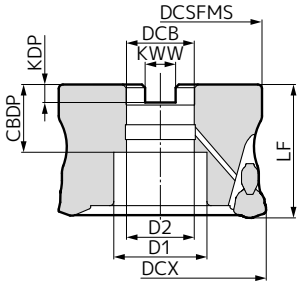


Fig 2



Body (Applicable Insert WDMT08 type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 08040RS**	▲	**40**	37	45	**16**	8.4	5.6	18	13.5	9	4	0.2	1

Body (Applicable Insert WDMT12 type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 12050RS**	▲	**50**	47	50	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	▲	**63**	60	50	**22**	10.4	6.3	20	18	11	5	0.6	1
	MSX 12066RS	▲	**66**	60	63	**27**	12.4	7.0	25	20	13.5	5	0.4	1

Body (Applicable Insert WDMT14 type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 14050RS**	▲	**50**	47	50	**22**	10.4	6.3	20	17	11	3	0.3	1
	14063RS	▲	**63**	60	50	**22**	10.4	6.3	20	18	11	4	0.6	1
	14080RS	▲	***80**	76	63	**27**	12.4	7.0	25	20	13.5	5	1.4	1
	14100RS	▲	***100**	96	63	**32**	14.4	8.5	32	44	—	6	2.2	2
Inch	**MSX 14080R**	▲	***80**	76	63	**31.75**	12.7	8.0	32.5	28	17	5	1.3	1
	14100R	▲	***100**	96	63	**31.75**	12.7	8.0	32.5	28	17	6	2.4	1

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

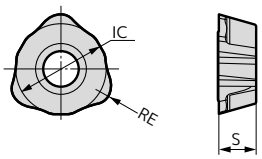
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting			KH	
	Medium Cutting	PM	PM	KH	
	Roughing	PM	PM		KH

Application	ISO Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0804ZDTR**	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000RS type	1
	1205ZDTR	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000RS type	1
	1406ZDTR	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000R(S) type	1
Honed type	**WDMT 0804ZDTR-H**	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000RS type	1
	1205ZDTR-H	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000RS type	1
	1406ZDTR-H	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000R(S) type	1

Fig 1



Recommended Cutting Conditions H185

Identification Code

MSX 08 040 R S

Series Code	Insert Size	Max. Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Clamp Plate	C-Ring	Cap Screw	Anti-seizure Cream
MSX 08000RS type	BFTX0306IP	**2.0**	TRDR08IP	—	—	CCH3.5	CR03	BFTX03510IP08	SUMI-P
MSX 12000RS type	BFTX0409IP	**3.0**	—	HPS1015	TRB15IP	CCH3.5	CR03	BFTX03510IP15	
MSX 14000R(S) type	BFTX0511IP	**5.0**	—	HPL2025	TRB20IP	CCH4.5	CR03	BFTX04513IP20	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MSX 06000E(S/M)/08000E(S/M)/12000E(S/M)/14000E(S/M) type

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle	Radial	-3° to -8°
	Axial	8°

1.0mm 20° (06000 type) | 1.5mm 20° (08000 type) | 2.0mm 20° (12000 type) | 2.5mm 20° (14000 type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling

Fig 1 (Single Clamp)



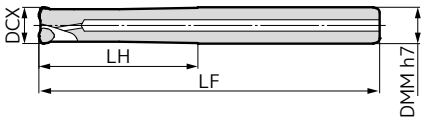
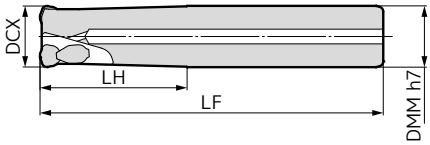


Fig 2 (Double Clamp)



Body (Applicable Insert WDMT06 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 06016ES	▲	**16**	16	30	110	2	0.2	1
06016EM	▲	**16**	16	70	150	2	0.2	1
06017EM	▲	**17**	16	20	150	2	0.2	1
06018EM	▲	**18**	16	20	150	2	0.2	1
06020ES	▲	**20**	20	50	130	3	0.3	1
06020EM	▲	**20**	20	100	180	3	0.4	1
06022EM	▲	**22**	20	30	180	3	0.4	1
06025ES	▲	**25**	25	60	140	3	0.5	1
06025EM	▲	**25**	25	120	250	3	0.8	1

Body (Applicable Insert WDMT08 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 08020ES	▲	**20**	20	50	130	2	0.3	1
08020EM	▲	**20**	20	100	180	2	0.3	1
08022EM	▲	**22**	20	30	180	2	0.4	1
08025ES	▲	**25**	25	60	140	2	0.4	2
08025EM	▲	**25**	25	120	250	2	0.8	2
08028EM	▲	**28**	25	40	250	2	0.9	2
08032ES	▲	**32**	32	70	150	3	0.8	2
08032EM	▲	**32**	32	120	250	3	1.4	2
08035EM	▲	**35**	32	50	250	3	1.5	2

Body (Applicable Insert WDMT12 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 12032ES	▲	**32**	32	70	150	2	0.8	2
12032EM	▲	**32**	32	120	250	2	1.4	2
12035EM	▲	**35**	32	50	250	2	1.4	2
12040ES	▲	**40**	32	50	150	3	0.9	2
12040EM	▲	**40**	32	50	250	3	1.5	2
12050EM	▲	**50**	42	50	250	4	2.6	2

Body (Applicable Insert WDMT14 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 14040ES	▲	**40**	32	50	150	2	0.9	2
14040EM	▲	**40**	32	50	250	2	1.5	2
14050ES	▲	**50**	42	50	150	3	1.5	2
14050EM	▲	**50**	42	50	250	3	2.5	2
14063ES	▲	**63**	42	50	150	4	1.7	2
14063EM	▲	**63**	42	50	250	4	2.8	2

Inserts are sold separately.

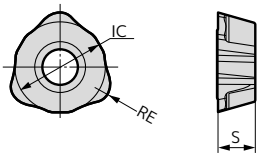
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting			K H	
	Medium Cutting	P M	P M	K H	
	Roughing	P M	P M		K H

Application	ISO Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0603ZDTR**	▲	▲	▲	▲	6.35	3.0	1.5	MSX 06000E(S/M) type	1
	0804ZDTR	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000E(S/M) type	1
	1205ZDTR	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000E(S/M) type	1
	1406ZDTR	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000E(S/M) type	1
Honed type	**WDMT 0603ZDTR-H**	▲	▲	▲	▲	6.35	3.0	1.5	MSX 06000E(S/M) type	1
	0804ZDTR-H	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000E(S/M) type	1
	1205ZDTR-H	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000E(S/M) type	1
	1406ZDTR-H	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000E(S/M) type	1

Fig 1



Recommended Cutting Conditions H185

Identification Code

MSX 06 016 E S

Series Code	Insert Size	Max. Dia.	Shank type	S: Short M: Medium

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Clamp Plate	C-Ring	Cap Screw	Anti-seizure Cream
MSX 06000E(S/M) type	BFTX02505IP	**1.5**	TRDR08IP	—	—	—	SUMI-P
MSX 08020E(S/M), MSX 08022EM	BFTX0306IP	**2.0**	TRDR08IP	—	—	—	
MSX 08000E(S/M) types other than the above	BFTX0306IP	**2.0**	TRDR08IP	CCH3.5	CR03	BFTX03510IP08	
MSX 12000E(S/M) type	BFTX0409IP	**3.0**	TRDR15IP	CCH3.5	CR03	BFTX03510IP15	
MSX 14000E(S/M) type	BFTX0511IP	**5.0**	TRDR20IP	CCH4.5	CR03	BFTX04513IP20	

★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

RSE series



■ Features

● **High-efficiency, high-rigidity radius cutter**
Wide insert seat face design achieves high efficiency machining of stainless steel etc.
Designed for superior durability
Ideal for roughing of aerospace components such as turbine blades

● **Lineup of ground type and M class inserts**
In addition to the 4-cornered ground type inserts, economical 8-cornered M Class inserts are also available

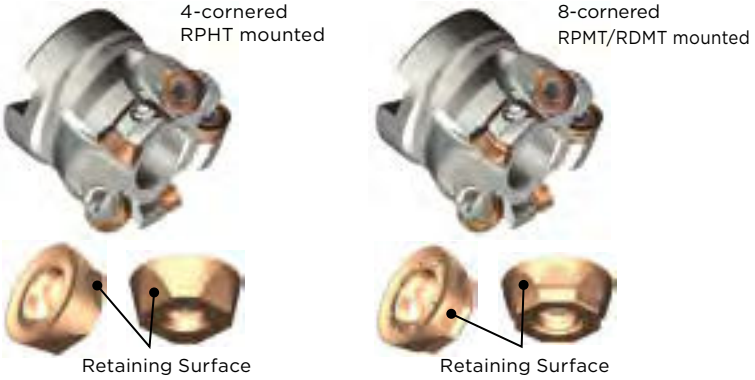
● **Uses new grades for exotic alloy machining**
New ACS1000/ACS2500/ACS3000 grades achieve stable and long tool life in machining exotic alloys, such as titanium alloys and Ni-based heat-resistant alloys, as well as stainless steel

■ High-rigidity clamp design

Wide Insert Seat Face Design



■ Cutter body can be shared by optimizing the retaining surface design



4-cornered ground type inserts or 8-cornered M Class inserts can be used on the same cutter body

■ Product Range

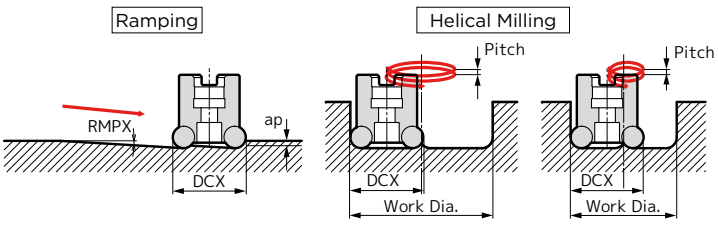
Type	ISO Cat. No.	Max. Diameter (mm)							
		ø25	ø32	ø40	ø42	ø50	ø52	ø63	ø80
Shell	**RSE 10000RS○○**			5		6			
	RSE 12000RS○○			4	4	5 6	5	6	8
	RSE 12000R○○ (inch)								8
Shank	**RSE 10000E○○**	2 3	3 4						

Number in ●● shows the number of teeth (inch) Inch Bore

■ Chipbreaker Shape

Work Material	M Stainless Steel, S Exotic Alloy
Applications	General-purpose to Roughing
Features	Standard
Chipbreaker	**G type**
Cutting Edge Cross Section	15°

■ Ramping/Helical Milling Upper Limit



Precautions for Helical Milling

- Above the max. machining diameter, the centre uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the centre uncut portion cannot be removed with the same cutter.

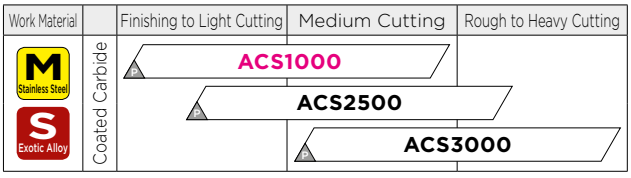
Insert Cat. No.	Max. Dia. DCX (mm)	Ramping	Helical Milling					
		Max. Ramping Angle RMPX(°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
R○○T10···	**ø25**	4.6	48.6	4.8	40.6	3.3	36.3	1.4
	ø32	2.8	62.6	4.6	54.6	2.9	50.3	1.4
	ø40	1.9	78.6	3.9	70.6	2.6	66.3	1.4
	ø50	1.3	98.6	3.4	90.6	2.5	86.3	1.4
R○○T12···	**ø40**	3.4	78.6	6.0	68.6	4.5	62.4	1.6
	ø42	3.1	82.6	6.0	72.6	4.4	66.4	1.6
	ø50	2.3	98.6	6.0	88.6	4.1	82.4	1.6
	ø52	2.2	102.6	6.0	92.6	4.1	86.4	1.6
	ø63	1.6	124.6	5.3	114.6	3.9	108.4	1.6
	ø80	1.1	158.6	4.8	148.6	3.7	142.4	1.6

■ Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
M Stainless Steel / S Exotic Alloy	**ACS1000**	3	· For high-efficiency milling of **exotic alloys** · High-hardness carbide substrate coupled with a chipping-resistant coating provides long and stable tool life in high-speed, high-efficiency machining applications
M Stainless Steel / S Exotic Alloy	**ACS2500**	3	Coating with excellent wear and adhesion resistance provides outstanding performance especially in machining **titanium alloys**
M Stainless Steel / S Exotic Alloy	**ACS3000**	3	High toughness carbide substrate and a coating with excellent chipping resistance provide outstanding stability in a wide range of work materials such as **heat-resistant alloys**, **stainless steel**, and **titanium alloys**

■ Grade Application Range

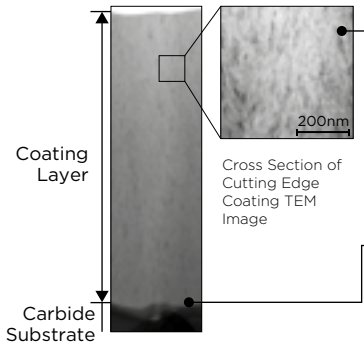
Newly developed **ACS2500/ACS3000** grades ideal for machining titanium alloys, heat-resistant alloys and stainless steel. Newly available **ACS1000**



The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD P: PVD

New PVD Coating Layer Features

ABSOTECH **PVD**

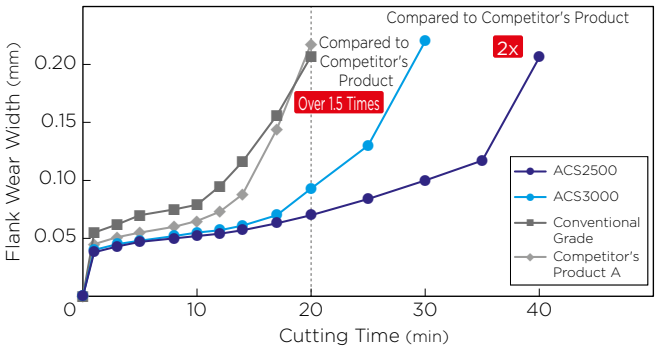


Ultra-fine Grained B Additive
· New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
· Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion and more than twice the conventional chipping resistance

Applicable Grades: ACS2500, ACS3000

■ Cutting Performance

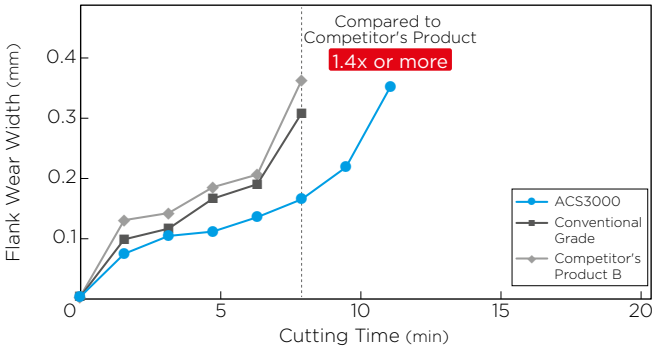


Machine	: Vertical Machining Centre BT40, Work Material: Ti-6Al-4V
Tool	: RSE 12050RS05, Insert: RPHT1204M0EN-G
Cutting conditions	: vc = 70m/min fz = 0.25mm/t ap = 2mm ae = 30mm Wet

After cutting for 20 minutes



Superb wear resistance with 1.5 times longer tool life than conventional grades and competitor's products



Machine	: Vertical Machining Centre BT40, Work Material: Inconel 718 (44HRC)
Tool	: RSE 12050RS05, Insert: RPHT1204M0EN-G
Cutting conditions	: vc = 40m/min fz = 0.3mm/t ap = 2mm ae = 30mm Wet

After cutting for 7.9 minutes



Superb fracture resistance for a tool life 1.4 times greater than that of conventional tools and competitor's products

RSE 10000RS type

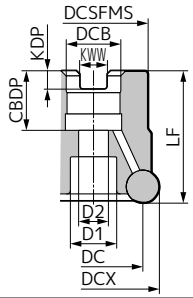
Rake Angle	Radial	-5°
	Axial	4°

5mm 4-cornered | 1.4mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSE 10040RS05**	★	**40**	30	33	40	16	8.4	5.6	18	14	9	5	0.16	1
	10050RS06	★	**50**	40	40	40	22	10.4	6.3	20	18	11	6	0.27	1

Inserts are sold separately.

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX03584IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

RSE **10** **040** **R** **S** **05**

Series Code	Insert Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

ISO Cat. No.	ACS1000	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT 10T3M0EN-G	★	★	★	10	3.97	1
RPMT 10T3M0EN-G	★	★	★	10	3.97	2
RDMT 10T3M0EN-G	★	★	★	10	3.97	3

Fig 1 4-cornered

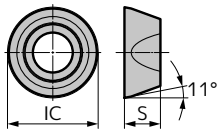


Fig 2 8-cornered

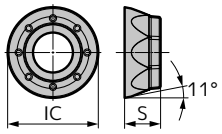
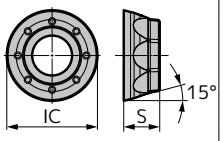


Fig 3 8-cornered



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - **35** - 50	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
		Ti Alloy	—	G	30 - **60** - 90	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - **145** - 175	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - **130** - 155	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - **155** - 190	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000

Note
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Wave Radius Mill

RSE 12000R(S) type

M Stainless Steel S Exotic Alloy

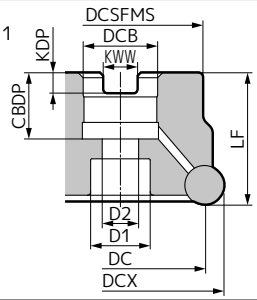
Rake Angle	Radial	-5°
	Axial	4°

6mm 4-cornered 1.7mm 8-cornered

Face Milling · Shoulder Milling · Groove Milling · Ramping · Profiling · Helical Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSE 12040RS04**	★	**40**	28	33	40	**16**	8.4	5.6	18	13.5	9	4	0.15	1
	12042RS04	★	**42**	30	33	40	**16**	8.4	5.6	18	14	9	4	0.17	1
	12050RS05	★	**50**	38	41	40	**22**	10.4	6.3	20	18	11	5	0.24	1
	12050RS06	★	**50**	38	41	40	**22**	10.4	6.3	20	18	11	6	0.23	1
	12052RS05	★	**52**	40	41	40	**22**	10.4	6.3	20	18	11	5	0.26	1
	12063RS06	★	**63**	51	50	40	**22**	10.4	6.3	20	18	11	6	0.47	1
	12080RS08	★	***80**	68	55	50	**27**	12.4	7	22	20	14	8	0.89	1
Inch	**RSE 12080R08**	★	***80**	68	55	50	**25.4**	12.4	7	22	20	14	8	0.9	1

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX04095IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

RSE **12** **050** **R** **S** **05**

RSE	12	050	R	S	05
Series Code	Insert Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	MS	MS	
	Medium Cutting		MS	MS
	Roughing			MS

ISO Cat. No.	ACS1000	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT 1204M0EN-G	★	★	★	12	4.76	1
RPMT 1204M0EN-G	★	★	★	12	4.76	2
RDMT 1204M0EN-G	★	★	★	12	4.76	3

Fig 1 4-cornered

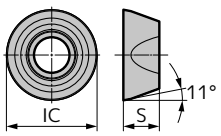


Fig 2 8-cornered

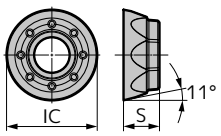
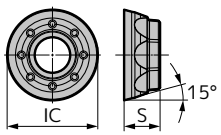


Fig 3 8-cornered



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - **35** - 50	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
		Ti Alloy	—	G	30 - **60** - 90	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - **145** - 175	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - **130** - 155	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - **155** - 190	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000

Note
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RSE 10000E type

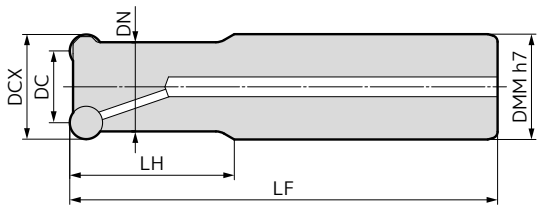
Rake Angle		
	Radial	0°
	Axial	4°

5mm 4-cornered | 1.4mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSE 10025E02	★	**25**	15	25	20.3	50	130	2	0.4	1
10025E03	★	**25**	15	25	20.3	50	130	3	0.39	1
10032E03	★	**32**	22	32	27.1	50	130	3	0.68	1
10032E04	★	**32**	22	32	27.1	50	130	4	0.67	1

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03584IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

RSE **10** **032** **E** **03**

Series Code | Insert Size | Max. Dia. | Shank type | Number of Teeth

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

ISO Cat. No.	ACS1000	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT 10T3M0EN-G	★	★	★	10	3.97	1
RPMT 10T3M0EN-G	★	★	★	10	3.97	2
RDMT 10T3M0EN-G	★	★	★	10	3.97	3

Fig 1 4-cornered

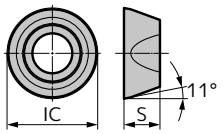


Fig 2 8-cornered

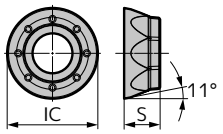
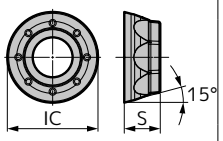


Fig 3 8-cornered



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - **35** - 50	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
		Ti Alloy	—	G	30 - **60** - 90	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - **145** - 175	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - **130** - 155	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - **155** - 190	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000

Note
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

RSX series

VIDEO OF CUTTING

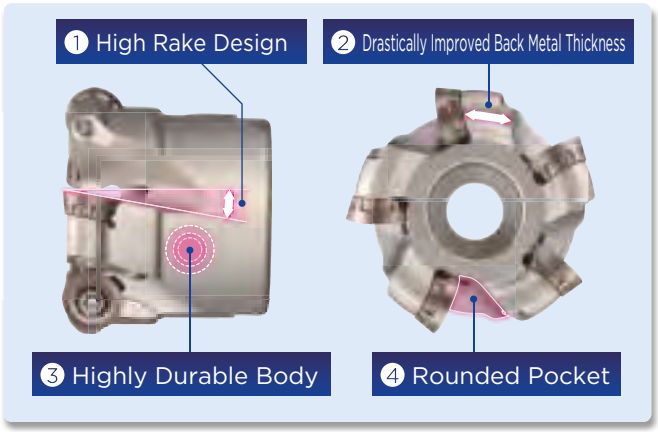


■ Features

SEC-Wave Radius Mill RSX series is a radius cutter that enables stable machining even when using machines with low clamp rigidity, thanks to a body design that achieves excellent sharpness and rigidity.
Lineup of ACM series grades for stainless steel/exotic alloy, ACP200 grade for steel and ACK300 grade for cast iron to suit a wide range of work materials.
RSX08000 and RSX20000 lineup extended to support a wide range of machining

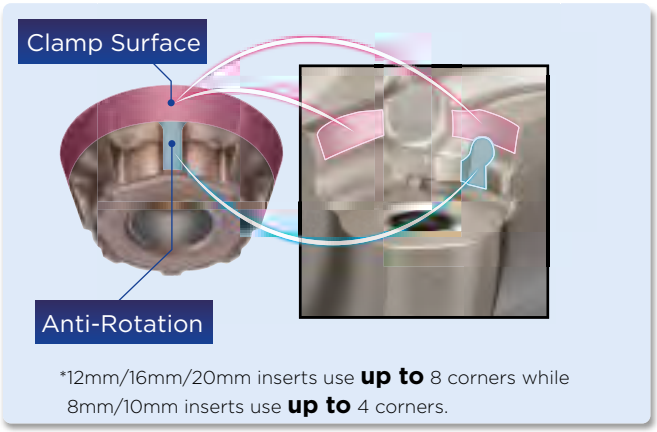
■ Low Cutting Force, Low-vibration Design

Achieves low cutting force, low-vibration machining thanks to ultra-high-rake design and high-rigidity body design



■ Excellent Operability

Enables easy corner control with high accuracy and operability by employing our proprietary positioning mechanism



*12mm/16mm/20mm inserts use **up to** 8 corners while 8mm/10mm inserts use **up to** 4 corners.

■ Product Range

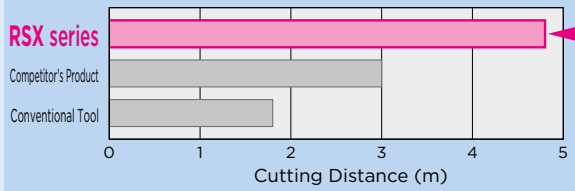
Type	ISO Cat. No.	Description	Max. Diameter (mm) ø20	ø25	ø32	ø40	ø50	ø52	ø63	ø66	ø80	ø100	ø125	ø160	Shape
Shell	RSX1000RS	Standard Pitch				4	5	5							
	RSXF1000RS	Extra Fine Pitch				5	6	6							
	RSX12000RS	Standard Pitch				3	4	4	5	6	6	6			
	RSX12000R (inch)	Standard Pitch									6	6			
	RSXF12000RS	Extra Fine Pitch				4	5	5	6	7	7	10			
	RSXF12000R (inch)	Extra Fine Pitch									7	10			
	RSX16000RS	Standard Pitch							4		5	6	6		
	RSX16000R (inch)	Standard Pitch									5	6	6		
	RSXF16000RS	Extra Fine Pitch							5		6	7	8	10	
	RSXF16000R (inch)	Extra Fine Pitch									6	7	8	10	
	RSX20000RS	Standard Pitch									4	5	6	7	
	RSX20000R (inch)	Standard Pitch									4	5	6	7	
	RSXF20000RS	Extra Fine Pitch									5	6	7	9	
	RSXF20000R (inch)	Extra Fine Pitch									5	6	7	9	
Shank	RSX08000ES	Standard Pitch	2	3											
	RSXF08000ES	Extra Fine Pitch	3	4											
	RSX10000ES	Standard Pitch		2	3										
	RSXF10000ES	Extra Fine Pitch		3	4										
	RSX12000ES	Standard Pitch			2										
	RSXF12000ES	Extra Fine Pitch			3										
Modular	RSX08000M	Standard Pitch	2	3	4										
	RSXF08000M	Extra Fine Pitch	3	4	5										
	RSX10000M	Standard Pitch		2	3										
	RSXF10000M	Extra Fine Pitch		3	4										
	RSX12000M	Standard Pitch			2	3									
	RSXF12000M	Extra Fine Pitch			3	4									

Number in ●●● shows the number of teeth (inch) Inch Bore

Modular type H269

■ Cutting Performance

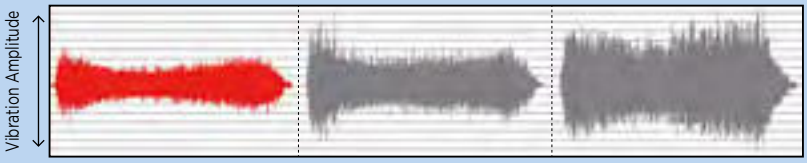
Tool Life Comparison (Fracture Resistance)





Achieves a tool life approximately 1.6 times longer than competitors' products

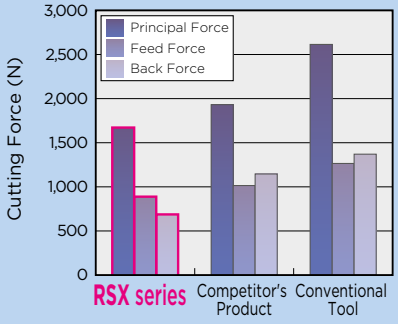
Cutting Vibration Comparison



RSX series Competitor's Product Conventional Tool

Approximately 15% lower than competitors' products

Comparison of Cutting Force



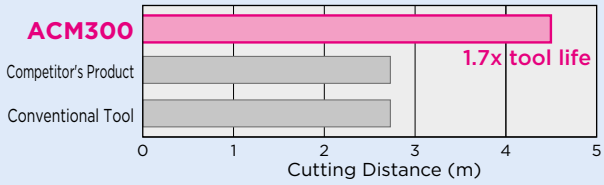
Work Material: SUS304 Tool: ø50

Cutting Conditions: vc = 200m/min, fz = 0.5mm/t

ap = 2.0mm, ae = 10.0mm Wet

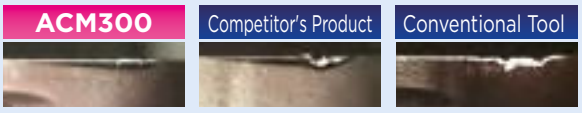
■ Long, Stable Tool Life

Tool Life (Milling SUS304)

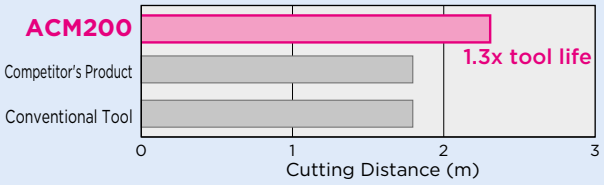


Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: vc = 200m/min, fz = 0.5mm/t, ap = 2mm, ae = 10mm Wet

(Cutting Distance: 2.7m)



Tool Life (Milling SUS630-H900)



Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: vc = 150m/min, fz = 0.3mm/t, ap = 2mm, ae = 10mm Wet

(Cutting Distance: 1.8m)

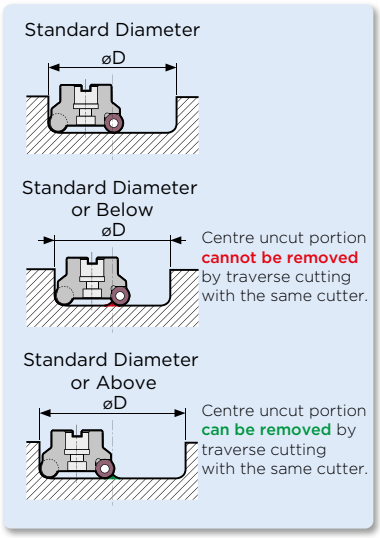


RSX series

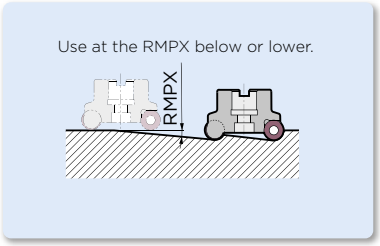
■ Machining Applications

Can be used for various types of high-efficiency machining such as deep shoulder milling of molds, ramping, and helical milling.

Precautions for Helical Milling



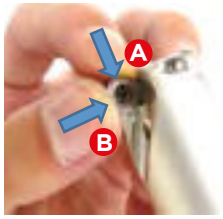
Precautions for Ramping



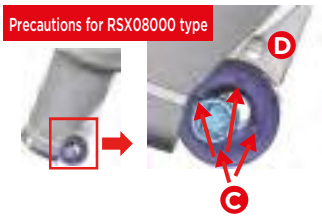
Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (mm)				Ramping
	Max. Dia. DCX	Machining Dia. øD			Maximum Ramp Angle RMPX
		Min. Dia.	Standard Diameter	Max. Dia.	
RDET08...	**20**	27.6	32	39	12°00′
	25	37.0	42	49	7°15′
	32	50.8	56	63	4°45′
RDET10...	**25**	33.0	40	49	10°30′
	32	46.0	54	63	6°45′
	40	62.0	70	79	4°30′
	50	82.0	90	99	3°15′
	52	86.0	94	103	3°10′
RDET12...	**32**	41.5	52	63	12°30′
	40	57.5	68	79	8°00′
	50	77.5	88	99	5°30′
	52	81.5	92	103	5°15′
	63	103.5	114	125	4°00′
	66	109.5	120	131	3°45′
	80	137.5	148	159	2°50′
	100	177.5	188	199	2°10′
RDET16...	**63**	96.0	110	125	6°00′
	80	130.0	144	159	4°10′
	100	170.0	184	199	3°00′
	125	220.0	234	249	2°20′
RDET20...	**80**	122.0	140	159	4°15′
	100	162.0	180	199	3°00′
	125	212.0	230	249	2°00′
	160	282.0	300	319	1°15′

■ Precautions for Mounting Inserts



Hold down the insert from the Ⓐ and Ⓑ directions and fasten the screw.



Align either insert rake face marking position Ⓒ with the marking position Ⓓ on the body.

RSX(F) 10000RS type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

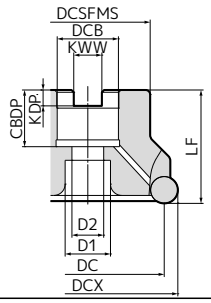
Rake Angle	Radial	-5°
	Axial	10°

5mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Standard Pitch)

Dimensions (mm)

ISO Cat. No.		Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 10040RS**	★	**40**	30	34	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	10050RS	★	**50**	40	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	10052RS	★	**52**	42	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1

Body (Extra Fine Pitch)

Dimensions (mm)

ISO Cat. No.		Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 10040RS**	★	**40**	30	34	40	**16**	8.4	5.6	18	14	9	5	0.2	1
	10050RS	★	**50**	40	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	10052RS	★	**52**	42	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1

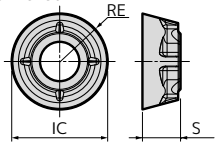
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Insert

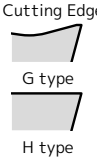
Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting			MS	MS		MS	MS					
	Medium Cutting	PM			MS	MS	MS	MS	MS				
	Roughing	PM	K			MS			MS				
ISO Cat. No.		ACP200	ACK300	ACS1000	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 10T3M0EN-G		★	★	★	★	★	★	▲	▲	10	5.0	3.97	1
10T3M0EN-H		★	★		★	★	★	▲	▲	10	5.0	3.97	1

Fig 1 4-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX Series Code | **F** Extra Fine Pitch | **10** Insert Size | **040** Max. Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
	N·m			
BFTX03584IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RSX(F) 12000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

6mm 4-cornered | 1.6mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

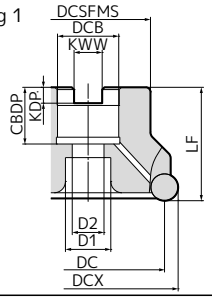


Fig 2

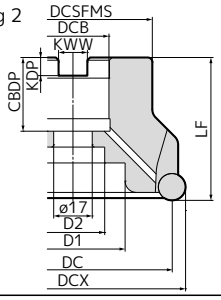
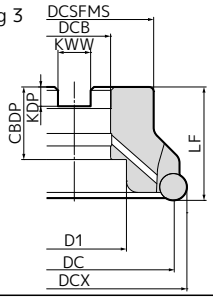


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 12040RS**	★	**40**	28	32	40	**16**	8.4	5.6	18	13.5	9	3	0.2	1
	12050RS	★	**50**	38	40	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12052RS	★	**52**	40	40	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	★	**63**	51	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12066RS	★	**66**	54	55	50	**27**	12.4	7.0	25	20	14	6	0.7	1
	12080RS	★	***80**	68	55	50	**27**	12.4	7.0	25	20	14	6	1.0	1
	12100RS	★	**100**	88	70	50	**32**	14.4	8.5	32	46	—	6	1.4	3
Inch	**RSX 12080R**	★	***80**	68	55	50	**25.4**	9.5	6.0	25	20	13	6	1.0	1
	12100R	★	***100**	88	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.9	2

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 12040RS**	★	**40**	28	32	40	**16**	8.4	5.6	18	13.5	9	4	0.2	1
	12050RS	★	**50**	38	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	12052RS	★	**52**	40	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	12063RS	★	**63**	51	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	12066RS	★	**66**	54	55	50	**27**	12.4	7.0	25	20	14	7	0.7	1
	12080RS	★	***80**	68	55	50	**27**	12.4	7.0	25	20	14	7	0.9	1
	12100RS	★	**100**	88	70	50	**32**	14.4	8.5	32	46	—	10	1.3	3
Inch	**RSXF 12080R**	★	***80**	68	55	50	**25.4**	9.5	6.0	25	20	13	7	1.0	1
	12100R	★	***100**	88	70	63	**31.75**	12.7	8.0	32.5	46	28	10	1.8	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

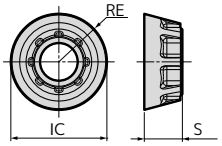
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

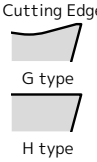
Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting			MS	MS		MS	MS					
	Medium Cutting	PM			MS	MS	MS	MS	MS				
	Roughing	PM	K			MS			MS				
ISO Cat. No.		ACP200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 1204M0EN-G		★	★	★	★	★	★	▲	▲	12	6.0	4.76	1
1204M0EN-H		★	★		★	★	★	▲	▲	12	6.0	4.76	1

Fig 1 8-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX Series Code | **F** Extra Fine Pitch | **12** Insert Size | **040** Max. Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
	N·m			
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RSX(F) 16000R(S) type

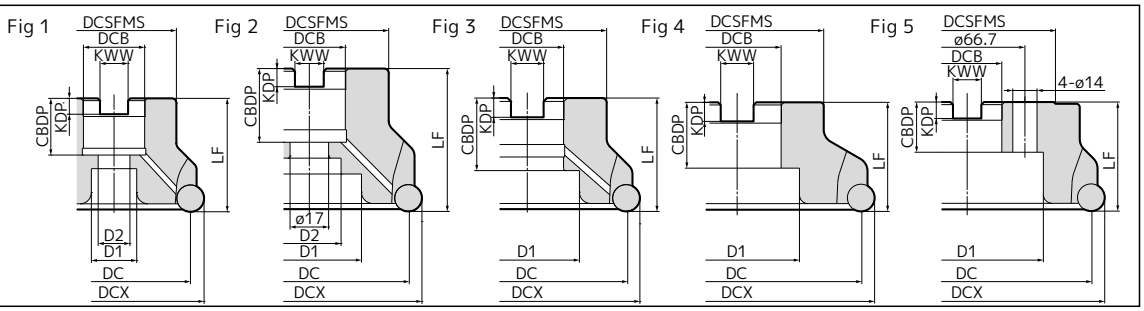
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

8mm 4-cornered | 2.2mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling





Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 16063RS**	★	**63**	47	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	16080RS	★	*80	64	55	50	**27**	12.4	7.0	25	20	14	5	0.9	1
	16100RS	★	**100**	84	70	50	**32**	14.4	8.5	32	46	—	6	1.3	3
	16125RS	★	**125**	109	80	63	**40**	16.4	9.5	29	52	29	6	2.6	1
Inch	**RSX 16080R**	★	*80	64	55	50	**25.4**	9.5	6.0	25	20	13	5	0.9	1
	16100R	★	*100	84	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.8	2
	16125R	★	**125**	109	80	63	**38.1**	15.9	10.0	35.5	55	30	6	2.7	1

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 16063RS**	★	**63**	47	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	16080RS	★	*80	64	55	50	**27**	12.4	7.0	25	20	14	6	0.8	1
	16100RS	★	**100**	84	70	50	**32**	14.4	8.5	32	46	—	7	1.3	3
	16125RS	★	**125**	109	80	63	**40**	16.4	9.5	29	52	29	8	2.5	1
	16160RS		**160**	144	130	63	**40**	16.4	9.5	29	88	—	10	4.8	5
Inch	**RSXF 16080R**	★	*80	64	55	50	**25.4**	9.5	6.0	25	20	13	6	0.8	1
	16100R	★	*100	84	70	63	**31.75**	12.7	8.0	32.5	46	28	7	1.7	2
	16125R	★	**125**	109	80	63	**38.1**	15.9	10.0	35.5	55	30	8	2.6	1
	16160R		**160**	144	100	63	**50.8**	19.1	11.0	38	72	—	10	4.3	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

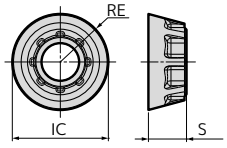
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

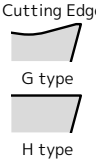
Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting			MS	MS		MS	MS						
	Medium Cutting	PM			MS	MS	MS	MS	MS					
	Roughing	PM	K			MS			MS					
ISO Cat. No.		ACP200	ACK300	ACS1000	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 1606M0EN-G		★	★	★	★	★	★	▲	▲	16	8.0	6.5	1
1606M0EN-H		★	★		★	★	★	▲	▲	16	8.0	6.5	1

Fig 1 8-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts ☞ H196

Identification Code

RSX Series Code | **F** Extra Fine Pitch | **16** Insert Size | **063** Max. Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
RSX(F) 16063RS RSX(F) 16080R(S) Up to RSX(F) 16125R(S)	BFTX0511IP	**5.0**	—	HPL2025	TRB20IP	SUMI-P
RSXF 16160R(S)	BFTX0511IP	**5.0**	TRDR20IP	—	—	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80-**120**-180	0.15-**0.25**-0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80-**120**-180	0.15-**0.25**-0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACS2500 ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20-**30**-40	0.10-**0.20**-0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60-**80**-100	0.10-**0.20**-0.30	
			α + β Alloy	(Rm1050)	40-**50**-60	0.10-**0.20**-0.30	

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

RSX(F) 2000OR(S) type

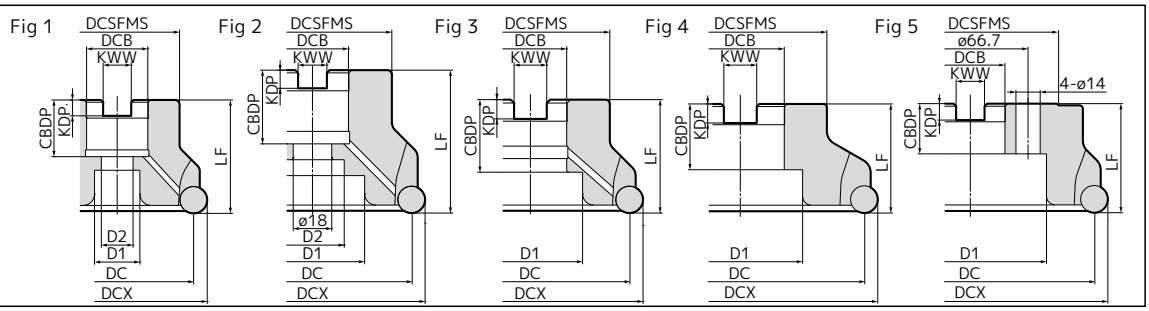
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

10mm 4-cornered | 2.7mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling





Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 20080RS**	★	*80	60	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	20100RS	★	**100**	80	70	50	**32**	14.4	8	32	46	—	5	1.8	3
	20125RS	★	**125**	105	80	63	**40**	16.4	9	29	52	29	6	2.6	1
	20160RS	★	**160**	140	130	63	**40**	16.4	9	29	90	—	7	4.7	5
Inch	**RSX 20080R**	★	*80	60	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	20100R	★	**100**	80	70	63	**31.75**	12.7	8	32	46	27	5	1.8	2
	20125R	★	**125**	105	80	63	**38.1**	15.9	10	35.5	55	30	6	2.6	1
	20160R	★	**160**	140	130	63	**50.8**	19.1	11	38	72	—	7	4.2	4

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 20080RS**	★	*80	60	55	50	**27**	12.4	7	22	20	14	5	0.9	1
	20100RS	★	**100**	80	70	50	**32**	14.4	8	32	46	—	6	1.8	3
	20125RS	★	**125**	105	80	63	**40**	16.4	9	29	52	29	7	2.6	1
	20160RS	★	**160**	140	130	63	**40**	16.4	9	29	90	—	9	4.6	5
Inch	**RSXF 20080R**	★	*80	60	55	50	**25.4**	9.5	6	25	20	14	5	0.9	1
	20100R	★	**100	80	70	63	**31.75**	12.7	8	32	46	27	6	1.8	2
	20125R	★	**125**	105	80	63	**38.1**	15.9	10	35.5	55	30	7	2.6	1
	20160R	★	**160**	140	130	63	**50.8**	19.1	11	38	72	—	9	4.1	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

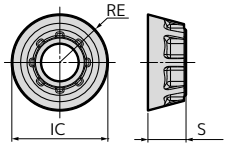
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting				P M S	P M S		P M S	P M S				
	Medium Cutting	P M			P M S	P M S	P M S	P M S	P M S	P M S			
	Roughing	P M	K			P M S				P M S			
ISO Cat. No.		ACP200	ACK300	ACS1000	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 2006M0EN-G		★	★	★	★	★	★	▲	▲	20	10.0	6.5	1
2006M0EN-H		★	★		★	★	★	▲	▲	20	10.0	6.5	1

Fig 1 8-cornered



● Cross Section of Cutting Edge

G type

H type

Precautions for Mounting Inserts H196

Identification Code

RSX Series Code | **F** Extra Fine Pitch | **20** Insert Size | **080** Max. Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
RSX(F) 20080R(S) Up to RSX(F) 20125R(S)	BFTX0615IP	**5.0**	—	HPL2025	TRB25IP	SUMI-P
RSX(F) 20160R(S)	BFTX0615IP	**5.0**	TRDR25IP	—	—	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RSX(F) 08000ES/10000ES/12000ES type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

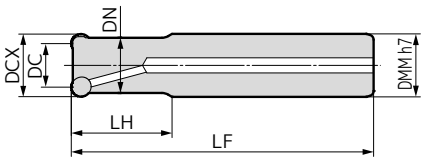
Rake Angle	Radial	-5° to -8°
	Axial	10°

4mm (08000ES) | 5mm (10000ES) | 6mm 4-cornered (12000ES) | 1.6mm 8-cornered (12000ES)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Standard Pitch) Applicable Insert IC = 8mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 08020ES	★	**20**	12	20	16.9	30	100	2	0.3	1
08025ES	★	**25**	17	25	21.9	40	120	3	0.4	1

Body (Extra Fine Pitch) Applicable Insert IC = 8mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 08020ES	★	**20**	12	20	16.9	30	100	3	0.3	1
08025ES	★	**25**	12	25	21.9	40	120	4	0.4	1

Body (Standard Pitch) Applicable Insert IC = 10mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 10025ES	★	**25**	15	25	20.3	50	130	2	0.4	1
10032ES	★	**32**	22	32	27.1	50	130	3	0.7	1

Body (Extra Fine Pitch) Applicable Insert IC = 10mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 10025ES	★	**25**	15	25	20.3	50	130	3	0.4	1
10032ES	★	**32**	22	32	27.1	50	130	4	0.7	1

Body (Standard Pitch) Applicable Insert IC = 12mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 12032ES	★	**32**	20	32	25.6	50	130	2	0.7	1

Body (Extra Fine Pitch) Applicable Insert IC = 12mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 12032ES	★	**32**	20	32	25.6	50	130	3	0.7	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting			M S	M S		M S	M S					
	Medium Cutting	P M			M S	M S	M S	M S	M S				
	Roughing	P M	K			M S			M S				
ISO Cat. No.		ACP200	ACK300	ACS1000	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Applicable Cutter	Fig
RDET 0803M0EN-G		★	★	★	★	★	★	▲	▲	8	4.0	3.18	RSX(F) 08000ES type	1
0803M0EN-H		★	★		★	★	★	▲	▲					1
RDET 10T3M0EN-G		★	★	★	★	★	★	▲	▲	10	5.0	3.97	RSX(F) 10000ES type	1
10T3M0EN-H		★	★		★	★	★	▲	▲					1
RDET 1204M0EN-G		★	★	★	★	★	★	▲	▲	12	6.0	4.76	RSX(F) 12000ES type	2
1204M0EN-H		★	★		★	★	★	▲	▲					2

Fig 1 4-cornered

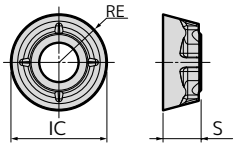
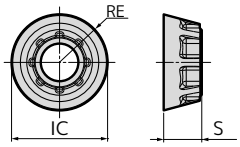


Fig 2 8-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX **F** **10** **025** **ES**

RSX	F	10	025	ES
Series Code	Extra Fine Pitch	Insert Size	Max. Dia.	Shank type

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
RSX(F) 08000ES type	BFTX02506IP	**1.5**	TRDR08IP	SUMI-P
RSX(F) 10000ES type	BFTX03584IP	**3.0**	TRDR15IP	SUMI-P
RSX(F) 12000ES type	BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WRCX series



■ Features

**The SEC-Wave Radius Mill WRCX type is a versatile, high-efficiency cutter that is suited to various types of machining such as deep shoulder milling of molds, ramping, and helical milling.
Furthermore, a wide selection of chipbreakers and grades covers a wide range of work materials, from steel to non-ferrous metals.**

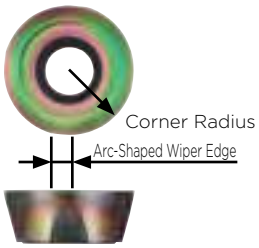
- **Durable body with special surface treatment offers significantly improved tool life and reliability.**
- **Superb chatter resistance with anti-vibration edge design.**
- **All sizes come with coolant holes preventing chip build-up and jamming.**
- **Sturdy screw clamp with Torx Plus screw insert mounting ensures stable machining**

■ Abundant Insert Series

- **In addition to conventional WRC type inserts, the new lineup includes non-ferrous metal inserts and surfing inserts**

Non-Ferrous Metal Inserts QPET ○○○○○○ PPFR-S

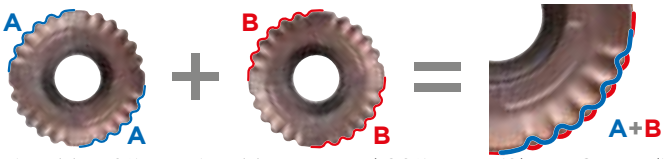
- Good surface roughness with arc-shaped wiper edge
- Sharp corners
- Four-cornered insert

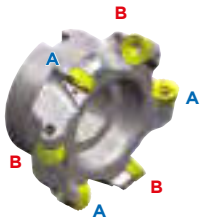


Surfing Insert QPMT ○○○○○○ PPER-R

- Cutting edges feature unique rippled design
- Four-cornered insert
- Low cutting force, enabling use on low-rigidity machines as well

***Use in combinations that alternate cutting edge A and cutting edge B.**
(Only usable on cutters with an even number of cutting edges)





Shift the phase in 90° increments to mount inserts

■ Product Range

	Cat. No.	Max. Dia. (mm)	Number of Teeth
Shell type	**WRCX(F) 12000R(S)**	ø40 to ø80	4-6
	WRCX(F) 16000R(S)	ø63 to ø100	3-6
	WRCX 20000R(S)	ø125 to ø160	5-6
Shank type	**WRCX 08000E**	ø20 to ø25	2-3
	WRCX 10000E	ø25 to ø32	2-3
	WRCX 16000E	ø40 to ø50	2-3
Modular type	**WRCX 08000M**	ø20 to ø25	2-3
	WRCX 10000M	ø25 to ø32	2-3
	WRCX 12000M	ø40	4

Modular type H270

● Maximum Allowable Spindle Speed when Milling Non-Ferrous Metal (Unit: min⁻¹)

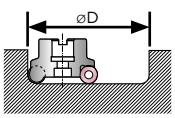
Max. Dia. DCX(mm)	Insert Cat. No.		
	QPET10·····-S	QPET12·····-S	QPET16·····-S
25	28,000		
32	25,000		
40		22,000	15,000
50		20,000	14,000
63		18,000	13,000
80		16,000	12,000
100			10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force. Even if the speed used is within the maximum allowable spindle speeds, abnormal vibrations may occur due to machine rigidity or other factors. Therefore, it is advisable to start operation at half the maximum allowable spindle speed and increase the speed gradually while checking for abnormalities.

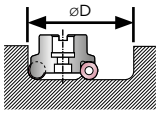
■ Usage Precautions

● Precautions for Helical Milling

Standard Diameter

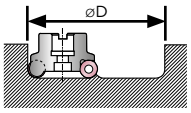


Standard Diameter or Below



Centre uncut portion cannot be removed by traverse cutting with the same cutter.

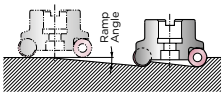
Standard Diameter or Above



Centre uncut portion can be removed by traverse cutting with the same cutter.

● Precautions for Ramping

- Use at the RMPX below or lower.



● Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (Dimensions in mm)				Ramping
	Max. Dia. DCX	Machining Dia. øD			Maximum Ramp Angle RMPX(max)
		Min. Dia.	Standard Diameter	Max. Dia.	
QP□□080000	**20**	25	32	39	13°
	25	35	42	49	8°20′
QP□□100000	**25**	32	40	48	13°10′
	32	46	54	62	8°
QP□□120000	**40**	57	68	79	10°
	50	77	88	99	7°30′
	63	103	114	125	5°10′
	80	137	148	159	3°50′
QP□□160000	**40**	49	64	79	19°30′
	50	69	84	99	12°
	63	95	110	125	8°
	80	129	144	159	5°30′
	100	169	184	199	4°
QP□□200000	**125**	212	230	248	3°30′
	160	282	300	318	2°30′

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WRCX(F, X) 12000, 16000 RS type

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

6mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

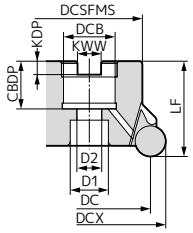


Fig 2

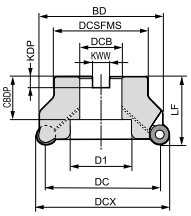
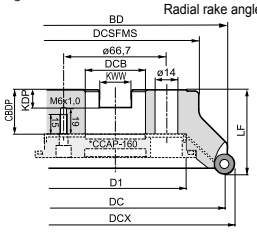


Fig 3

Axial rake angle: - 3°
Radial rake angle: 0°



* Note Fig.3 for DCX=160 : Coolant cap (CCAP-160) with 4 screws (BX0620) and wrench (TH050) is available seperately.

Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX 12040RS**	★	**40**	28	36	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	12050RS	★	**50**	38	40	40	**22**	10.4	6.3	20	18	11	4	0.2	1
	12052RS	★	**52**	40	40	40	**22**	10.4	6.3	20	18	11	5	0,3	1
	12063RS	★	**63**	51	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12080RS	★	**80**	68	55	50	**27**	12.4	7.0	25	20	13.5	6	0.9	1

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF 12050RS**	★	**50**	38	40	40	**22**	10.4	6.3	20	18	11	5	0.2	1
	12063RS	★	**63**	51	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	WRCXF 16052RS	★	**52**	36	45	40	**22**	10.4	6.3	20	17.7	11	4	0.3	1
	16063RS	★	**63**	47	50	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	16080RS	★	**80**	64	55	50	**27**	12.4	7.0	25	20	13.5	5	0.7	1
	16100RS	★	**100**	84	70	50	**32**	14.4	8.5	32	46	—	6	1.2	2
	16125RS	★	**125**	109	115	63	**40**	16.4	9.5	29	52	29	6	2.4	1
	16160RS	★	**160**	144	100	63	**40**	16.4	9.5	29	93	-	8	4.0	3*

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert (Common)

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC				
Process	High-speed/Light Cutting	P			K		K N	N				
	Medium Cutting		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 120440 PPEN**		★	★	★	★	—	—	12	4.0	4.76	1
	120440 PPEN-H*		★	★	★	★	—	—	12	4.0	4.76	1
For Non-Ferrous Metals	**QPET 120460 PPFR-S**	—	—	—	—	—	★	★	12	6.0	4.76	2
Surfing	**QPMT 120460 PPER-R**		★	★			—	—	12	6.0	4.76	3

*: -H at the end indicates strong edged.

Fig 1 8-cornered

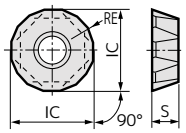


Fig 2 For Non-Ferrous Metals 4 corners

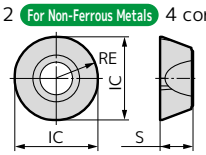
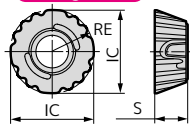


Fig 3 Surfing Insert 4 corners



Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
	N·m			
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Recommended Cutting Conditions

Diameter ø40 to ø80mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	—	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-Ferrous Metal	—	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WRCX 16000R(S) type

P Steel M Stainless Steel K Cast Iron N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

8mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

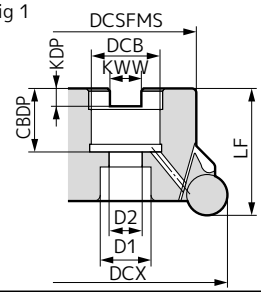
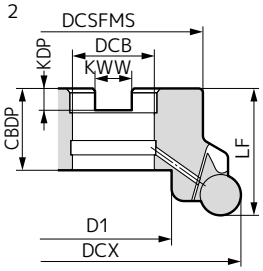


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX 16063RS**	★	**63**	47	50	40	**22**	10.4	6.3	20	18	11	3	0.4	1
	16080RS	★	*80	64	55	50	**27**	12.4	7.0	25	20	13.5	4	0.8	1
	16100RS	★	**100**	84	70	50	**32**	14.4	8.5	32	46	—	5	1.2	2
Inch	**16080R**	★	**80**	64	55	50	**25.4**	9.5	6.0	25	20	13	4	0.8	1
	16100R	★	**100**	84	70	63	**31.75**	12.7	8.0	32	46	17	5	1.4	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC				
Process	High-speed/Light Cutting	P			K		K N	N				
	Medium Cutting		PM	PM	K			N				
	Roughing		PM	PM		K						
Applications	ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 160660 PPEN**		★	★	★	★	—	—	16	6.0	6.5	1
	160660 PPEN-H*1		★	★	★	★	—	—	16	6.0	6.5	1
Anti-Vibration*2	**QPMT 160608 PPEN**		★	★	★	★	—	—	16	0.8	6.5	1
	160608 PPEN-CP		★	★	★	★	—	—	16	0.8	6.5	2
For Non-Ferrous Metals	**QPET 160680 PPFR-S**	—	—	—	—	—	★	★	16	8.0	6.5	3
Surfing	**QPMT 160680 PPER-R**		★	★			—	—	16	8.0	6.5	4

Fig 1 8 コーナー

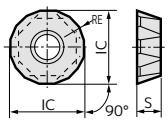


Fig 2 (CP 型)

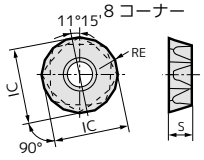


Fig 3 非鉄金属用 4コーナー

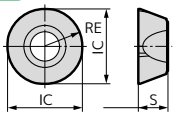
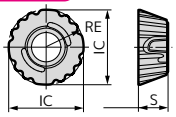


Fig 4 サーフィンインサート 4コーナー



*1: -H at the end indicates strong cutting edge type.
*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately. Only even numbers of cutting edges are usable.

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
				
BFTX0511IP	**5.0**	HPL2025	TRB20IP	SUMI-P

Recommended Cutting Conditions

Diameter ø40 to ø80mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	—	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-Ferrous Metal	—	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150- **200** -250	0.30- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **160** -200	0.10- **0.30** -0.50	ACP200
M	Stainless Steel	—	160- **180** -200	0.15- **0.20** -0.30	ACP300
K	Cast Iron	250HB	100- **150** -200	0.10- **0.15** -0.20	ACK200
N	Non-Ferrous Metal	—	200- **500** -1,000	0.20- **0.40** -0.60	DL1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WRCX (F) 20000R(S) type

P Steel M Stainless Steel K Cast Iron N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

10mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

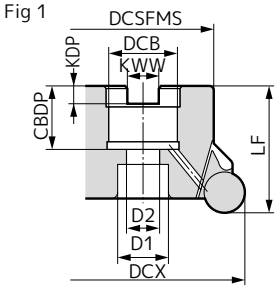
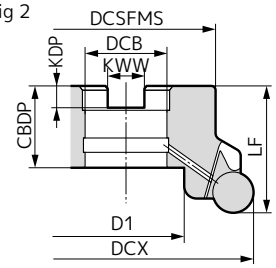


Fig 2



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF 20080RS**	★	**80**	60	68	63	**27**	12.4	7.0	25	20	13.5	5	0.7	1
	20100RS	★	**100**	80	88	50	**32**	14.4	8.5	32	46	-	6	1.1	2
Inch	**WRCX 20125R**	★	**125**	105	80	63	**38.1**	15.9	10.0	35.5	55	30	5	2.3	1
	20160R	★	**160**	140	100	63	**50.8**	19.1	11.0	41.5	72	—	6	4.0	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC				
Process	High-speed/Light Cutting	P			K		K N	N				
	Medium Cutting		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 200670 PPEN**		★	★	★	★	—	—	20	7.0	6.5	1
	200670 PPEN-H[*1]		★	★	★	★	—	—	20	7.0	6.5	1
Anti-Vibration[*2]	**QPMT 200608 PPEN**		★	★	★	★	—	—	20	0.8	6.5	1
	200608 PPEN-CP		★	★	★	★	—	—	20	0.8	6.5	2
Surfing	**QPMT 2006100 PPER-R**		★	★			—	—	20	10.0	6.5	3

Fig 1 8 コーナー

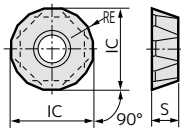


Fig 2 (CP 型) 11°15' 8 コーナー

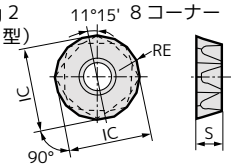
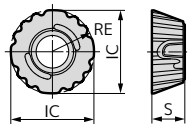


Fig 3 サーフィンインサート 4 コーナー



*1: -H at the end indicates strong cutting edge type.
*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
		N·m		Handle Grip	Bit	
WRCX 20125R	BFTX0615IP	**7.5**	—	HPL2025	TRB25IP	SUMI-P
WRCX 20160R	BFTX0615IP	**7.5**	TRDR25IP	—	—	

Recommended Cutting Conditions

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150- **200** -250	0.30- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **160** -200	0.10- **0.30** -0.50	ACP200
M	Stainless Steel	—	160- **180** -200	0.15- **0.20** -0.30	ACP300
K	Cast Iron	250HB	100- **150** -200	0.10- **0.15** -0.20	ACK200

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WRCX 08000E(S/M)/10000E(S/M)/16000E(S/M) type

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

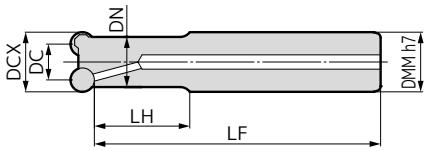
Rake Angle	Radial	-3 to 0°
	Axial	-3°

4mm (08000E type) | 5mm (10000E type) | 8mm (16000E type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Applicable Insert IC = 8mm type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 08020ES	★	**20**	12	20	18	50	130	2	0.2	1
08020EM	★	**20**	12	20	18	100	180	2	0.3	1
08020EL		**20**	12	20	18	130	250	2	0.5	1
WRCX 08025ES	★	**25**	17	25	21	50	130	3	0.4	1
08025EM	★	**25**	17	25	21	100	180	3	0.5	1
08025EL		**25**	17	25	21	130	250	3	0.7	1

Body (Applicable Insert IC = 10mm type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 10025ES	★	**25**	15	25	21	50	130	2	0.4	1
10025EM	★	**25**	15	25	21	100	180	2	0.5	1
10025EL		**25**	15	25	21	130	250	2	0.7	1
WRCX 10032ES	★	**32**	22	32	28	50	130	3	0.7	1
10032EM	★	**32**	22	32	28	120	200	3	1.0	1
10032EL		**32**	22	32	28	180	300	3	1.5	1

Body (Applicable Insert IC = 16mm type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 16040ES	★	**40**	24	32	31.3	50	170	2	0.9	1
16040EM	★	**40**	24	32	31.3	50	250	2	1.4	1
WRCX 16050ES	★	**50**	34	32	40.8	50	170	3	1.0	1
16050EM	★	**50**	34	32	40.8	50	250	3	1.5	1

Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
WRCX 08000E(S/M) type	BFTX02506IP	1.5 N·m	TRDR08IP	SUMI-P
WRCX 10000E(S/M) type	BFTX03584IP	3.0 N·m	TRDR15IP	
WRCX 16000E(S/M) type	BFTX0511IP	5.0 N·m	TRDR20IP	

Recommended Cutting Conditions

Diameter ø20 to ø32mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80- **120** -160	0.10- **0.30** -0.40	ACP200
P	Alloy Steel	180 to 280HB	60- **100** -140	0.10- **0.20** -0.30	ACP200
M	Stainless Steel	—	60- **100** -120	0.10- **0.15** -0.20	ACP300
K	Cast Iron	250HB	60- **80** -120	0.10- **0.20** -0.30	ACK200
N	Non-Ferrous Alloys	—	200- **500** -1,000	0.10- **0.20** -0.30	DL1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø40 to ø50mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
P	Alloy Steel	180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	—	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-Ferrous Alloys	—	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				Cermet Carbide	DLC
Process	High-speed/Light Cutting	P			K	K N	N
	Medium Cutting		P M	P M	K		N
	Roughing		P M	P M		K	

Applications	ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig	Applicable Cutter
General-purpose	**QPMT 080330 PPEN**		★	★	★	★	—	—	8	3.0	3.18	1	WRCX08000E(S/M) type
	080330 PPEN-H*1		★	★	★	★	—	—	8	3.0	3.18	1	
	QPMT 10T335 PPEN		★	★	★	★	—	—	10	3.5	3.97	1	WRCX10000E(S/M) type
	10T335 PPEN-H*1		★	★	★	★	—	—	10	3.5	3.97	1	
	QPMT 160660 PPEN		★	★	★	★	—	—	16	6.0	6.5	1	WRCX16000E(S/M) type
	160660 PPEN-H*1		★	★	★	★	—	—	16	6.0	6.5	1	
Anti-Vibration*2	**QPMT 160608 PPEN**		★	★	★	★	—	—	16	0.8	6.5	1	WRCX16000E(S/M) type
	160608 PPEN-CP		★	★	★	★	—	—	16	0.8	6.5	2	
For Non-Ferrous Metals	**QPET 10T350 PPFR-S**	—	—	—	—	—	★	★	10	5.0	3.97	3	WRCX10000E(S/M) type
	QPET 160680 PPFR-S	—	—	—	—	—	★	★	16	8.0	6.5	3	WRCX16000E(S/M) type
Surfing	**QPMT 160680 PPER-R**		★	★			—	—	16	8.0	6.5	4	WRCX16000E(S/M) type

Fig 1 — 8 corners

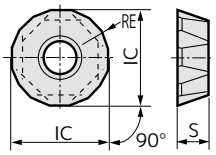


Fig 2 (CP type) — 8 corners

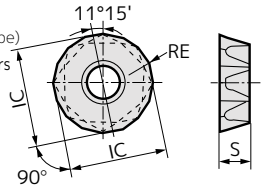


Fig 3 — For Non-Ferrous Metals — 4 corners

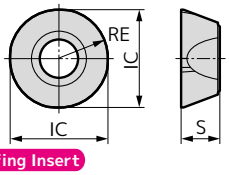
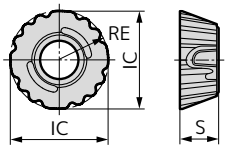


Fig 4 — Surfing Insert — 4 corners



*1: -H at the end indicates strong cutting edge type. *2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WBMR series



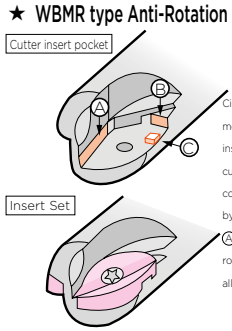
■ Features

A lineup of ø20 to ø50mm shank type ballnose cutter models for 3D profile roughing of die molds and machine parts.

★ WBMR2000/2000L (ø20 to ø50mm)

- Wave-shaped high rake angle insert design achieves a sharp cutting edge and low cutting force
- Economical M-class insert with strong cutting edge
- Anti-rotation guides prevent the insert from slipping during machining
- Combination of main and secondary inserts used for large diameter cutters (ø40, ø50), which enables easier tool management

★ WBMR type Anti-Rotation Mechanism



WBMR2000
(ø20 to ø50mm)



(WBMR2250S)

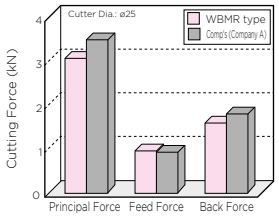
WBMR2000L
(ø20 to ø50mm)



(WBMR2500SL)

■ Performance

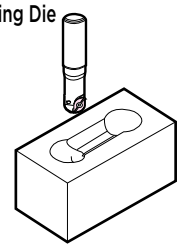
● Cutting Force



Work Material: S50C
Cutting Conditions
(Shoulder Milling, Down Cutting)
vc = 200m/min
fz = 0.15mm/t
ap = 5mm
ae = 5mm

■ Application Examples

● Cold Molding Die (SKD11)



Evaluation
Flank wear width after continuous cutting for seven hours was less than competitor's product. Stable cutting was observed.

WBMR2200S (ø20)
Insert Grade: ACZ350
Cutting Conditions
n = 2,200min^{-1}
vf = 500mm/min
ap 0.3 to 2mm
Non-water soluble Cutting Oil

■ Product Range

Type	ISO Cat. No.	Dia. (mm) ø20	ø25	ø30	ø40	ø50
Shank	**WBMR 2000S**	★	★	★	★	★
	WBMR 2000M	★	★	★	★	★
	WBMR 2000L	★	★	★	★	★
	WBMR 2000S(M/L)-C					★
	WBMR 2000SL	★	★	★	★	★
	WBMR 2000ML	★	★	★	★	★
	WBMR 2000LL	★	★	★	★	★
	WBMR 2000S(M/L)L-C					★

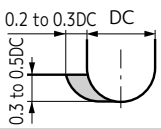
■ Parts

Applicable Cutter □ indicates S/M/L type	Part Name	Short Edge type For Tip Insert	Long Edge type (-L) For Tip Insert	Long Edge type (-L) For Peripheral Cutting Edge	Anti-seizure Cream
WBMR2200□(L)	Flat Insert Screw	BFTX0307N (N·m) **2.0**			SUMI-P
	Wrench	TRX10			
WBMR2250□(L)	Flat Insert Screw	BFTX0409N (N·m) **3.0**			
	Wrench	TRD15			
WBMR2300□(L)	Flat Insert Screw	BFTX0511N (N·m) **5.0**		BFTX0407N (N·m) **3.0**	
	Wrench	TRD20		TRD15	
WBMR2400□(L)	Flat Insert Screw	BFTX0619N (N·m) **7.5**		BFTX0409N (N·m) **3.0**	
	Wrench	TRD25		TRD15	
WBMR2500□(L) WBMR2500□(L)-C	Flat Insert Screw	BFTX0619N (N·m) **7.5**		BFTX0409N (N·m) **3.0**	
	Wrench	TRD25		TRD15	

Recommended Cutting Conditions

(A) Tip insert only

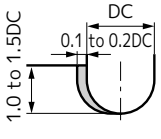
ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **150** -200	0.10- **0.20** -0.30	ACP200
	Alloy Steel	180 to 280HB	70- **100** -120	0.10- **0.20** -0.30	ACP200
M	Stainless Steel, Die Steel	—	50- **80** -100	0.10- **0.15** -0.20	ACP300
K	Cast Iron	250HB	100- **120** -150	0.20- **0.30** -0.40	ACK300



Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

(B) Tip insert and peripheral cutting edge

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80- **120** -150	0.10- **0.20** -0.30	ACP200
	Alloy Steel	180 to 280HB	50- **80** -100	0.10- **0.20** -0.30	ACP200
M	Stainless Steel, Die Steel	—	40- **60** -80	0.10- **0.15** -0.20	ACP300
K	Cast Iron	250HB	80- **100** -120	0.20- **0.30** -0.40	ACK300



Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
Blank: Made-to-order item
(N·m) Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

WBMR 2000 type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

20-47mm

R-Grooving Profiling



Fig 1

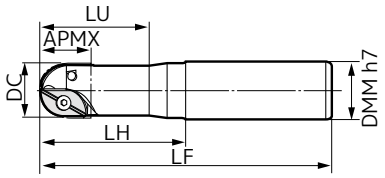
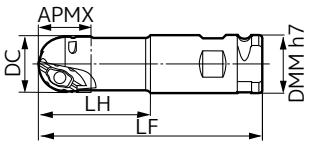


Fig 2



Note: Fig 2 shows a combination clamped shank diagram (2500☐-C).

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Length LU	Overall Length LF	Fig
WBMR 2200S	★	**20**	20	25	60	40	140	1
2200M	★	**20**	20	25	60	40	200	1
2200L	★	**20**	20	25	80	40	250	1
WBMR 2250S	★	**25**	23	32	70	50	150	1
2250M	★	**25**	23	32	73	50	220	1
2250L	★	**25**	23	32	100	50	300	1
WBMR 2300S	★	**30**	28	32	80	60	160	1
2300M	★	**30**	28	32	85	60	240	1
2300L	★	**30**	28	32	120	60	350	1
WBMR 2400S	★	**40**	35	42	100	—	200	1
2400M	★	**40**	35	42	180	—	280	1
2400L	★	**40**	35	42	250	—	350	1
WBMR 2500S	★	**50**	47	42	100	—	200	1
2500M	★	**50**	47	42	180	—	280	1
2500L	★	**50**	47	42	250	—	350	1
WBMR 2500S-C	★	**50**	47	50.8	100	—	200	2
2500M-C	★	**50**	47	50.8	180	—	280	2
2500L-C	★	**50**	47	50.8	250	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

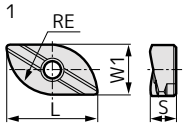


Fig 2

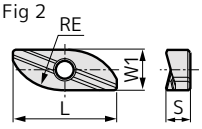


Fig 3

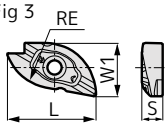
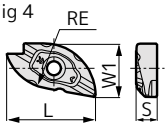


Fig 4



Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting	P			K								
	Medium Cutting		PM	PM	K								
	Roughing		PM	PM		K							

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Milling Cutters	Remarks
ZNMT 1804100-C		★	★		★	18.00	9.76	4.76	10	1	WBMR 2200☐	· Tip inserts are used in combination according to Fig 1 & 2.
2004100-S		★	★		★	20.00	7.50	4.37	10	2		
ZNMT 2205125-C		★	★		★	22.50	12.20	5.70	12.5	1	WBMR 2250☐	· Tip inserts are used in combination according to Fig 1 & 2.
2305125-S		★	★		★	23.00	9.38	5.56	12.5	2		
ZNMT 2706150-C		★	★		★	27.00	14.64	6.75	15	1	WBMR 2300☐	· Tip inserts are used in combination according to Fig 1 & 2.
2806150-S		★	★		★	28.00	11.25	6.35	15	2		
ZNMT 3608200		★	★		★	36.00	19.50	8.65	20	3	WBMR 2400☐	· Use two of the items shown in Fig 3 as the tip inserts.
ZNMT 4310250		★	★		★	43.00	25.70	10.15	25	3	WBMR 2500☐	· Use two of the items shown in Fig 3 or Fig 4 (nicked) as the tip inserts.
4310250-N		★	★		★	43.00	25.70	10.15	25	4		

Parts H207 Recommended Cutting Conditions H207

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

WBMR 2000L type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

30-69mm

R-Grooving Profiling

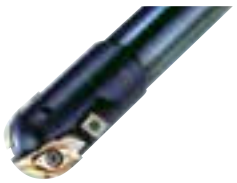


Fig 1

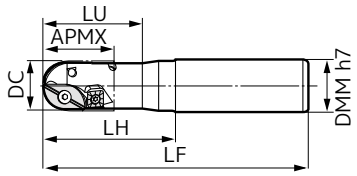
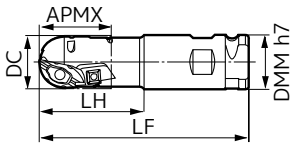


Fig 2



Note: Fig 2 shows a combination clamped shank diagram (2500□-C).

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Length LU	Overall Length LF	Fig
WBMR 2200SL	★	**20**	30	25	60	40	140	1
2200ML	★	**20**	30	25	60	40	200	1
2200LL	★	**20**	30	25	80	40	250	1
WBMR 2250SL	★	**25**	38	32	70	50	150	1
2250ML	★	**25**	38	32	73	50	220	1
2250LL	★	**25**	38	32	100	50	300	1
WBMR 2300SL	★	**30**	42	32	80	60	160	1
2300ML	★	**30**	42	32	85	60	240	1
2300LL	★	**30**	42	32	120	60	350	1
WBMR 2400SL	★	**40**	50	42	100	—	200	1
2400ML	★	**40**	50	42	180	—	280	1
2400LL	★	**40**	50	42	250	—	350	1
WBMR 2500SL	★	**50**	69	42	100	—	200	1
2500ML	★	**50**	69	42	180	—	280	1
2500LL	★	**50**	69	42	250	—	350	1
WBMR 2500SL-C	★	**50**	69	50.8	100	—	200	2
2500ML-C	★	**50**	69	50.8	180	—	280	2
2500LL-C	★	**50**	69	50.8	250	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

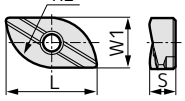


Fig 2

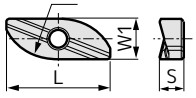


Fig 3



Fig 4

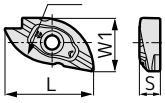
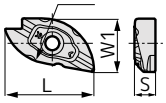


Fig 5



Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting	P			K
	Medium Cutting		P M	P M	K
	Roughing		P M	P M		K

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Milling Cutters	Remarks
ZNMT 1804100-C		★	★		★	18.00	9.76	4.76	10	1	WBMR 2200□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral cutting edge (Fig 3) for 2200□L only.
2004100-S		★	★		★	20.00	7.50	4.37	10	2		
SPMT 070308		★	★		★	7.94	—	3.18	—	3		
ZNMT 2205125-C		★	★		★	22.50	12.20	5.70	12.5	1	WBMR 2250□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral cutting edge (Fig 3) for 2250□L only.
2305125-S		★	★		★	23.00	9.38	5.56	12.5	2		
SPMT 09T308		★	★		★	9.53	—	3.97	—	3		
ZNMT 2706150-C		★	★		★	27.00	14.64	6.75	15	1	WBMR 2300□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral cutting edge (Fig 3) for 2300□L only.
2806150-S		★	★		★	28.00	11.25	6.35	15	2		
SPMT 09T308		★	★		★	9.53	—	3.97	—	3		
ZNMT 3608200		★	★		★	36.00	19.50	8.65	20	4	WBMR 2400□L	· Use two of the items shown in Fig 4 as the tip inserts. · Peripheral cutting edge (Fig 3) for 2400□L only.
SPMT 09T308		★	★		★	9.53	—	3.97	—	3		
ZNMT 4310250		★	★		★	43.00	25.70	10.15	25	4	WBMR 2500□L	· Use two of the items shown in Fig 4 or Fig 5 (nicked) as the tip inserts. · Peripheral cutting edge (Fig 3) for 2500□L only.
4310250-N		★	★		★	43.00	25.70	10.15	25	5		
SPMT 120408		★	★		★	12.70	—	4.76	—	3		

Parts H207 Recommended Cutting Conditions H207

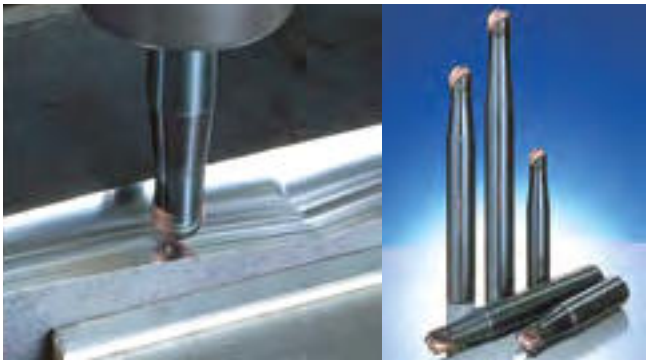
★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

WBMF series



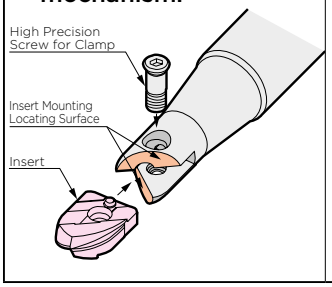
■ Features

A lineup of ø10 to ø30mm shank type ballnose cutter models for 3D profile finishing of die molds and machine parts.

★ WBMF1000 type (ø10 to ø30mm)

- Simple but precise clamping design.
- Original large helix angle design.
- Sharp cutting edge that produces good surface roughness.
- Excellent wear resistance with Super ZX Coat.

★ WBMF type clamp mechanism.

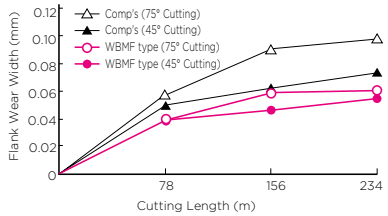


WBMF1000



■ Performance

● Insert Life



Results
WBMF type exhibits superior wear resistance compared to competitors' products in ramping operations, which are frequently encountered in actual machining.

Work Material: S50C
Machining Method: Ramping (45°, 75°)
Cutting Conditions
n = 2,000min^{-1}
vf = 2,000mm/min
ap = 0.3mm
pf = 0.6mm
Dry

■ Product Range

Type	Cat. No.	Dia. (mm)					
		ø10	ø12	ø16	ø20	ø25	ø30
Shank	**WBMF 1000S**	★	★	★	★	★	★
	WBMF 1000M	★	★	★	★	★	★
	WBMF 1000L	★	★	★	★	★	★

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WBMF 1000 type

P Steel

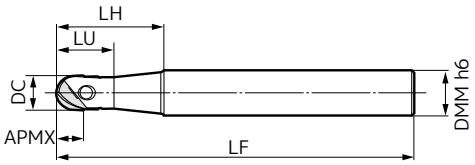
Rake Angle	Radial	—
	Axial	0°

0.1-0.4mm

R-Grooving Profiling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Length LU	Overall Length LF	Fig
WBMF 1100S	★	**10**	9	16	30	17	100	1
1100M	★	**10**	9	16	35	17	130	1
1100L	★	**10**	9	16	50	17	180	1
1120S	★	**12**	10.5	16	40	19.5	110	1
1120M	★	**12**	10.5	16	40	19.5	150	1
1120L	★	**12**	10.5	16	60	19.5	200	1
1160S	★	**16**	12	20	50	25.5	130	1
1160M	★	**16**	12	20	50	25.5	180	1
1160L	★	**16**	12	20	70	25.5	220	1
1200S	★	**20**	15	25	60	32	140	1
1200M	★	**20**	15	25	60	32	200	1
1200L	★	**20**	15	25	80	32	250	1
1250S	★	**25**	18.5	32	70	36	150	1
1250M	★	**25**	18.5	32	73	36	220	1
1250L	★	**25**	18.5	32	100	36	300	1
1300S	★	**30**	22.5	32	80	43	160	1
1300M	★	**30**	22.5	32	85	43	240	1
1300L	★	**30**	22.5	32	120	43	350	1

Inserts are sold separately.

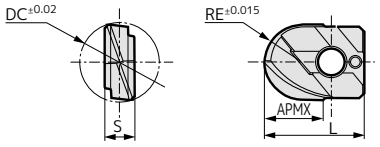
Insert

Dimensions (mm)

Grade Classification		Coated Carbide
Process	High-speed/Light Cutting	P
	Medium Cutting	
	Roughing	

Cat. No.	ACZ120	Dia. DC	Length L	Max. Depth of Cut APMX	Thickness S	Corner Radius RE	Applicable Cutter	Fig
ZPGU 1551050	★	10	15.6	9	5.1	5.0	WBMF 1100□	1
1856060	★	12	18	10.5	5.6	6.0	WBMF 1120□	1
2061080	★	16	20.5	12	6.1	8.0	WBMF 1160□	1
2471100	★	20	24.5	15	7.1	10.0	WBMF 1200□	1
2876125	★	25	28.5	18.5	7.6	12.5	WBMF 1250□	1
3486150	★	30	34.4	22.5	8.6	15.0	WBMF 1300□	1

Fig 1

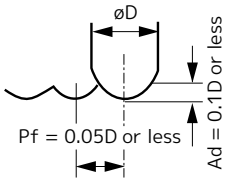


Parts

Applicable Cutter	Precision Screw	N·m	Wrench	Anti-seizure Cream
WBMF1100□	BFTG0408F	3.0	TRD15	SUMI-P
WBMF1120□	BFTG0409F			
WBMF1160□	BFTG0513F	5.0	TRD20	
WBMF1200□	BFTG0617F	7.5	TRD25	
WBMF1250□	BFTG0621F			
WBMF1300□	BFTG0825F			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	200- **250** -300	0.10- **0.20** -0.30	ACZ120
	Alloy Steel	180 to 280HB	100- **150** -200	0.10- **0.20** -0.30	ACZ120



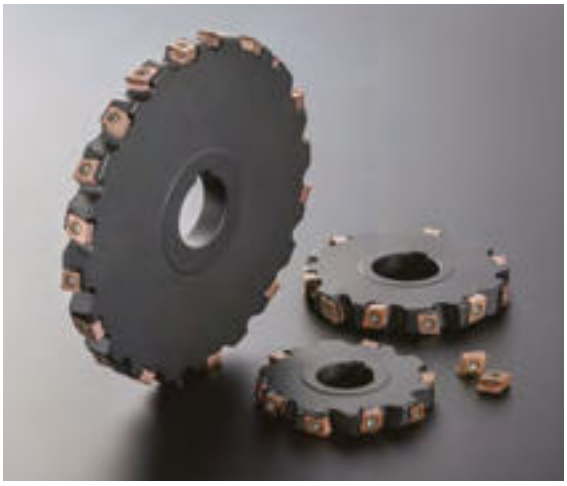
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Sumi Dual Mill

TGC series New

VIDEO OF CUTTING



■ Features

- **Side Cutter Suitable For A Variety Of Applications**
  Made-to-order bodies possible with cutting width of 17mm and up
  Suitable for various applications such as groove milling and shoulder milling.
- **Realises Low Resistance and Low Vibration Milling**
  Design emphasizes cutting edge sharpness with +10° inclination angle
  Excellent cutting edge sharpness suppresses chatter to enable stable machining.
- **Excellent Machined Surface Quality**
  Proprietary insert array design minimises joint steps at the groove bottom for excellent machining quality.
- **Neutral-handed 4-cornered Insert**
  Easy management with neutral-handed insert design that eliminates the need to align right-hand and left-hand inserts.

■ Product Range (Body)

Body: Made-to-order (custom design)

Standard design



Multi-stage design



Insert ISO Cat. No.	Width of Cut CW (mm)									
	17	18.5	19	20.3	21	22	22.8	23.7	24.6	Over 24.6
TGCX130704PNEN-G	Standard design									Multi-stage design
TGCX130708PNEN-G	Standard design								Multi-stage design	
TGCX130712PNEN-G	Standard design							Multi-stage design		
TGCX130716PNEN-G	Standard design						Multi-stage design			
TGCX130720PNEN-G	Standard design					Multi-stage design				
TGCX130724PNEN-G	Standard design				Multi-stage design					
TGCX130730PNEN-G	Standard design			Multi-stage design						
TGCX130732PNEN-G	Standard design		Multi-stage design							

Standard design CW upper limit value varies with insert.

■ Product Range (Insert)

ISO Cat. No.	Corner Radius RE (mm)							
	0.4	0.8	1.2	1.6	2.0	2.4	3.0	3.2
TGCX1307○○PNEN-G	★	★	★	★	★	★	★	★

■ Chipbreaker

Work Material	P Steel, M stainless steel, K cast iron
Applications	General-purpose to Roughing
Chipbreaker	**G type** TGCX 13
Cutting Edge Cross Section	18°

■ Suitable for Various Applications

Groove Milling



Standard disc shape

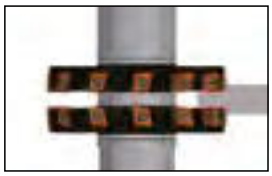
Shoulder Milling



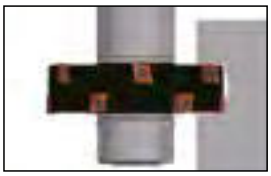
Back Spot Facing



Width Setting



Double-Sided Machining



★mark: Global stocked item

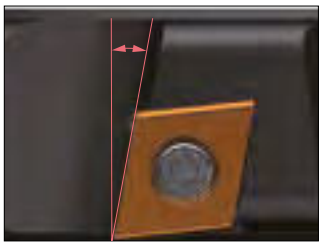
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

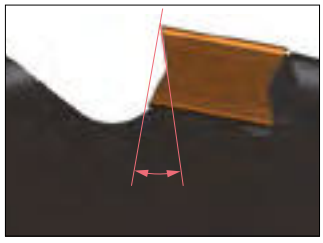
— mark: Not available

■ Sharp Edge Design

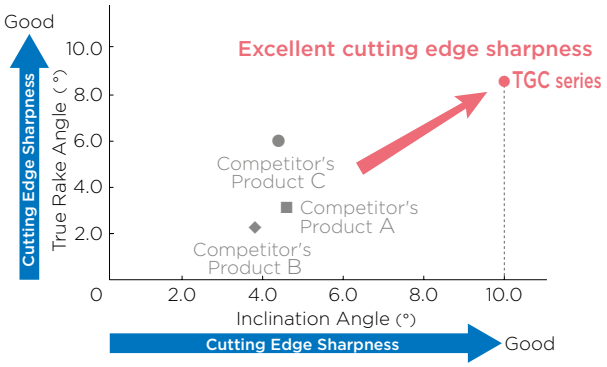
Design emphasizes cutting edge sharpness with +10° inclination angle.
Excellent cutting edge sharpness suppresses chatter to enable stable machining.



Inclination Angle

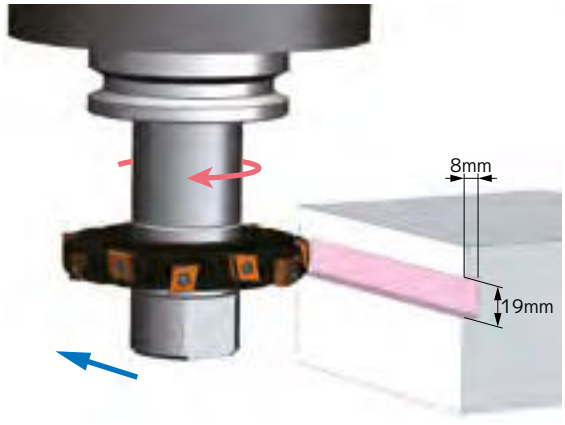


True Rake Angle

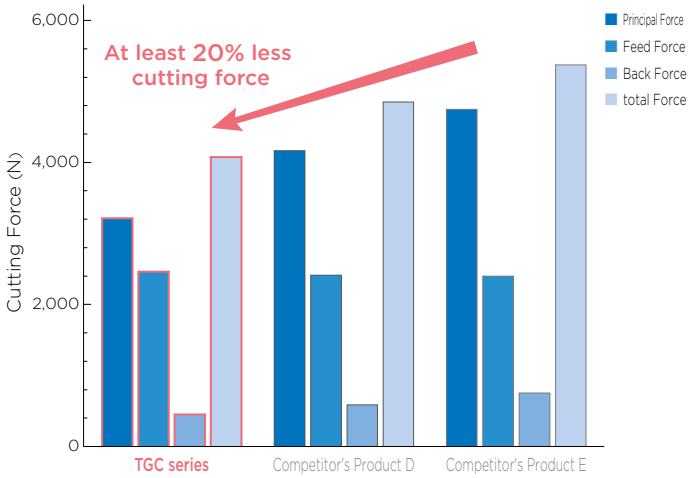


■ Cutting Performance

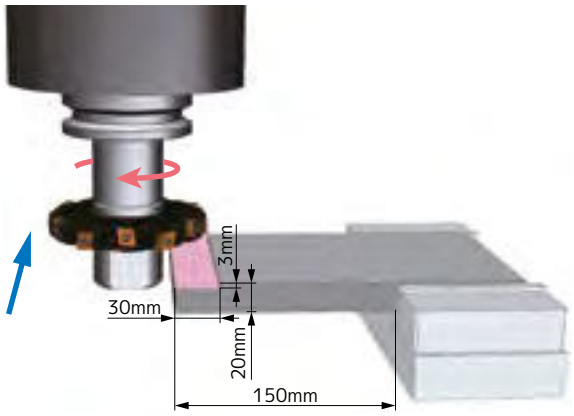
● Low Cutting Force



Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 200m/min fz = 0.2mm/t ap = 19mm ae = 8mm, Down Cut, Dry



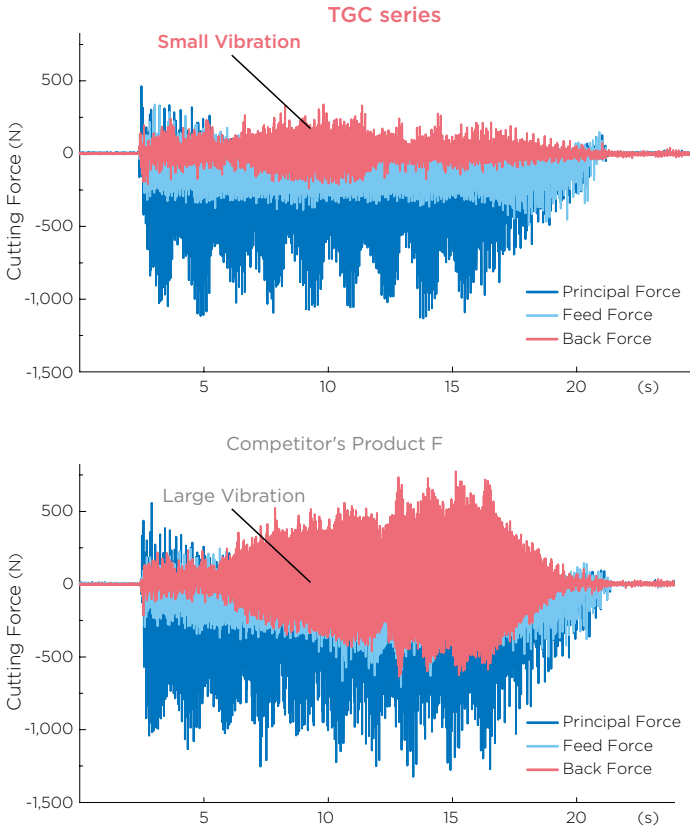
● Low Vibration



Machine	: Vertical Machining Centre BT50, Work Material: FC250
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 200m/min fz = 0.2mm/t ap = 3mm ae = 30mm, Down Cut, Dry

Suppresses chatter even when machining low-rigidity workpieces

Excellent cutting edge sharpness eliminates chatter to enable stable machining

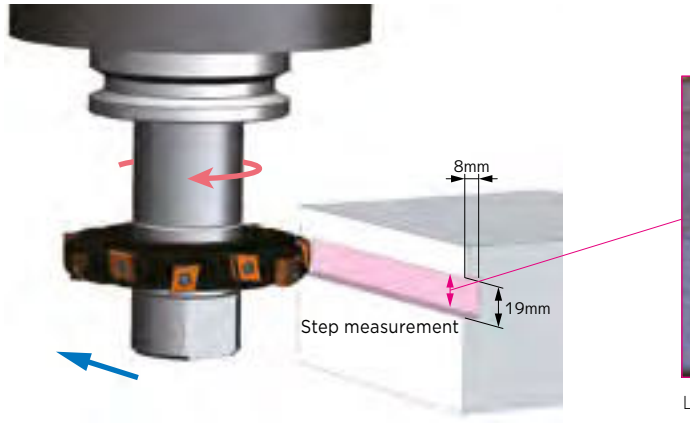


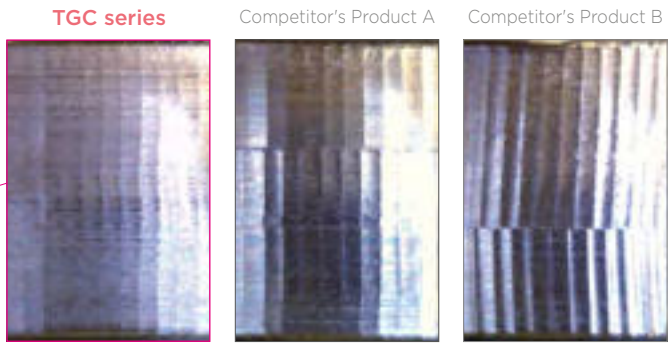
★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

● Small Joint Steps At Groove Bottom

Proprietary insert array design minimizes joint steps at groove bottom for excellent visual quality





Less than 0.01mm step | Step 0.026mm | Step 0.024mm

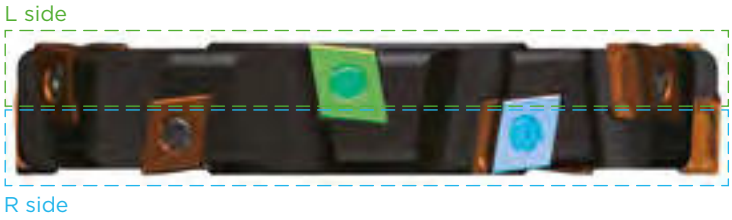
Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 200m/min fz = 0.2mm/t ap = 19mm ae = 8mm , Down Cut, Dry

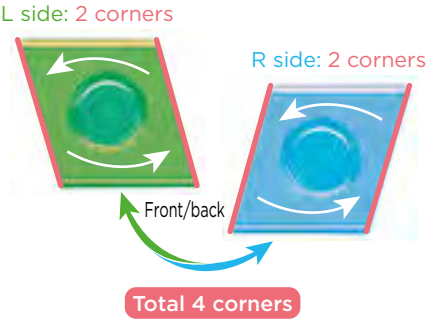
Excellent visual quality

*Results of in-house evaluation.

● Neutral-handed 4-cornered Insert

Easy management with neutral-handed insert design that eliminates the need to align right-hand and left-hand inserts



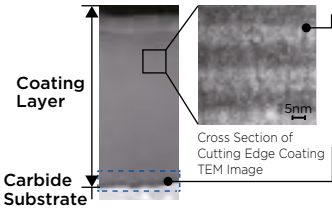


■ Grade Features

Work Material	Grade	Coating Thickness (µm)	Features
P M K S	ACU2500	3	Utilises ABSOTECH™ coating technology with excellent wear and chipping resistance. Its carbide substrate, with excellent fracture and wear resistance, achieves stable and long tool life for a variety of work materials.

Coating Layer Features

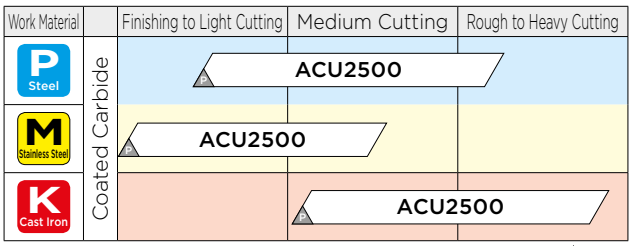
ABSOTECH PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

■ Grade Application Range (TGC type)



The letter "P" at the end of each grade indicates the coating type. △: PVD

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-Sumi Dual Mill

TGC 13000 type

New

P Steel | M Stainless Steel | K Cast Iron

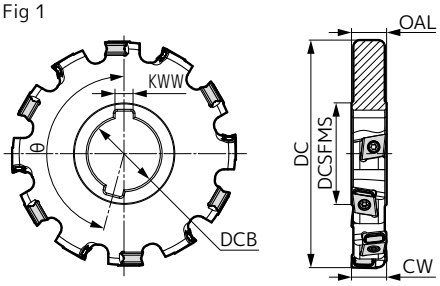
Rake Angle	Radial	-11.5° to -9.5°
	Axial	10°

17-24.6mm 90°

Face Milling | Shoulder Milling | Side Milling | Groove Milling | Back Spot Facing | Width Setting

Fig 1





Body (Standard Disc Shape)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss Dia. DCSFMS	Width of Cut CW	Boss Thickness OAL	Bore Dia. DCB	Keyway Width KWW	Phase θ (°)	Total No. of Teeth	Weight (kg)	Fig
Metric	TGC 13100W○○Z10RS		100	47	17 to 24.6	= CW	32	8	162	10	0.66 up	1
	13125W○○Z12RS		125	55	17 to 24.6	= CW	40	10	165	12	1.29 up	1
	13160W○○Z14RS		160	55	17 to 24.6	= CW	40	10	167.14	14	2.04 up	1
	13200W○○Z16RS		200	69	17 to 24.6	= CW	50	12	168.75	16	3.33 up	1

Basic specifications have two keyways. (Also available with only one) Inserts are sold separately.
The upper limit of width of cut CW is the value of inserts with corner radius RE0.4. For the width of cut CW upper limit values for each corner radius RE, see the Insert Cat. No. Table.
Disc shapes other than the standard type can be designed.

Identification Code

TGC	13	125	W17	Z12	R	S
Series Code	Insert Size	Dia.	Width of Cut	Number of Teeth	Feed Direction	Metric Bore

Parts

Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0412IP	3.0	TRDR15IP	SUMI-P

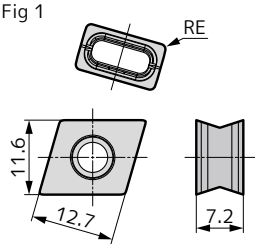
Insert

Dimensions (mm)

Grade Classification		Coated Carbide
Process	High-speed/Light Cutting	P M K
	Medium Cutting	P M K
	Roughing	P M K

ISO Cat. No.	ACU2500	Corner Radius RE	Width of Cut CW Upper Limit	Fig
TGCX 130704PNEN-G	★	0.4	24.6	1
130708PNEN-G	★	0.8	23.7	1
130712PNEN-G	★	1.2	22.8	1
130716PNEN-G	★	1.6	22.0	1
130720PNEN-G	★	2.0	21.0	1
130724PNEN-G	★	2.4	20.3	1
130730PNEN-G	★	3.0	19.0	1
130732PNEN-G	★	3.2	18.5	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	G	100 - **200** - 300	0.1 - **0.2** - 0.25	ACU2500
	Alloy Steel	180 to 280HB	G	80 - **160** - 260	0.1 - **0.2** - 0.25	ACU2500
M	Stainless Steel	180 to 280HB	G	90 - **135** - 180	0.1 - **0.15** - 0.2	ACU2500
K	Cast Iron/Ductile Cast Iron	250HB	G	100 - **200** - 300	0.1 - **0.2** - 0.25	ACU2500

Note
· The above figures are guidelines for simultaneous cutting with one R/L cutting tooth each, on a BT50 machine tool.
· The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

SEC-Sumi Dual Mill TGC type Made-to-Order Request Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert Series Configuration

Dimensions (mm)

ISO Cat. No.	Corner Radius RE							
	0.4	0.8	1.2	1.6	2.0	2.4	3.0	3.2
TGCX 1307○○PNEN-G	★	★	★	★	★	★	★	★
TGCX 13 Width of Cut CW Upper Limit Value	24.6	23.7	22.8	22.0	21.0	20.3	19.0	18.5

A multi-stage design is required if the width of cut CW is wider than these upper limit values.

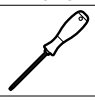
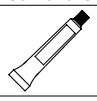
[Made-to-Order Insert Support]
Corner radius (RE) = 0.4 to 2.0mm supported.
(Machined radius size may differ from the corner radius RE size of the mounted inserts)

Width of Cut CW Size Reference Specification

Width of Cut CW	Insert type
17 to 24.6mm	TGCX 13

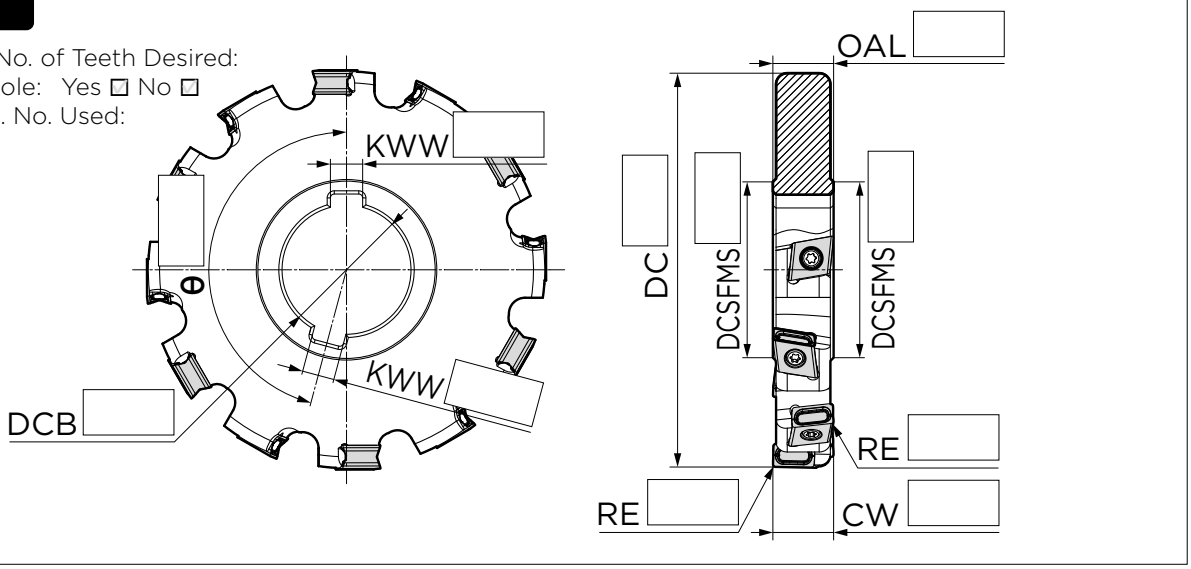
- The above width of cut CW upper limit value is the value with insert corner radius RE0.4.
- For the width of cut CW upper limit values for each corner radius RE, see the Insert Series Configuration Table on the left.

■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

☐ **Disc**

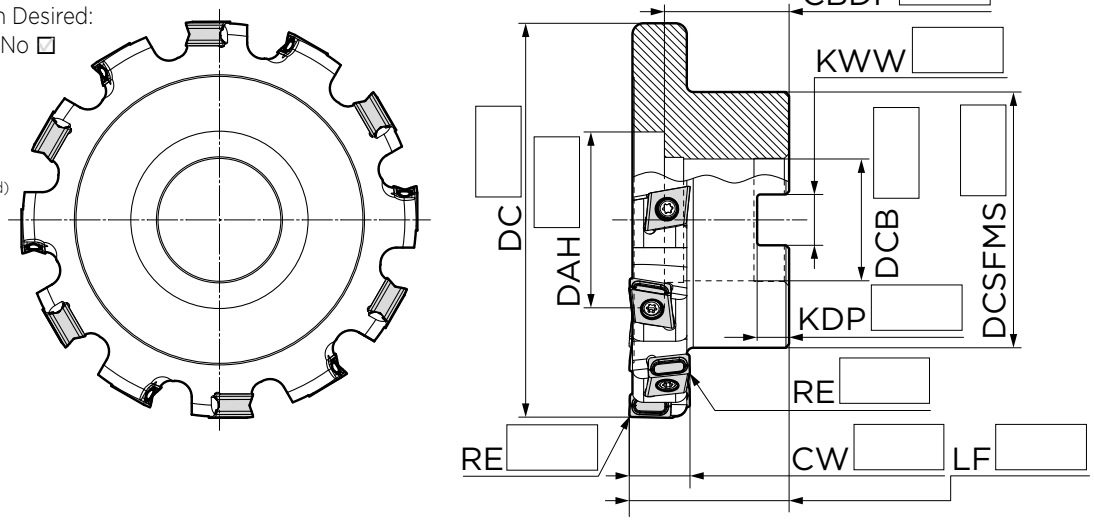
Effective No. of Teeth Desired:
Coolant Hole: Yes ☐ No ☐
Arbor Cat. No. Used:



Basic specifications have two keyways. (Also available with only one)

☐ **With Boss**

Effective No. of Teeth Desired:
Coolant Hole: Yes ☐ No ☐
Arbor Cat. No. Used:
Feed Direction:
Right-handed ☐
Left-handed ☐
(Figure shows right-handed)



Designs for applications other than those listed above are possible, please consult us separately.

MEMO

TSE type

P Steel K Cast Iron

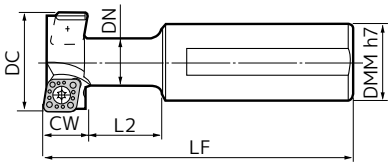
Rake Angle		
Rake Angle	Radial	0°
	Axial	0°

ø9-22mm 90°

Groove Milling

Fig 1





Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Diameter DN	Width CW	Length L2	Overall Length LF	Number of Teeth	Fig
TSE 2125	★	**21**	25	10.5	9	20	109	2	1
2525	★	**25**	25	12.5	11	21	112	2	1
3232	★	**32**	32	16.5	14	26	120	2	1
4032	★	**40**	32	20.5	18	32	130	2	1
5032	★	**50**	32	26.5	22	38	140	4	1

Inserts are sold separately.

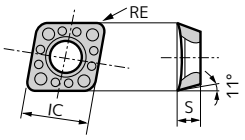
Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide	
Process	High-speed/Light Cutting			
	Medium Cutting	PM	PK	K
	Roughing			

ISO Cat. No.	AC630M	A30	G10E	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
CPMT 060204N-US	★	★	★	6.35	2.38	0.4	TSE 2125	1
080308N-US	★	★	★	7.938	3.18	0.8	TSE 2525	1
09T308N-US	★	★	★	9.525	3.97	0.8	TSE 3232	1
CPMH 120408N-US	★	★	★	12.7	4.76	0.8	TSE 4032 TSE 5032	1

Fig 1



Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench
TSE2125	BFTX02506N	**1.5**	TRX08
TSE2525	BFTX0307N	**2.0**	TRX10
TSE3232	BFTX0407N	**3.0**	TRX15
TSE4032 TSE5032	BFN0511T	**5.0**	TRX20

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **125** -150	0.05- **0.08** -0.10	AC630M
P	Alloy Steel	180 to 280HB	60- **80** -100	0.03- **0.05** -0.08	AC630M
K	Cast Iron	250HB	60- **80** -100	0.05- **0.08** -0.10	G10E

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)



■ Features

The SEC-WaveMill WFXC series is a chamfering tool that uses a WFX series insert. A wide variety of grades supports various work materials.
New grade ACS series has also been expanded, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

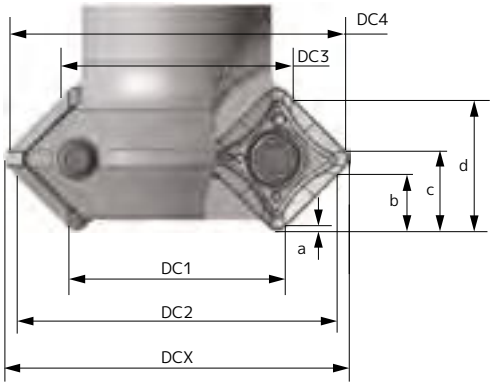
■ Precautions for Use

Chamfering tools use a straight cutting edge that enables the chamfering range to be changed depending on the corner radius (RE) of the insert mounted to the body.
Machining diameter: Use within the range shown in the table below, no lower than DC1 and no higher than DC2.
Depth of cut: Cutting to a depth shown by the distance from the tool tip (a) in a straight line to the cutting edge (b) is possible.

Dimensions (mm)

Body	Insert		Chamfering				Back Chamfering				Max. Dia.
			Min. Machining Dia.	Max. Machining Dia.	Minimum Depth	Maximum Depth	Min. Machining Dia.	Max. Machining Dia.	Minimum Depth	Maximum Depth	
	Cat. No.	RE	DC1	DC2	a	b	DC3	DC4	c	d	DCX
WFXC08008E	SOMT080304	0.4	7.5	15.8	0.1	4.1	9.3	17.6	5.8	9.9	17.8
	SOMT080308	0.8	8.0	15.8	0.2	3.9	9.3	17.1	5.9	9.8	17.5
	SOMT080312	1.2	8.5	15.8	0.4	3.6	9.3	16.6	6.0	9.6	17.2
WFXC08016E WFXC08016M	SOMT080304	0.4	15.5	23.8	0.1	4.1	17.3	25.6	5.8	9.9	25.8
	SOMT080308	0.8	16.0	23.8	0.2	3.9	17.3	25.1	5.9	9.8	25.5
	SOMT080312	1.2	16.5	23.8	0.4	3.6	17.3	24.6	6.0	9.6	25.2
WFXC12025E WFXC12025M	SOMT120404	0.4	24.6	38.3	0.1	6.8	27.3	41.2	9.1	16.0	41.3
	SOMT120408	0.8	25.0	38.3	0.2	6.6	27.3	40.6	9.2	15.8	41.0
	SOMT120412	1.2	25.6	38.3	0.4	6.3	27.3	40.1	9.3	15.7	40.7
	SOMT120416	1.6	26.1	38.3	0.5	6.1	27.3	39.5	9.4	15.5	40.4
WFXC12032E WFXC12032M	SOMT120404	0.4	31.6	45.3	0.1	6.8	34.3	48.2	9.1	16.0	48.3
	SOMT120408	0.8	32.0	45.3	0.2	6.6	34.3	47.6	9.2	15.8	48.0
	SOMT120412	1.2	32.6	45.3	0.4	6.3	34.3	47.1	9.3	15.7	47.7
	SOMT120416	1.6	33.1	45.3	0.5	6.1	34.3	46.5	9.4	15.5	47.4

Modular type H271



WFXC 08000E type

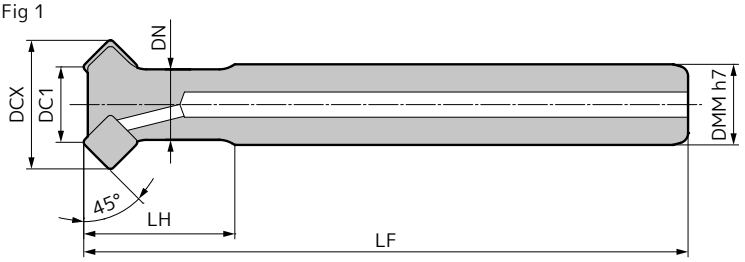
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	0°
	Axial	0°

45° Chamfering | Back Chamfering



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXC 08008E	★	**8**	17.5	10	30	120	1	0.1	1
08016E	★	**16**	25.5	16	30	120	2	0.2	1

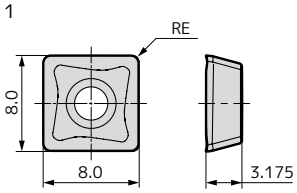
DC1 and DCX values were obtained with a 0.8 corner radius insert mounted.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
	Medium Cutting																
	Roughing																
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1

Fig 1



Precautions for Use H219

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

WFXC 08 016 E

- WFXC: Series Code
- 08: Insert Size
- 016: Min. Machining Dia.
- E: Shank type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280HB	150-**200**-250	0.05-**0.10**-0.15
P	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
P	Die Steel	200 to 220HB	100-**150**-200	0.05-**0.10**-0.15
M	Stainless Steel	—	150-**200**-250	0.05-**0.10**-0.15
K	Cast Iron	250HB	100-**175**-250	0.05-**0.10**-0.15
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20
S	Exotic Alloy	—	30-**50**-80	0.08-**0.13**-0.18

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WFXC 12000E type

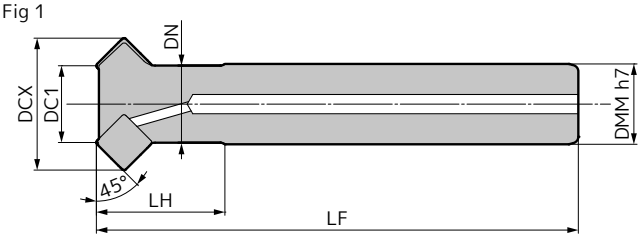
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	0°
	Axial	0°

45° Chamfering | Back Chamfering



Fig 1



Body (Shank type)

Dimensions (mm)

ISO Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXC 12025E	★	**25**	41	25	40	150	3	0.6	1
12032E	★	**32**	48	32	40	150	3	1.0	1

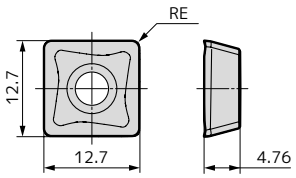
DC1 and DCX values were obtained with a 0.8 corner radius insert mounted.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	●	P			K		M S	M S		M S		K N	N		
	Medium Cutting	●		P M	P M	K			M S	M S	M S	M S		N	P M	
	Roughing	●		P M	P M		K			M S		M S			P	
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	1
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	1
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1

Fig 1



Precautions for Use H219

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03512IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

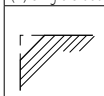
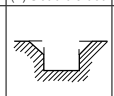
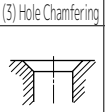
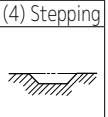
WFXC Series Code | **12** Insert Size | **025** Min. Machining Dia. | **E** Shank type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280HB	150- **200** -250	0.05- **0.10** -0.15
P	Mild Steel	≤ 180HB	180- **265** -350	0.10- **0.15** -0.20
P	Die Steel	200 to 220HB	100- **150** -200	0.05- **0.10** -0.15
M	Stainless Steel	—	150- **200** -250	0.05- **0.10** -0.15
K	Cast Iron	250HB	100- **175** -250	0.05- **0.10** -0.15
N	Non-Ferrous Metal	—	300- **500** -1,000	0.10- **0.15** -0.20
S	Exotic Alloy	—	30- **50** -80	0.10- **0.15** -0.20

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Application

(1) Single Sided	(2) Double Sided	(3) Hole Chamfering	(4) Stepping
			

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)



■ Features

● **Drastically Reduced Runout Adjustment Time**
Simple screw-fastening structure enables fine adjustments to be made easily

● **Through-Blade Coolant**
Ensures coolant supply to the cutting edge and breaks chips

● **Lightweight Aluminum Alloy Body (ANXA type)**
Utilises aluminum alloy to achieve a total weight of less than 1.3kg for a ø125mm cutter with 22 teeth

● **High-strength CVD Single Crystal Diamond SCV10 Wiper Blade WS type lineup**

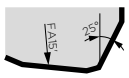
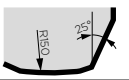
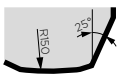
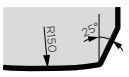
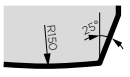
■ Product Range

Type	ISO Cat. No.	Body Material	Max. Diameter (mm) ø25	ø30	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	**ANXA 16000R** (Inch)	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXA 16000RS	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXS 16000R (Inch)	Steel						6 8 12	6 10 14	8 12 18	10 14 22	
	ANXS 16000RS	Steel				4 6	4 6 9	6 8 12	6 10 14	8 12 18	10 14 22	
Shank	**ANXS 16000E**	Steel	2	3 4	3 4	4 6	4 6 9					
Modular	**ANXS 16000M**	Steel	2	3 4	3 4	4 6						

Number in ●●● shows the number of teeth (Inch) Inch Bore

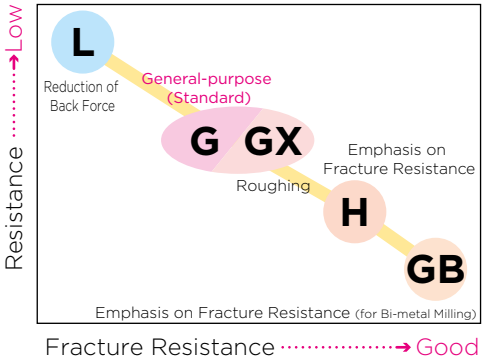
Modular type ☞ H272

■ Blade Selection Guide

Work Material	N								
Applications	Finishing/Light Cutting	General-purpose	Roughing		Composite Milling *1	Corner Radius Milling	Corner Radius Milling	Finishing	Burr-free Mirror Finish
Features	Low Cutting Force	Standard	Long Edge	High Strength	High Strength	Corner Radius 0.4	Corner Radius 0.8	Wiper	Wiper
Cutting Edge Shape	**L**	**G**	**GX**	**H**	**GB**	—	—	**W**	**WS**
									
Edge Length (*2)	6.0mm	6.0mm	9.0mm	6.0mm	6.0mm	6.0mm	6.0mm	2.0mm	1.0mm

*1 Machining of components combining aluminum alloy and cast iron. W type and WS type cannot be used together.

■ Blade Selection Reference

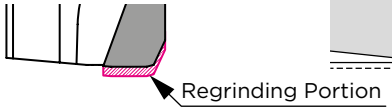


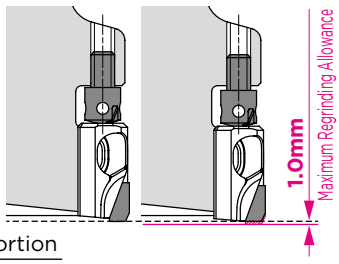


*2 Edge length

● **Regrinding possible up to 1.0mm. Reduced running costs**

Assuming 0.2mm of regrinding each time, an edge can be used up to 6 times.
(Peripheral cutting edge and WS type cannot be reground.)





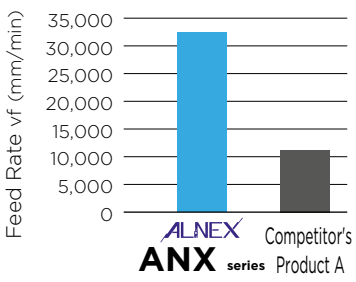
■ High-speed, High-efficiency Cutting

Realises ultra-high-efficiency machining with vf = 30,000mm/min



Cutter diameter ø100mm comparison

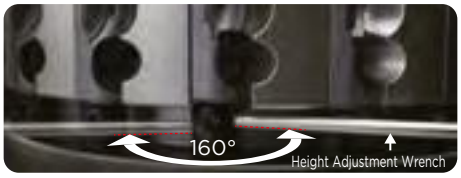
	Spindle Speed min⁻¹	Number of Teeth	Feed Rate vf(mm/min)
ALNEX ANX series	18,000	18	32,400
Competitor's Product A	9,500	12	11,400



■ Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body (reduces deformation due to tightening)

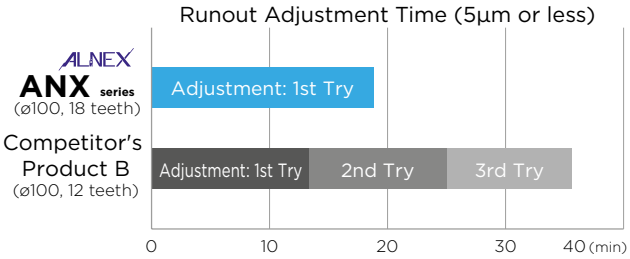




Adjustment is easy thanks to the large movable range of the height adjustment wrench.



We recommend keeping cutting edge height variation during runout adjustment to within 5µm.

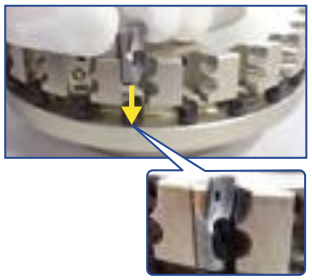


Completed on 1st Try, Adjustment Time Reduced

*Because the cutting edge chips off easily, care is required when mounting on the cutter body. Use a non-contact tool presetter.

■ Blade Mounting/Runout Adjustment

(1)



(1)Slide the blade into the cutter teeth groove.

(2)



(2)Lightly tighten the cap screw while pressing the blade against the restraining face. (1N·m)

(3)



(3)Adjust the blade to the required height by using the dedicated wrench to turn the height adjustment screw.

(4)

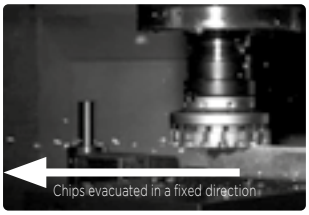


(4)Perform final tightening of the cap screw. (2N·m)

■ Chip Control

Through-Blade Coolant chip breaking





Controls the chips' scatter direction.



The chip pocket catches the chips and suppresses damage to the body.



ALNEX ANX series

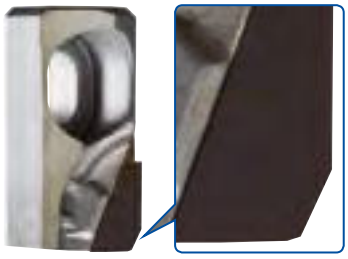


Competitor's Product C

Work Material: ADC12 Cutting Conditions: vc = 2,500m/min, fz = 0.05mm/t, ap = 0.5mm, Wet

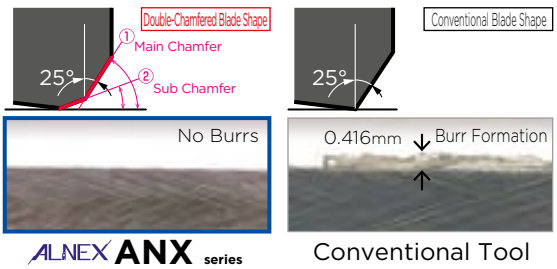
■ Burr Control

Reduces burrs by using a double-chamfered cutting edge (L/G/GX/H/GB type)



Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material	: A6061 Rolled Steel
Cutting Conditions	: vc = 3,142m/min, fz = 0.10mm/t ap = 0.5mm, Dry

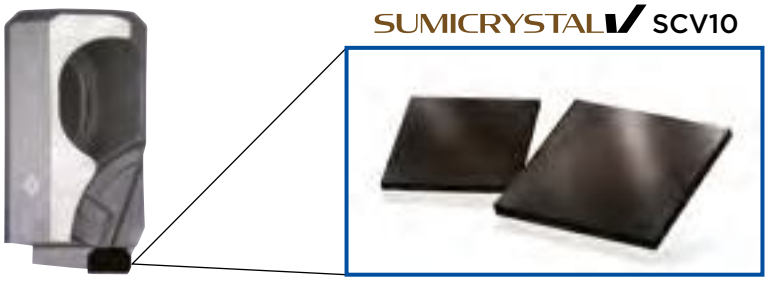


ALNEX ANX series

Conventional Tool

CVD Single Crystal Diamond SCV10 Wiper Blade WS type

- Wiper blade adopts high-strength single-crystal diamond using Sumitomo Electric Hardmetal's vapour phase synthesis technology
- Sharp cutting edge achieves burr-free mirror finish in aluminum alloy machining
- Superior wear resistance maintains cutting edge sharpness for a long time, reducing total tool costs



Conventional single-crystal diamond

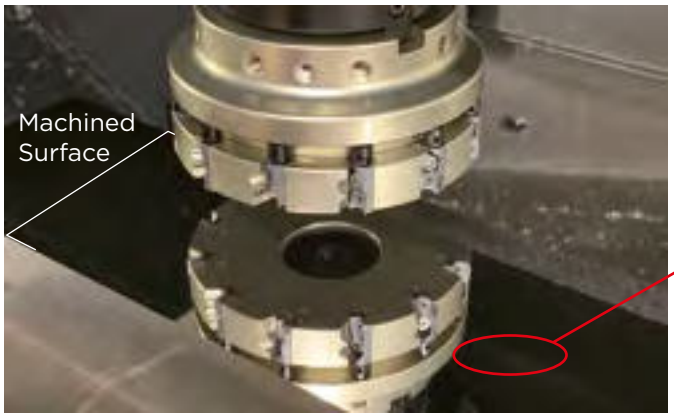


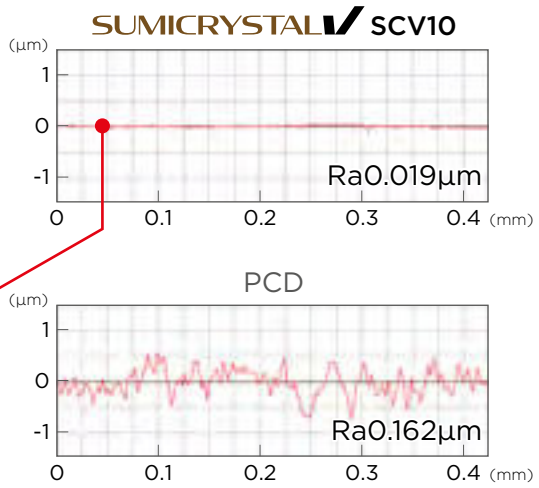
◆ Superb mirror surface and burr control through sharp cutting edge

Realizes a mirror finish in milling of aluminum alloys, copper alloys, and other non-ferrous metals, with long-term burr control

■ Mirror Finish (Wiper Blade WS type)

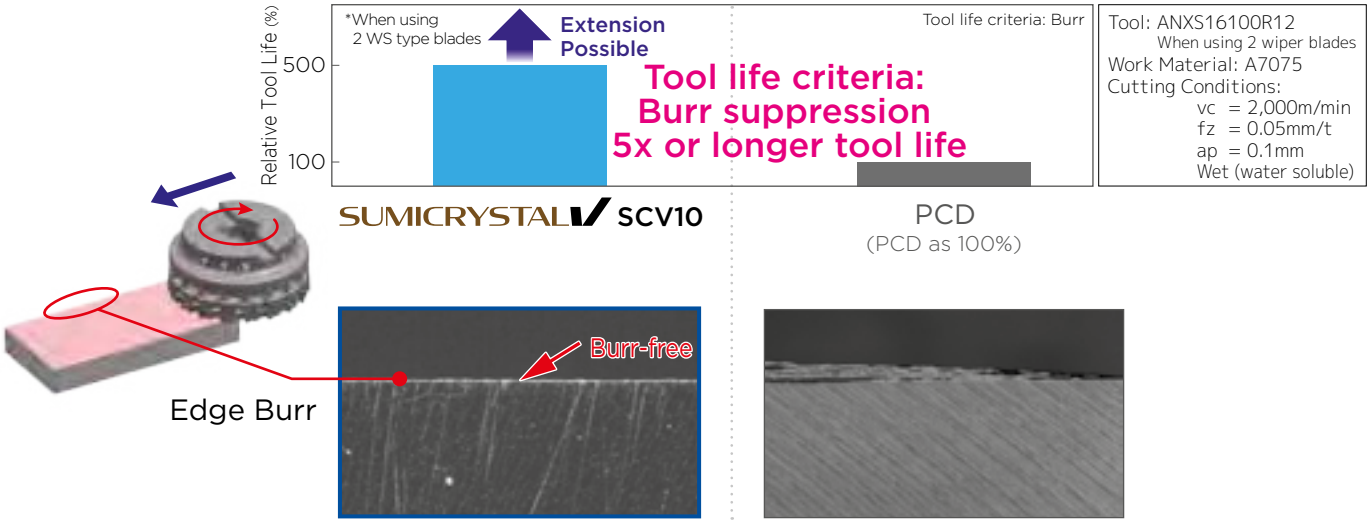
Sharp cutting edge achieves mirror finish with cutting alone





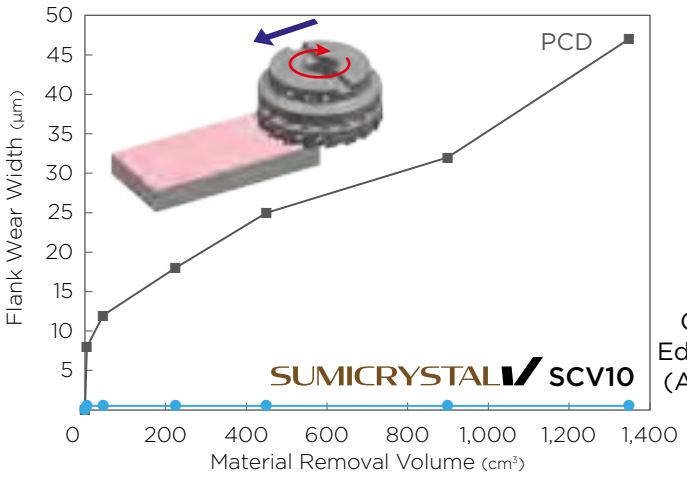
■ Burr-Free (Wiper Blade WS type)

Sharp cutting edge and excellent wear resistance suppress burrs over a long period



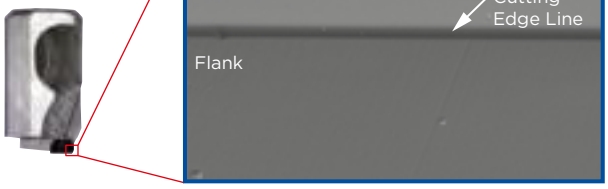
◆ Superior wear resistance maintains cutting edge sharpness for a long time

Wear resistance evaluation in high-silicon aluminum alloy machining

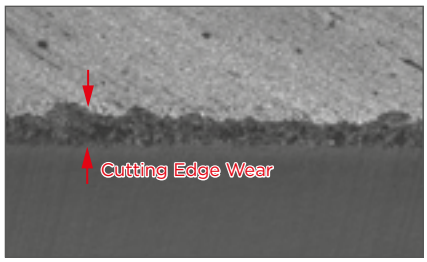


Work Material: Al-17wt.% Si alloy
Cutting Conditions: vc = 800m/min, fz = 1.0mm/t, ap = 0.03mm
Wet (water soluble)
*Evaluated with 1 wiper blade (dummy blade used in opposite position)

Cutting Edge Photo (After use)



PCD

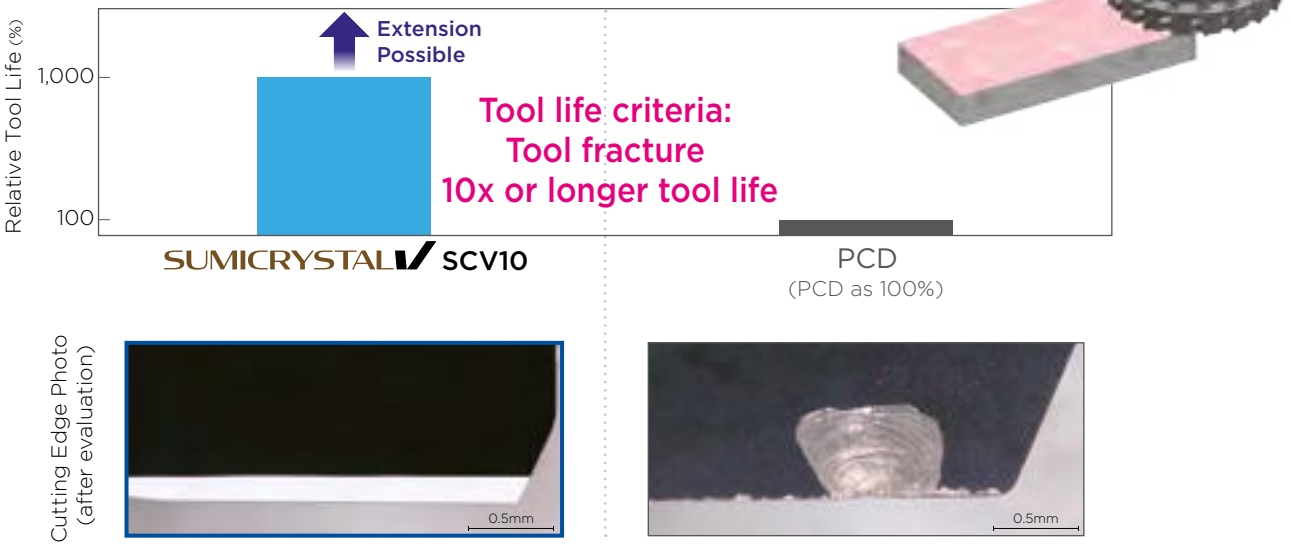


SUMICRYSTAL SCV10

No progression of flank wear, consistent mirror finish with burr suppression

◆ Jet-black high-strength single-crystal diamond grade

Fracture resistance evaluation in machining aluminum alloy-ceramic composite



Cutting Edge Photo (after evaluation)

Work Material: Aluminum Alloy + Ceramic Composite
Cutting Conditions: vc = 2,500m/min, fz = 1.0mm/t, ap = 0.03mm
Wet (water soluble)
*Evaluated with 1 wiper blade (dummy blade used in opposite position)

10x or more fracture resistance compared to PCD in finishing at low depths of cut (0.05 mm or less)

ANXA 16000R(S) type

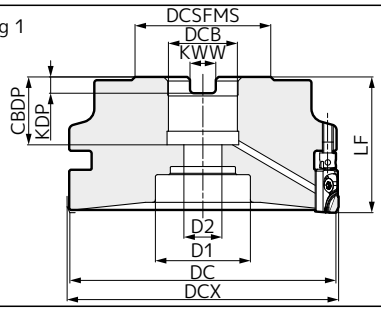
Rake Angle		
Radial	+5°	
Axial	+5°	

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1



Body (Aluminum Alloy)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXA 16080RS06**	★	**80**	78	50	50	**27**	12.4	7	22	35	14	6	0.5	1
	16080RS10	★	**80**	78	50	50	**27**	12.4	7	22	35	14	10	0.5	1
	16080RS14	★	**80**	78	50	50	**27**	12.4	7	22	35	14	14	0.5	1
	16100RS08	★	**100**	98	50	50	**27**	12.4	7	22	35	14	8	0.8	1
	16100RS12	★	**100**	98	50	50	**27**	12.4	7	22	35	14	12	0.8	1
	16100RS18	★	**100**	98	50	50	**27**	12.4	7	22	35	14	18	0.8	1
	16125RS10	★	**125**	123	50	50	**27**	12.4	7	22	35	14	10	1.2	1
	16125RS14	★	**125**	123	50	50	**27**	12.4	7	22	35	14	14	1.2	1
	16125RS22	★	**125**	123	50	50	**27**	12.4	7	22	35	14	22	1.3	1
	16160RS12	★	**160**	158	80	63	**40**	16.4	9	29	52	29	12	2.6	1
	16160RS20	★	**160**	158	80	63	**40**	16.4	9	29	52	29	20	2.6	1
	16160RS28	★	**160**	158	80	63	**40**	16.4	9	29	52	29	28	2.6	1
Inch	**ANXA 16080R06**	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	6	0.5	1
	16080R10	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	10	0.5	1
	16080R14	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	14	0.5	1
	16100R08	★	**100**	98	50	50	**25.4**	9.5	6	25	35	14	8	0.8	1
	16100R12	★	**100**	98	50	50	**25.4**	9.5	6	25	35	14	12	0.9	1
	16100R18	★	**100**	98	50	50	**25.4**	9.5	6	25	35	14	18	0.9	1
	16125R10	★	**125**	123	50	50	**25.4**	9.5	6	25	35	14	10	1.2	1
	16125R14	★	**125**	123	50	50	**25.4**	9.5	6	25	35	14	14	1.2	1
	16125R22	★	**125**	123	50	50	**25.4**	9.5	6	25	35	14	22	1.3	1
	16160R12	★	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	12	2.3	1
	16160R20	★	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	20	2.4	1
	16160R28	★	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	28	2.6	1

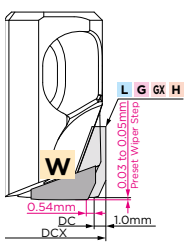
Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).
All aluminum alloy cutter bodies from (DCX) ø80 to ø125 have similar bore diameter (DCB) (metric ø27/inch ø25.4).

Identification Code

ANX Series Code | **A** Aluminum Alloy Body | **16** Blade Size | **100** Max. Dia. | **R** Feed Direction | **S** Metric Bore | **18** Number of Teeth

■ Precautions When Using Wiper Blades

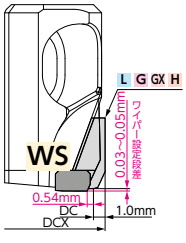
· W type Setting



⚠ Precautions

In order to maintain cutter balance when using the W type wiper blade, use a cutter with an even-number of cutting teeth and place another W type wiper blade at the opposite teeth position.

· WS type Setting



⚠ Precautions

(For more details, refer to the instruction manual included with the product)

In order to maintain cutter balance when using the WS type (SCV10 wiper blade), use a cutter with an even-number of cutting teeth and place another WS type wiper blade (or dummy blade ANBD) at opposite teeth positions.

*The dummy blade is dedicated for use with WS type.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

ANXA 16000R(S) type

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V					
Process	High-speed/Light Cutting	N	KN	KN	N					
	Medium Cutting	N	KN	KN						
	Roughing	N	KN	KN						
ISO Cat. No.		DA1000	DA1090	DA90 (New)	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L		★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G		★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB			★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H		★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX		★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R		★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R		★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W		★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS		—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANBD		—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1

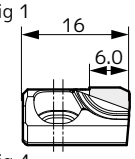


Fig 2

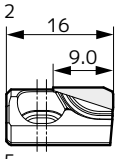


Fig 3

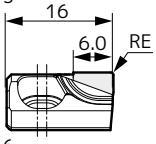
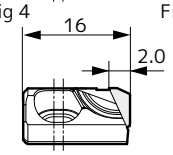
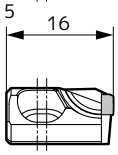


Fig 4



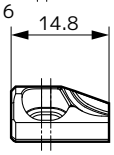
Wiper Blade

Fig 5



Wiper Blade

Fig 6



Dummy Blade

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, see the table below for the feed rate.

Parts

Applicable Cutter	Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	
		N·m					N·m
ANXA 16080R(S)○○	BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT	BXH1235-D33	**50**
ANXA 16100R(S)○○							
ANXA 16125R(S)○○							
ANXA 16160R(S)○○						BXH2036-D50	**200**

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXA 16080RS06	20,000
16080RS10	20,000
16080RS14	20,000
16100RS08	18,000
16100RS12	18,000
16100RS18	18,000
16125RS10	16,000
16125RS14	16,000
16125RS22	16,000
16160RS12	14,000
16160RS20	14,000
16160RS28	14,000
ANXA 16080R06	20,000
16080R10	20,000
16080R14	20,000
16100R08	18,000
16100R12	18,000
16100R18	18,000
16125R10	16,000
16125R14	16,000
16125R22	16,000
16160R12	14,000
16160R20	14,000
16160R28	14,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Wiper Blade WS type Recommended Feed Rate

WS Cutting Edge Feed Rate per Tooth*1 fzws (mm/tws)	D ≤ 0.5	0.5 < D ≤ 1.7	1.7 < D
Burr-free Finish	◎ Excellent		Impossible
Mirror Finishing	◎ Excellent	○ Good	
Target Surface Roughness Ra (μm)	0.015 to 0.05	up to 0.6	

*1 Feed Rate per WS Cutting Edge Tooth fzws Feed Rate per Tooth fz

$$fz_{WS}\ (mm/t_{WS}) = \frac{fz \times (\text{Total No. of Teeth})^{*2}}{(\text{WS type No. of Teeth})^{*3}}$$

$$fz\ (mm/t) = \frac{\text{Feed Rate (vf) (mm/min)}}{\text{Spindle Speed n (min}^{-1}\text{)} \times \text{(Total No. of Teeth)}}$$

*2 Total number of teeth includes dummy blade and wiper blade (WS type).

*3 WS type number of teeth does not include dummy blade.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

ANXS 16000R(S) type

Rake Angle	Radial	+5°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1

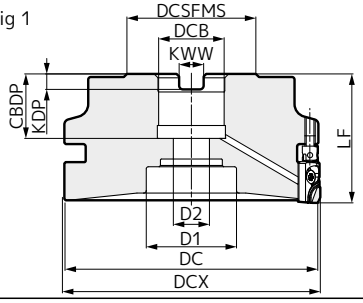
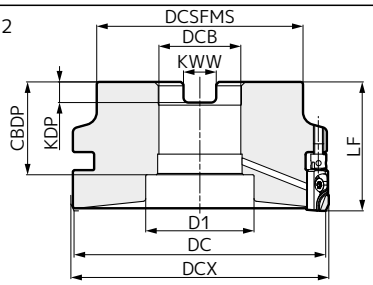


Fig 2



Body (Steel)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16040RS04**	★	**40**	38	38.5	40	**16**	8.4	5.6	18	14	9	4	0.3	1
	16040RS06	★	**40**	38	38.5	40	**16**	8.4	5.6	18	14	9	6	0.3	1
	16050RS04	★	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	16050RS06	★	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	16050RS09	★	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	9	0.4	1
	16063RS06	★	**63**	61	50	40	**22**	10.4	6.3	20	18	11	6	0.7	1
	16063RS08	★	**63**	61	50	40	**22**	10.4	6.3	20	18	11	8	0.7	1
	16063RS12	★	**63**	61	50	40	**22**	10.4	6.3	20	18	11	12	0.7	1
	16080RS06	★	**80**	78	50	50	**27**	12.4	7	22	35	14	6	1.2	1
	16080RS10	★	**80**	78	50	50	**27**	12.4	7	22	35	14	10	1.2	1
	16080RS14	★	**80**	78	50	50	**27**	12.4	7	22	35	14	14	1.2	1
	16100RS08	★	**100**	98	80	50	**32**	14.4	8	32	46	—	8	1.9	2
	16100RS12	★	**100**	98	80	50	**32**	14.4	8	32	46	—	12	2.0	2
	16100RS18	★	**100**	98	80	50	**32**	14.4	8	32	46	—	18	2.0	2
	16125RS10	★	**125**	123	80	63	**40**	16.4	9	29	52	29	10	3.8	1
	16125RS14	★	**125**	123	80	63	**40**	16.4	9	29	52	29	14	3.9	1
	16125RS22	★	**125**	123	80	63	**40**	16.4	9	29	52	29	22	3.9	1
Inch	**ANXS 16063R06**	★	**63**	61	50	50	**25.4**	9.5	6	25	20	14	6	0.9	1
	16063R08	★	**63**	61	50	50	**25.4**	9.5	6	25	20	14	8	0.9	1
	16063R12	★	**63**	61	50	50	**25.4**	9.5	6	25	20	14	12	0.9	1
	16080R06	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	6	1.2	1
	16080R10	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	10	1.2	1
	16080R14	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	14	1.2	1
	16100R08	★	**100**	98	80	50	**31.75**	12.7	8	36	42	—	8	1.9	2
	16100R12	★	**100**	98	80	50	**31.75**	12.7	8	36	42	—	12	2.0	2
	16100R18	★	**100**	98	80	50	**31.75**	12.7	8	36	42	—	18	2.0	2
	16125R10	★	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	10	3.9	1
	16125R14	★	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	14	3.9	1
	16125R22	★	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	22	3.9	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).

Identification Code

ANX	S	16	100	R	S	18
Series Code	Steel Body	Blade Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ANXS 16000R(S) type

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

ISO Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G	★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1

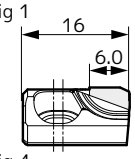


Fig 2

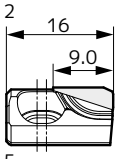


Fig 3

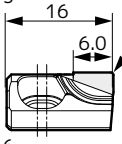
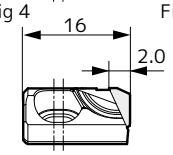
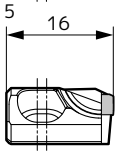


Fig 4



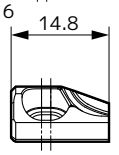
Wiper Blade

Fig 5



Wiper Blade

Fig 6



Dummy Blade

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
KN	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, refer to page H227.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS 16040RS04	25,000
16040RS06	25,000
16050RS04	25,000
16050RS06	25,000
16050RS09	25,000
16063RS06	22,000
16063RS08	22,000
16063RS12	22,000
16080RS06	20,000
16080RS10	20,000
16080RS14	20,000
16100RS08	18,000
16100RS12	18,000
16100RS18	18,000
16125RS10	16,000
16125RS14	16,000
16125RS22	16,000
ANXS 16063R06	22,000
16063R08	22,000
16063R12	22,000
16080R06	20,000
16080R10	20,000
16080R14	20,000
16100R08	18,000
16100R12	18,000
16100R18	18,000
16125R10	16,000
16125R14	16,000
16125R22	16,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

Parts

Applicable Cutter	Cap Screw	(N·m)	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	(N·m)
ANXS 16040RS○○	BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT	BXH0825-D13	**15**
ANXS 16050RS○○						BXH1030-D16	**25**
ANXS 16063RS○○							
ANXS 16080RS○○						BXH1235-D33	**50**
ANXS 16100RS○○						BXH1635-D40	**100**
ANXS 16125RS○○						BXH2036-D50	**200**
ANXS 16063R○○	BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT	BXH1235-D18	**40**
ANXS 16080R○○						BXH1235-D33	**50**
ANXS 16100R○○						BXH1635-D40	**100**
ANXS 16125R○○						BXH2036-D50	**200**

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

ANXS 16000E type

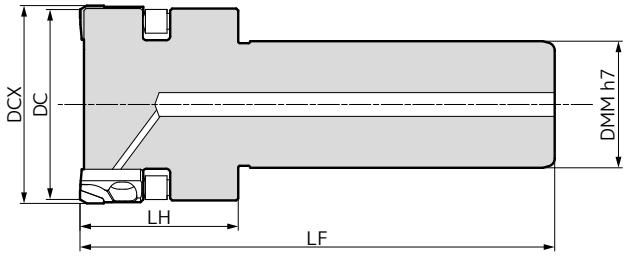
Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Face Milling Shoulder Milling Groove Milling

Fig 1





Body (Steel)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
ANXS 16025E02	★	**25**	23	20	35	95	2	0.2	1
16030E03	★	**30**	28	20	35	95	3	0.3	1
16030E04	★	**30**	28	20	35	95	4	0.3	1
16032E03	★	**32**	30	20	35	95	3	0.3	1
16032E04	★	**32**	30	20	35	95	4	0.3	1
16040E04	★	**40**	38	20	40	100	4	0.4	1
16040E06	★	**40**	38	20	40	100	6	0.5	1
16050E04	★	**50**	48	32	40	120	4	1.0	1
16050E06	★	**50**	48	32	40	120	6	1.0	1
16050E09	★	**50**	48	32	40	120	9	1.0	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Identification Code

ANX	S	16	032	E	04
Series Code	Steel Body	Blade Size	Max. Dia.	Shank type	Number of Teeth

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ANXS 16000E type

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G	★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1

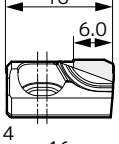


Fig 2

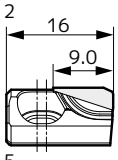


Fig 3

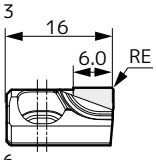
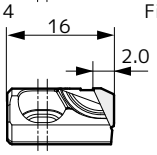
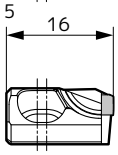


Fig 4



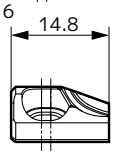
Wiper Blade

Fig 5



Wiper Blade

Fig 6



Dummy Blade

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The above are the recommended conditions for ANX series overall. Use within the maximum allowable spindle speed.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, refer to page H227.

Parts

Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench
	N·m			
BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS 16025E02	10,000
16030E03	10,000
16030E04	10,000
16032E03	10,000
16032E04	10,000
16040E04	10,000
16040E06	10,000
16050E04	10,000
16050E06	10,000
16050E09	10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HF series

VIDEO OF CUTTING



■ Features

The HF series high-efficiency cutter for aluminum alloys employs a unique blade design to achieve machining without burrs.
HFFH type with coolant holes is now available as a BBT30 (BIG-PLUS™) arbor integrated version.

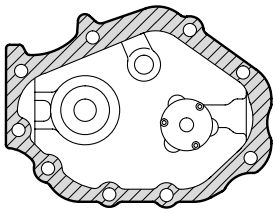
Work Material

· Aluminum and aluminum alloys
· Other non-ferrous metals
(Not suited for cast iron or steel.)

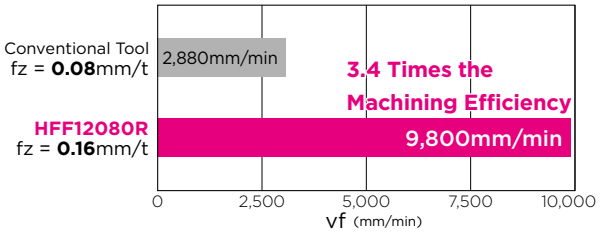


● Achieves high-efficiency milling with vf of over 20,000 mm/min thanks to its multi-blade design (3 teeth per inch)

High-feed, High-efficiency Milling with Multi-blade Design



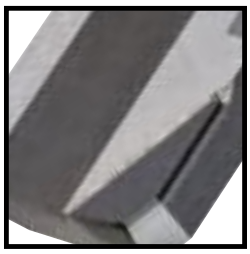
Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-tooth),
Conventional Tool (ø80 6-tooth)



● Maximum Allowable Spindle Speed and Feed Rate

Cutter Dia. (mm)	nmax (min⁻¹)	vc (m/min)	fz (mm/t)	Max. No. of Teeth (pcs.)	vf (mm/min)
ø80	11,000	2,763	up to 0.2	10	up to 22,000
ø100	9,500	2,983	up to 0.2	12	up to 22,800
ø125	7,500	2,944	up to 0.2	15	up to 22,500

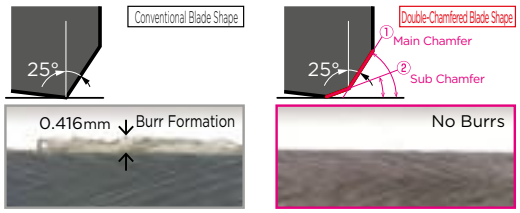
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.



● Reduces burrs by using a double-chamfered blade type

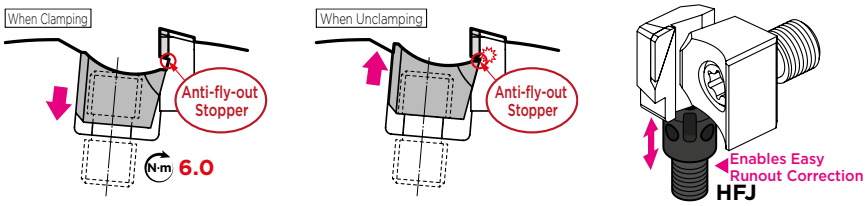
Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material : **A6061** Rolled Steel
Cutting Conditions : vc = **3,142**m/min, fz = **0.10**mm/t, ap = **0.5**mm, Dry





● Wedge clamp with anti-fly-out mechanism ensures safety and operability

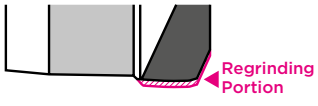


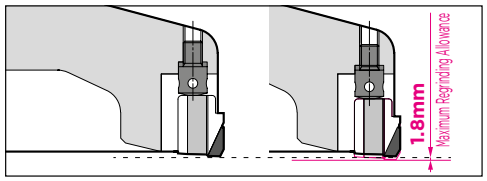
Ensure that the maximum allowable spindle speed (n max) specified for each cutter diameter is not exceeded. (See the table at upper right)



● Reduces running costs by drastically increasing blade regrinding allowance (to 1.8mm)

Assuming 0.2mm of regrinding each time, an edge can be used up to 10 times.
(Given conditions of normal wear with ap = **1.4**mm or less)





The regrinding allowance has been drastically increased compared to conventional screw-lock types.



● Internal coolant improves chip evacuation performance (HFFH type, HFFH-BBT30 type)

The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

*1: BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2: Can also be used with BT30 spindle machines.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

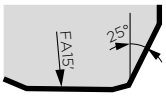
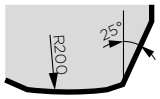
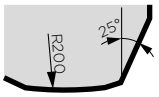
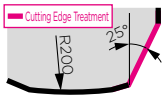
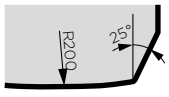
HF series

■ Product Range

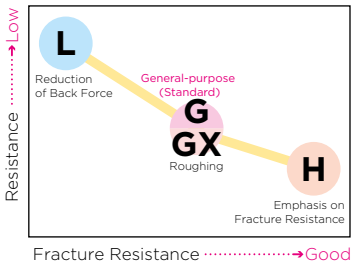
Type	Cat. No.	Dia. (mm) ø80	ø100	ø125
Shell	HFM 12000RS	6*	8	10*
	HFM 12000R (inch)	6	8*	10*
	HFF 12000RS	10*	12	15*
	HFF 12000R (inch)	10	12*	15*
	HFFH 12000RS	10*	12	15*
	HFFH 12000R (inch)	10	12*	15*
	HFFH 12000R-BBT30	10	12	15

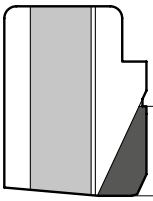
Number in ● shows the number of teeth (inch) Inch Bore * mark: Different diameter shanks available

■ Blade Selection Guide

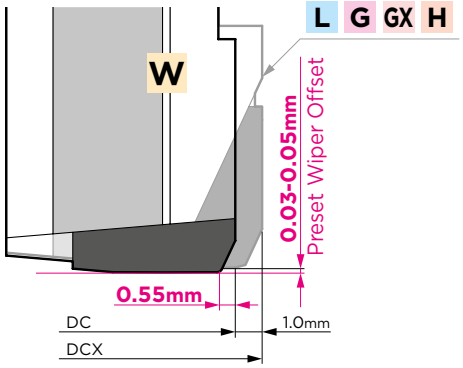
Work Material	N				
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	Finishing
Features	Low Cutting Force	Standard	Long Edge	High Strength	Wiper
Type	L type	G type	GX type	H type	W type
Cutting Edge Shape					
Edge Length (*)	6.0mm	6.0mm	9.0mm	6.0mm	2.0mm

■ Blade Selection Reference



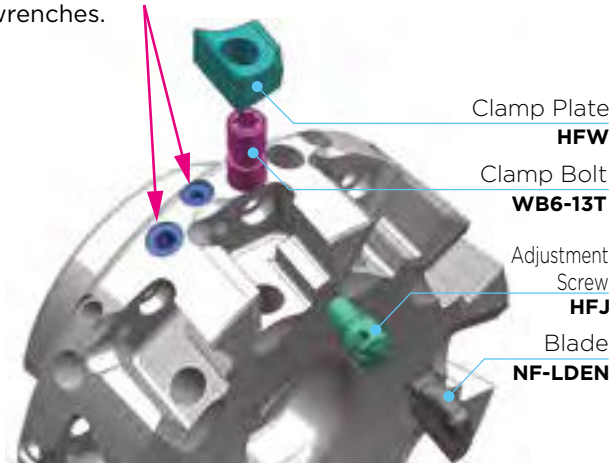


■ Wiper Blade Offset Position



■ Structure of HF series

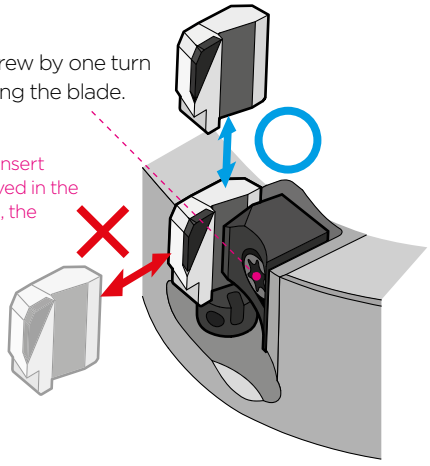
The axial set screw and balance adjustment screw hole have an embedded special material that prevents the insertion of screwdrivers or hex wrenches.



■ Blade Mounting Direction

Loosen the screw by one turn before removing the blade.

⚠ Note that if the insert is forcibly removed in the wrong direction, the part may break.



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFM 12000RS/R type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1

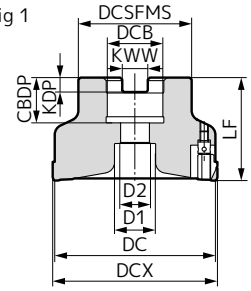


Fig 2

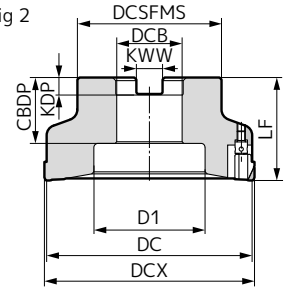
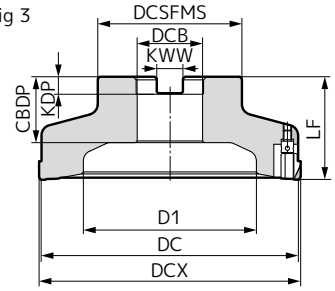


Fig 3



Body (Fine Pitch: 2-teeth/Inch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFM 12080RS-22**	★	**80**	82	50	40	**22**	10.4	6.3	20	18	11	6	1.0	1
	12080RS-27	★	**80**	82	55	50	**27**	12.4	7	22	20	14	6	1.2	1
	12100RS-32	★	**100**	102	70	50	**32**	14.4	8	32	54	—	8	1.7	2
	12125RS-32	★	**125**	127	70	50	**32**	14.4	8	32	84	—	10	2.2	3
	12125RS-40	★	**125**	127	90	63	**40**	16.4	9	35	84	—	10	2.8	3
Inch	**HFM 12080R-25.4**	★	**80**	82	50	50	**25.4**	9.5	6	30	35	—	6	1.0	2
	12100R-25.4	★	**100**	102	50	50	**25.4**	9.5	6	30	54	—	8	1.5	2
	12100R-31.75	★	**100**	102	70	50	**31.75**	12.7	8	32	54	—	8	1.7	2
	12125R-25.4	★	**125**	127	50	50	**25.4**	9.5	6	30	84	—	10	2.0	3
	12125R-31.75	★	**125**	127	70	50	**31.75**	12.7	8	32	84	—	10	2.2	3
	12125R-38.1	★	**125**	127	80	63	**38.1**	15.9	10	36	84	—	10	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	★	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	★	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	★	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	★	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	★	2.0	Arc-Shaped	Wiper	3

Fig 1

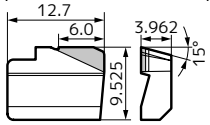


Fig 2

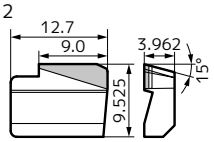
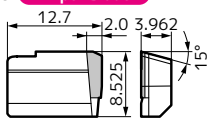


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	HFJ	TTX20	RFT	HFVT

Identification Code

HF M 12 080 R S - 22

Series Code	Fine Pitch	Blade Size	Dia.	Feed Direction	Metric Bore	Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HFF 12000RS/R type

Rake Angle	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1

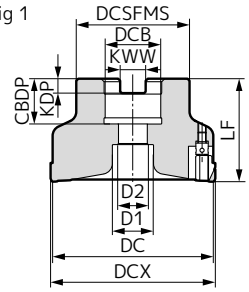


Fig 2

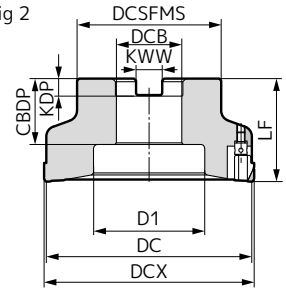
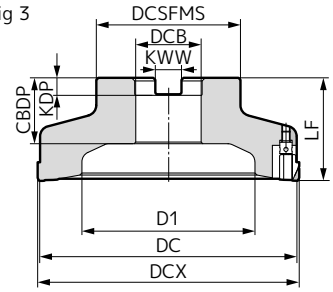


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFF 12080RS-22**	★	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	12080RS-27	★	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	12100RS-32	★	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	12125RS-32	★	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	12125RS-40	★	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFF 12080R-25.4**	★	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	12100R-25.4	★	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	12100R-31.75	★	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	12125R-25.4	★	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	12125R-31.75	★	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	12125R-38.1	★	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	★	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	★	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	★	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	★	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	★	2.0	Arc-Shaped	Wiper	3

Fig 1

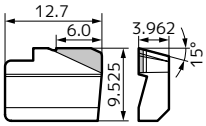


Fig 2

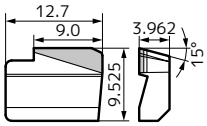
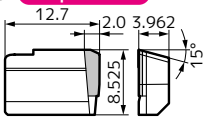


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	HFJ	TTX20	RFT	HFVT

Identification Code

HF F 12 080 R S - 22

Series Code	Extra Fine Pitch	Blade Size	Dia.	Feed Direction	Metric Bore	Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- For groove milling, adjust the feed rate to around 70% of the above values.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFFH 12000RS/R type

Rake Angle		
Radial	4°	
Axial	10°	

3mm 90°

Face Milling



Fig 1

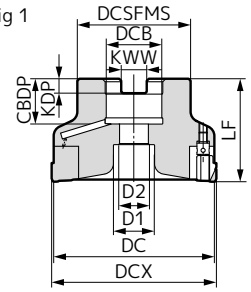


Fig 2

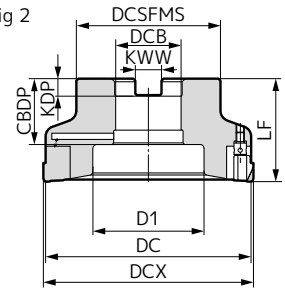
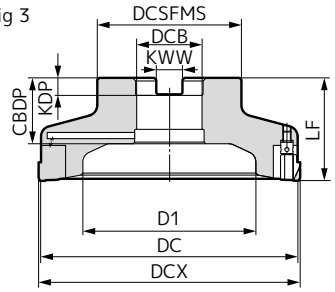


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFFH 12080RS-22**	★	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	12080RS-27	★	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	12100RS-32	★	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	12125RS-32	★	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	12125RS-40	★	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFFH 12080R-25.4**	★	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	12100R-25.4	★	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	12100R-31.75	★	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	12125R-25.4	★	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	12125R-31.75	★	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	12125R-38.1	★	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	★	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	★	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	★	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	★	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	★	2.0	Arc-Shaped	Wiper	3

Fig 1

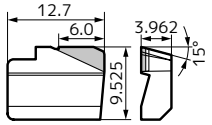


Fig 2

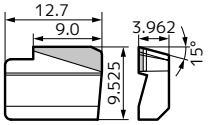
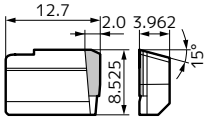
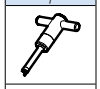


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	TTX20	HFJ	RFT	HFVT

Identification Code

HF	F	H	12	080	R	S	-	22
Series Code	Extra Fine Pitch	With Oil Hole	Blade Size	Dia.	Feed Direction	Metric Bore		Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFFH 12000R-BBT30 type

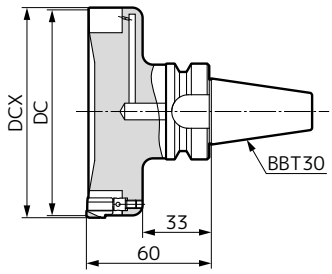
Rake Angle	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Number of Teeth	Weight (kg)	Fig
Inch	**HFFH 12080R-BBT30**	★	**80**	82	10	1.6	1
	12100R-BBT30	★	**100**	102	12	2.4	1
	12125R-BBT30	★	**125**	127	15	2.6	1

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	★	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	★	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	★	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	★	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	★	2.0	Arc-Shaped	Wiper	3

Fig 1

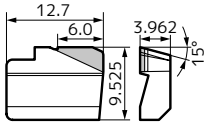


Fig 2

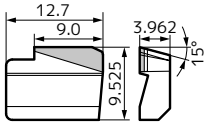
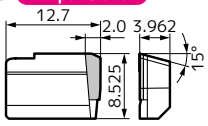


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	TTX20	HFJ	RFT	HFVT

Identification Code

HF **F** **H** **12** **080** **R** - **BBT30**

Series Code	Extra Fine Pitch	With Oil Hole	Blade Size	Dia.	Feed Direction	Supported Arbor Symbol

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

* BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
* Can also be used with BT30 spindle machines.

★ mark: Global stocked item
Blank: Made-to-order item
(N·m) Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

RF series



■ Features

The RF series cutter has a lightweight body designed for high-speed, high-performance roughing to finish milling of aluminum alloys and other non-ferrous metals.

■ Work Material

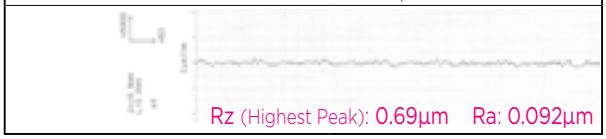
★ Aluminum and aluminum alloys
★ Other Non-Ferrous Metals

(Not suited for cast iron or steel.)

★ **From Roughing to Finishing Processes:** Roughing: Economical carbide insert / Finishing: High-precision SUMIDIA insert
★ **Strong and Lightweight Body:** Special aluminum alloy body. 40% lighter than steel cutters. Hard anodizing. Improved efficiency with higher spindle speeds, lower spindle loads and shorter tool change time
★ **Safety Design:** Prevents inserts from dislodging from cutter due to centrifugal force. (Speeds must be within max. recommended conditions) To prevent warping, wedges are not used in the cutter construction
★ **Easy Runout Adjustment:** External setting gauge is used for easy tool presetting. High-precision cutter construction - units fitted are within 10µm runout even before setting

■ Surface Finish

- Process: Finish Milling
- Machine: Vertical Machining Centre
- Arbor: HSK63A
- Work Material: Si 10 to 12% Al Alloy
- Cutter: RF4100R 6-tooth (1 Wiper)
- Grade: SUMIDIA (DA1000)
- vc = 4,990m/min
- n = 15,900min^{-1}
- vf = 11,400mm/min
- fz = 0.12mm/t
- ap = 0.5mm, Wiper ap = 0.03mm, Dry

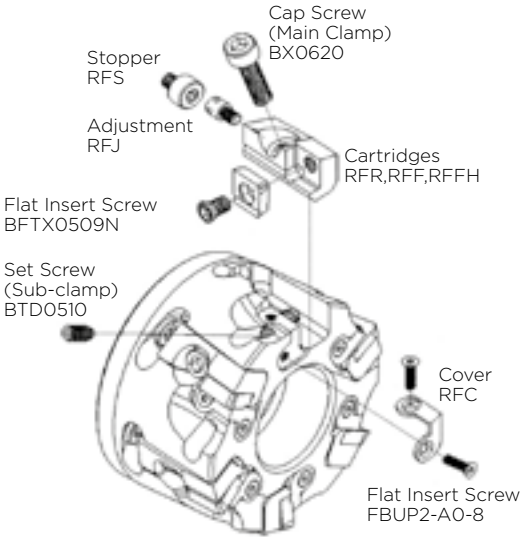


★ Maximum Allowable Spindle Speed

Cat. No.	n max (min $^{-1}$)
RF4080R	17,000
RF4100R	15,900
RF4125R	13,500
RF4160R	11,000
RF4200R	9,000
RF4250R	7,600
RF4315R	6,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Structure of RF series



■ Recommended Cutting Conditions

Si Content of 12% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05- **0.13** -0.20	DA1000 DA2200
		300-**650**-1,000	0.05- **0.13** -0.20	H1

Note
- The above are the recommended conditions for RF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12%

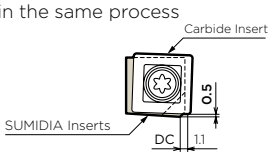
ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000 DA2200
		200- **300** -400	0.05- **0.13** -0.20	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

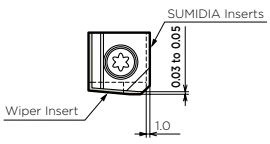
★ Recommended Cutting Edge Position

We recommend positioning as in the figure below when mounting carbide inserts or SUMIDIA inserts (blades).

● When roughing and finishing in the same process



● When using wiper edge



■ Product Range

Type	Cat. No.	Dia. (mm) ø80	ø100	ø125	ø160	ø200	ø250	ø315
Shell	RF 4000R (Inch)	6	6	8	10	12	16	18

Number in ●○ shows the number of teeth (Inch) Inch Bore

⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

As it is possible to mix different types of inserts/blades, it is important to take note of the following.

★ Do not mix reground and new inserts or inserts with a different regrinding allowance on the same cutter.
★ Carbide and SUMIDIA inserts must be arranged alternately.
★ When using a combination of SUMIDIA blades and inserts, ensure proper balance by mounting the same type of cutting edges on opposite sides of the cutter.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

RF 4000R type

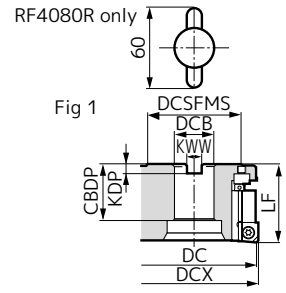
Rake Angle		
Radial	4°	
Axial	10°	

3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)

Face Milling





Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**RF 4080R**	★	**80**	82	60	50	**25.4**	9.5	6	30	6	0.7	1
	4100R	★	**100**	102	75	50	**31.75**	12.7	8	38	6	1.0	1
	4125R	★	**125**	127	75	63	**38.1**	15.9	10	38	8	1.6	1
	4160R	★	**160**	162	100	63	**50.8**	19.1	11	38	10	2.6	1
	4200R	★	**200**	202	130	63	**47.625**	25.4	14	42	12	3.6	2
	4250R		**250**	252	130	63	**47.625**	25.4	14	42	16	6.0	2
	4315R		**315**	317	240	80	**47.625**	25.4	14	42	18	11.0	2

Cartridges, blades and inserts are sold separately.
Use a flanged bolt to mount the cutter to the arbor.

Insert/Cartridge

Dimensions (mm)

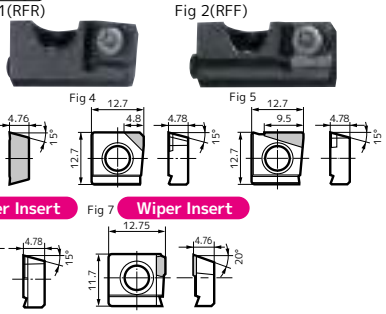
Grade Classification		Cemented Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed/Light Cutting	N	N	N	N	N
	Medium Cutting	N	N	N	N	
	Roughing	N	N	N	N	

Refer to page M68 for details of SUMICRYSTAL.

*When using large depth of cut (ap = 3mm or longer) with RF4080R, use the RFFH cartridge. (RFF is possible for normal cutting.)

ISO Cat. No.	H1	DL1000	DA1000	DA2200	SC10	Fig	Cartridges Cat. No.	Cartridges Stock	Fig
SDET 1204ZDFR	★	★	—	—	—	3	RFR	★	1
NF-SNEW 1204ADFR	—	—	★	▲	—	4	RFF	★	2
120404ADFR-H	—	—	★	—	—	5	RFF (Others) *RFFH(RF4080R)	★	2
1204ADFR-W	—	—	★	▲	—	6	RFF	★	2
SNEW 1204ADFR-WS	—	—	—	—	★	7	RFF	★	2

Cartridges
Fig 1(RFR)
Fig 2(RFF)



An "H" at the end of the part number indicates large depth of cut type, while "W" or "WS" indicates a wiper insert.

Parts

Cover	Stopper	Cap Screw		Set Screw		Flat Insert Screw	Adjustment	Flat Insert Screw		Wrench	Wrench
		Main Clamp	N·m	Sub-clamp	N·m	Cover Mounting			N·m	TH050 TH025 RFT	
RFC	RFS	BX0620	**10.0**	BTD0510	**3.0**	FBUP2-A0-8	RFJ	BFTX0509N	**5.0**	TH050 TH025 RFT	TTX20

Blades/Dummy Blades



Product Name	Cat. No.	SUMIDIA DA2200
SUMIDIA Blade	RFB	★
SUMIDIA Wiper Blade	RFBW	★
Dummy Blade	RFD	★(Steel)

Use dummy blades for unused teeth to protect the body as well as maintaining balance.

Setting Parts

Inserts can be set in the cartridge with high precision outside the machine in advance.



Setting Gauge
RF-SET
(Sold Separately/ Standard Stock)



Clamp Jig
RF-JIG
(Sold Separately/ Standard Stock)

*Dial gauge is not included.

Internal Coolant Attachments

For internal coolant supply, use an internal coolant holder or a commercially available clamp bolt with coolant holes. Typical examples are given in the table below. For specifications, contact each manufacturer directly.

Body Cat. No.	Internal Coolant Holders	Standard Clamp Bolt with Coolant Hole (Example)	
		MST Corporation	BIG DAISHOWA
RF 4080R	—	MBC-M12	TMBA-M12
RF 4100R	—	MBC-M16	TMBA-M16
RF 4125R	—	MBC-M20	TMBA-M20
RF 4160R	—	MBC-M24	TMBA-M24
RF 4200R	RF-CLT	—	—
RF 4250R	RF-CLT	—	—
RF 4315R	RF-CLT	—	—



Direction of Coolant Streams



Internal Coolant Holders
RF-CLT (Standard Stock)



Standard Clamp Bolt with Coolant Hole
[Typical Example] MBC-M12 to M24
(Sold Separately)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

SRF series



■ Features

The SRF series is ideal for aluminum alloy machining on high-performance small machines.

★ **Ideal for small machines**
Especially reliable on BT30 class small machines.

★ **From roughing to finishing processes**
Utilises SUMIDIA DA1000 inserts with effective cutting edge length of 5mm.

★ **Economical NF type inserts:**
NF type SUMIDIA inserts with tough DA1000 grade lower tooling costs.

★ **High-speed cutting with SUMIDIA:**
Maximum spindle speeds of up to n = 20,000min^{-1}
(Please operate within the maximum allowable spindle speed of the machine and holder used)
***The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.**

★ **Simple runout adjustment mechanism:**
Simple direct insert mounting design with easy fine-adjustment for runout precision.

■ Recommended Cutting Conditions

Si Content of 12% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	2,000- **3,000** -4,000	0.05- **0.13** -0.20	DA1000

Note
- The above are the recommended conditions for SRF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SRF type

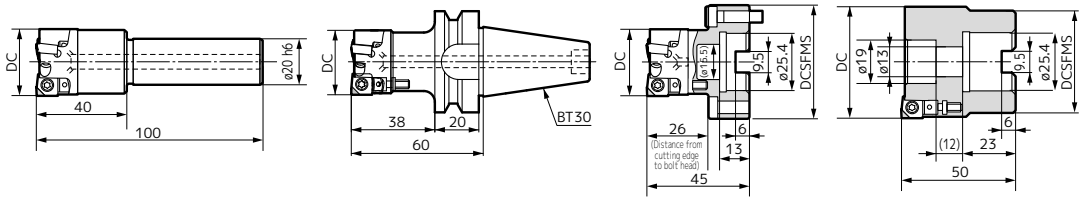
Rake Angle	Radial	-2° to 4°
	Axial	6°

5mm 90°

Face Milling Shoulder Milling

Fig 1 Fig 2 Fig 3 Fig 4





Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Number of Teeth	Weight (kg)	Fig
Inch	**SRF 30R-ST**	★	**30**	—	3	0.34	1
	40R-ST	★	**40**	—	4	0.50	1
	SRF 30R-BT30	★	**30**	—	3	0.57	2
	40R-BT30	★	**40**	—	4	0.72	2
	SRF 30R	★	**30**	**50.0**	3	0.27	3
	40R	★	**40**	**50.0**	4	0.35	3
	50R	★	*50	**46.5**	5	0.59	4
	63R	★	*63	**45.0**	6	0.67	4

Inserts are sold separately.

■ Product Range

Type	ISO Cat. No.	Dia. (mm) ø30	ø40	ø50	ø63
Shell	**SRF 30R(-ST)**	3			
	SRF 40R(-ST)		4		
	SRF 30R-BT30	3			
	SRF 40R-BT30		4		
	SRF 50R Inch			5	
	SRF 63R Inch				6

Number in ● shows the number of teeth Inch Inch Bore

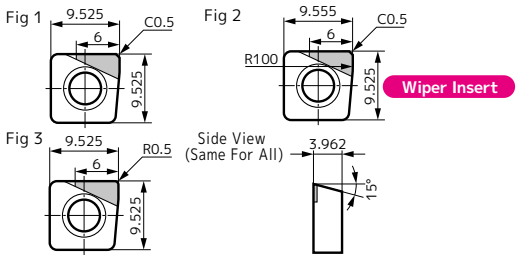
Note For mounting the cutters marked with * to an arbor, use a hex socket bolt (JIS B1176) M12 x 30 to 35mm.

Insert

Dimensions (mm)

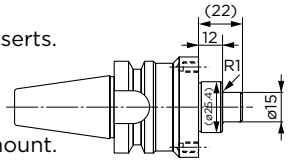
Grade Classification		SUMIDIA	
Process	High-speed/Light Cutting	N	N
	Medium Cutting	N	N
	Roughing	N	N

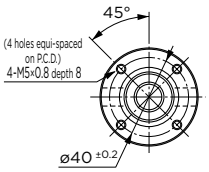
ISO Cat. No.	DA1000	DA2200	Cutting Edge Shape	Fig
NF-SNEW 09T3ADTR	★	▲	Standard	1
09T3ADTR-U	★	▲	Wiper Flat	2
09T3ADTR-R	★	▲	Corner Radius	3



Recommended Cutting Conditions H240

- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with corner radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 9.225mm), but the cutting edge height changes by the reground amount.
- Do not mix new and reground inserts or inserts with different regrind amounts on the same cutter.
- When using reground inserts, it is advisable to re-confirm cutting edge position with a tool pre-setter.
- Arbor for SRF30R, SRF40R





When using SRF30R and SRF40R cutters, the arbor needs to be modified as shown above.
(1. Reduce part of the arbor's adapter shaft length from ø25.4 to ø15.
2. Add 4 tap holes for (M5) mounting bolts.)
Use hex socket bolts M5 × 20mm for securing the body.

Maximum Depth of Cut (SRF50R, 5-teeth)

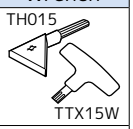
The table below contains guidelines on the maximum depth of cut, determined from internal tests. 'O' marks indicate the possible application range. Actual cutting conditions should be set based on the actual machine and workpiece characteristics.

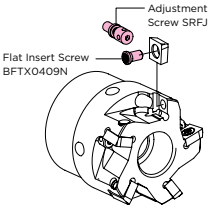
Depth of Cut ap (mm) \ Feed Rate	Feed Rate (vf) (mm/min) 2,500	4,000	5,000
	Feed Rate Per Tooth (fz) (mm/t) 0.05	0.08	0.10
0.5	○	○	○
1.0	○	○	○
1.5	○	○	○
2.0	○	○	○
2.5	○	○	○
3.0	○	○	○
3.5	○	○	—
4.0	○	—	—
4.5	○	—	—
5.0	○	—	—

Cutting Conditions
Cutter : SRF50R
Insert : NF-SNEW 09T3ADTR (DA1000)
n = 10,000min^{-1}
Arbor : BT30 FMA25.4-45
Workpiece : A-5052
Width : Maximum depth of cut at 35mm



Parts

Flat Insert Screw		Adjustment Screw	Wrench
	N·m		 TH015 TTX15W
BFTX0409N	**4.0**	SRFJ	TH015 TTX15W



★mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

WAX series



■ Features

- ● Ideal for Roughing to Finishing of Non-ferrous Metals such as Aluminum Alloy
- ● Excellent Adhesion Resistance
  Top rake face of the insert has a lapped finish
  AURORA (DLC) Coat grade - DL1000, for improved adhesion resistance also available
- ● Safety Design
  Prevents dislodging of inserts caused by centrifugal force
- ● Coolant Compatible
  Coolant holes are a standard feature for the whole series

■ Product Range

Type	ISO Cat. No.	Dia. (mm) ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125
Shell	WAX 3000-3.2					4	5			
	WAX 3000-3.2 inch							5	6	7
	WAX 3000-4.0					4	4			
	WAX 3000-4.0 inch							5	6	7
	WAX 4000-3.2					2	3			
	WAX 4000-3.2 inch							4	5	6
	WAX 4000-4.0					2	3			
	WAX 4000-4.0 inch							4	5	6
Shank	WAX 3000E-3.2	1	2	2	3					
	WAX 3000EL-3.2		2	2	3					
	WAX 3000E-4.0	1	2	2	3					
	WAX 3000EL-4.0		2	2	3					
	WAX 4000E-3.2		1	1	2					
	WAX 4000EL-3.2		1	1	2					
	WAX 4000E-4.0		1	1	2					
	WAX 4000EL-4.0		1	1	2					

Number in ●● shows the number of teeth inch Inch Bore

■ Grade Features

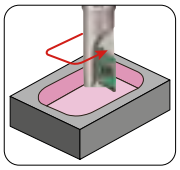
Work Material	Grade	Coating Thickness (μm)	Features
N Non-Ferrous Metal	DL1000	0.5	Coating with an extremely low coefficient of friction and excellent resistance to aluminum adhesion, provides stable cutting edge sharpness and chip evacuation. In combination with a dedicated carbide substrate for non-ferrous metals, wear resistance is further improved.

■ Grade Application Range

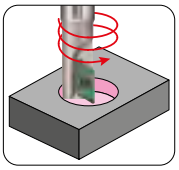
Work Material		Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
N Non-Ferrous Metal	Coated Carbide	DL1000		

■ Suitable for Various Applications

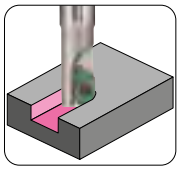
Pocket Expansion



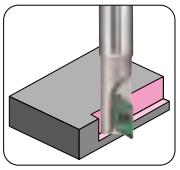
Helical Milling



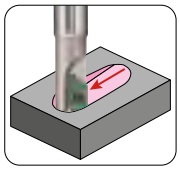
Groove Milling



Shoulder Milling

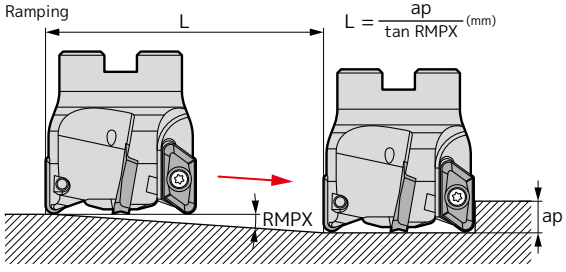


Ramping

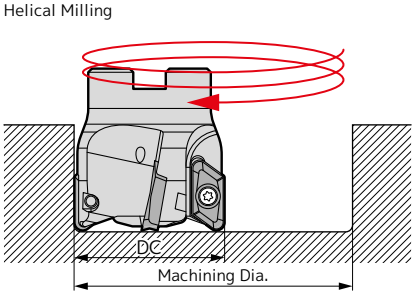


■ Ramping/Helical Milling Upper Limit and Allowable Maximum Spindle Speed

Ramping



Helical Milling



Dia. DC (mm)	Ramping: WAX3000 type Max. Ramping Angle RMPX (°)	Ramping: WAX4000 type Max. Ramping Angle RMPX (°)	Helical Milling: WAX3000 type Min. Machining Dia. (mm)	Helical Milling: WAX3000 type Max. Machining Dia. (mm)	Helical Milling: WAX4000 type Min. Machining Dia. (mm)	Helical Milling: WAX4000 type Max. Machining Dia. (mm)	Maximum Allowable Spindle Speed: WAX3000 type n max (min⁻¹)	WAX3000 type vc (m/min)	WAX4000 type n max (min⁻¹)	WAX4000 type vc (m/min)
20	28	—	22	33	—	—	14,000	880	—	—
25	17	26	29	43	27	43	29,000	2,200	11,000	860
32	12	18.5	43	57	38	57	25,000	2,500	9,000	900
40	9	13	59	73	54	73	23,000	2,900	20,000	2,500
50	7	9.5	79	93	74	93	20,000	3,100	18,000	2,800
63	5	7	105	119	100	119	18,000	3,500	16,000	3,100
80	3	5	139	153	134	153	16,000	4,000	14,000	3,500
100	3	4	179	193	174	193	14,000	4,400	12,000	3,700
125	2	3	229	243	224	243	13,000	5,100	11,000	4,300

*Maximum ramping angle (RMPX) depends on cutter diameter DC (mm). Minimum milling distance (L) for any depth of cut can be calculated by the equation above.
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

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▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WAX 3000 type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

16-18mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

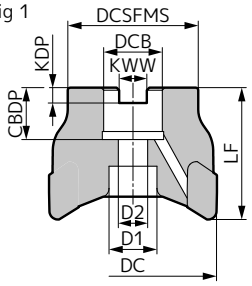


Fig 2

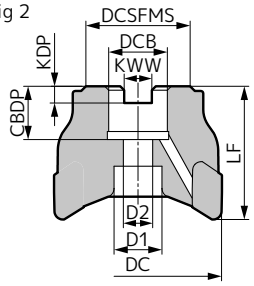
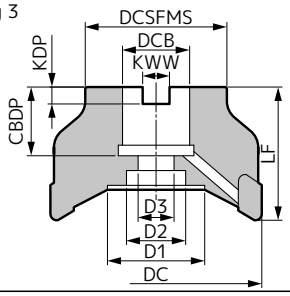


Fig 3



Body (Shell type for RE = 3.2 and below)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 3050-3.2**	★	**50**	**42**	50	**22.0**	10.4	6.3	21	18	11	—	4	0.34	1
	3063-3.2	★	**63**	**42**	50	**22.0**	10.4	6.3	21	18	11	—	5	0.6	2
Inch	**WAX 3080-3.2**	★	**80**	**57**	50	**25.4**	9.5	6.0	25	35	26	14	5	1.0	3
	3100-3.2	★	**100**	**67**	63	**31.75**	12.7	8.0	32.5	46	28	17	6	2.2	3
	3125-3.2	★	**125**	**87**	63	**38.1**	15.9	10	35.5	30	21	—	7	3.5	1

Body (Shell type for RE = 4.0 and above)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 3050-4.0**	★	**50**	**42**	50	**22**	10.4	6.3	21	18	11	—	4	0.34	1
	3063-4.0	★	**63**	**42**	50	**22**	10.4	6.3	21	18	11	—	4	0.6	2
Inch	**WAX 3080-4.0**	★	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	5	1.0	3
	3100-4.0	★	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	6	2.2	3
	3125-4.0	★	**125**	**87**	63	**38.1**	15.9	10	35.5	30	21	—	7	3.5	1

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

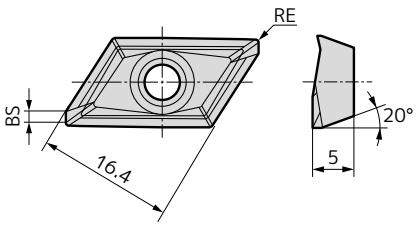
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

ISO Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 160404PEFRA	★	★	18	1.4	0.4	1
160408PEFRA	★	★	18	1.0	0.8	1
160412PEFRA	★	★	18	0.6	1.2	1
160416PEFRA	★	★	17.5	0.5	1.6	1
160420PEFRA	★	★	17.5	0.5	2.0	1
160430PEFRA	★	★	17	0.7	3.0	1
160432PEFRA	★	★	17	0.5	3.2	1
AECT 160440PEFRA	★	★	16.5	0.5	4.0	1
160450PEFRA	★	★	16	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0408	**3.0**	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX3000 type overall. Use within the maximum allowable spindle speed.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WAX 3000E/EL type

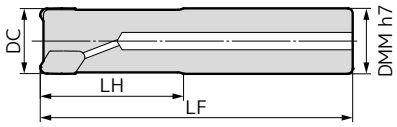
Rake Angle	Radial	6°
	Axial	19° to 25°

16-18mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Shank type RE = 3.2 or less)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 3020E -3.2	★	**20**	20	130	60	1	0.25	1
3025E -3.2	★	**25**	25	140	60	2	0.42	1
3025EL-3.2	★	**25**	25	200	60	2	0.63	1
3032E -3.2	★	**32**	32	150	70	2	0.75	1
3032EL-3.2	★	**32**	32	220	70	2	1.2	1
3040E -3.2	★	**40**	32	160	70	3	1.0	1
3040EL-3.2	★	**40**	32	220	70	3	1.4	1

Inserts are sold separately.

Body (Shank type RE = 4.0 or above)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 3020E -4.0	★	**20**	20	130	60	1	0.25	1
3025E -4.0	★	**25**	25	140	60	2	0.42	1
3025EL-4.0	★	**25**	25	200	60	2	0.63	1
3032E -4.0	★	**32**	32	150	70	2	0.75	1
3032EL-4.0	★	**32**	32	220	70	2	1.2	1
3040E -4.0	★	**40**	32	160	70	3	1.0	1
3040EL-4.0	★	**40**	32	220	70	3	1.4	1

Inserts are sold separately.

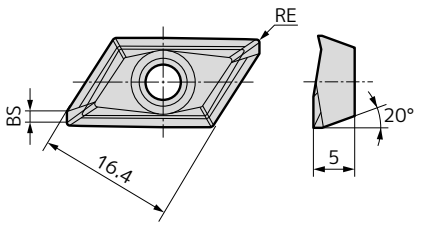
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

ISO Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 160404PEFRA	★	★	18	1.4	0.4	1
160408PEFRA	★	★	18	1.0	0.8	1
160412PEFRA	★	★	18	0.6	1.2	1
160416PEFRA	★	★	17.5	0.5	1.6	1
160420PEFRA	★	★	17.5	0.5	2.0	1
160430PEFRA	★	★	17	0.7	3.0	1
160432PEFRA	★	★	17	0.5	3.2	1
AECT 160440PEFRA	★	★	16.5	0.5	4.0	1
160450PEFRA	★	★	16	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WAX3020E type	BFTX0407K	3.0	TRD15	SUMI-P
Other than above	BFTX0408			

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX3000 type overall. Use within the maximum allowable spindle speed.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WAX 4000 type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

22-24mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

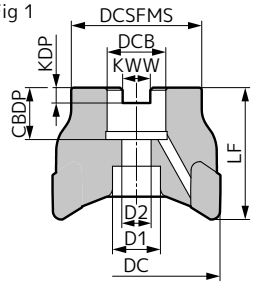


Fig 2

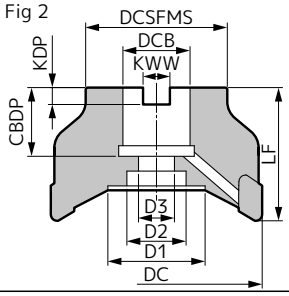
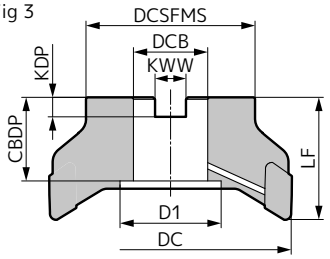


Fig 3



Body (Shell type for RE = 3.2 and below)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 4050-3.2**	★	**50**	**42**	50	**16**	8.4	5.6	18	14	9	—	2	0.37	1
	4063-3.2	★	**63**	**49**	50	**22**	10.4	6.3	21	18	11	—	3	0.54	1
Inch	**WAX 4080-3.2**	★	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	4	0.81	2
	4100-3.2	★	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	5	1.7	2
	4125-3.2	★	**125**	**87**	63	**38.1**	15.9	10	43	52	—	—	6	2.6	3

Body (Shell type for RE = 4.0 and above)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 4050-4.0**	★	**50**	**42**	50	**16**	8.4	5.6	18	14	9	—	2	0.38	1
	4063-4.0	★	**63**	**49**	50	**22**	10.4	6.3	21	18	11	—	3	0.54	1
Inch	**WAX 4080-4.0**	★	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	4	0.83	2
	4100-4.0	★	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	5	1.7	2
	4125-4.0	★	**125**	**87**	63	**38.1**	15.9	10	43	52	—	—	6	2.8	3

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

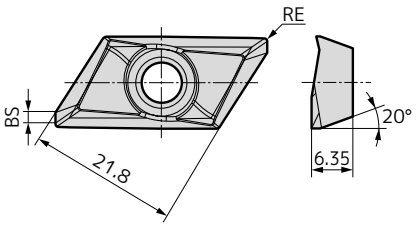
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

ISO Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 220604PEFRA	★	★	24	1.5	0.4	1
220608PEFRA	★	★	24	1.2	0.8	1
220612PEFRA	★	★	24	0.8	1.2	1
220616PEFRA	★	★	24	0.4	1.6	1
220620PEFRA	★	★	24	0.5	2.0	1
220630PEFRA	★	★	23	0.6	3.0	1
220632PEFRA	★	★	23	0.4	3.2	1
AECT 220640PEFRA	★	★	22	1.2	4.0	1
220650PEFRA	★	★	22	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0511N	**5.0**	TRD20	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX4000 type overall. Use within the maximum allowable spindle speed.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WAX 4000E/EL type

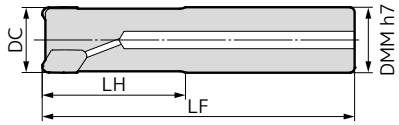
Rake Angle		
	Radial	6°
	Axial	19° to 25°

22-24mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (RE = 3.2 or less)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WAX 4025E -3.2	★	**25**	25	60	140	1	0.41	1
4025EL-3.2	★	**25**	25	60	200	1	0.63	1
4032E -3.2	★	**32**	32	70	150	1	0.72	1
4032EL-3.2	★	**32**	32	70	220	1	1.2	1
4040E -3.2	★	**40**	32	70	160	2	0.88	1
4040EL-3.2	★	**40**	32	70	220	2	1.2	1

Body (RE = 4.0 or more)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WAX 4025E -4.0	★	**25**	25	60	140	1	0.41	1
4025EL-4.0	★	**25**	25	60	200	1	0.63	1
4032E -4.0	★	**32**	32	70	150	1	0.72	1
4032EL-4.0	★	**32**	32	70	220	1	1.2	1
4040E -4.0	★	**40**	32	70	160	2	0.88	1
4040EL-4.0	★	**40**	32	70	220	2	1.2	1

Inserts are sold separately.

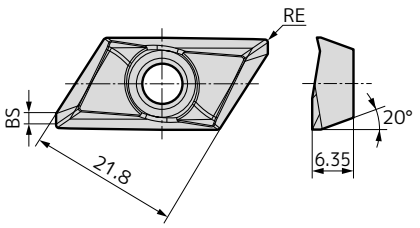
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

ISO Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 220604PEFRA	★	★	24	1.5	0.4	1
220608PEFRA	★	★	24	1.2	0.8	1
220612PEFRA	★	★	24	0.8	1.2	1
220616PEFRA	★	★	24	0.4	1.6	1
220620PEFRA	★	★	24	0.5	2.0	1
220630PEFRA	★	★	23	0.6	3.0	1
220632PEFRA	★	★	23	0.4	3.2	1
AECT 220640PEFRA	★	★	22	1.2	4.0	1
220650PEFRA	★	★	22	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WAX4025E/EL type, WAX4032E/EL type	BFTX0509N	5.0	TRD20	SUMI-P
WAX4040E/EL type	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX4000 type overall. Use within the maximum allowable spindle speed.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

FMU type/FMU-E type

Rake Angle		
Radial	2°	
Axial	8°	

0.5mm 45°

Face Milling



Fig 1

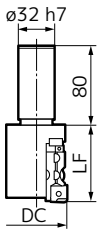


Fig 2

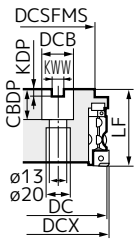


Fig 3

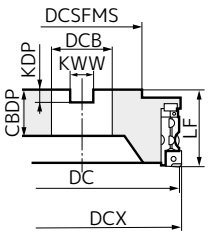


Fig 4

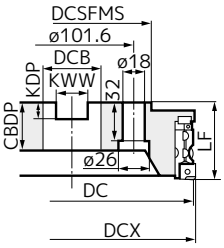
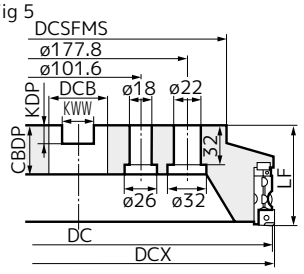


Fig 5



Body

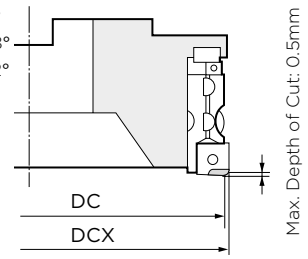
Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU 4040ER**	★	37.2	**40**	—	63	—	—	—	—	2	1.0	1
	4050ER	★	47.2	**50**	—	63	—	—	—	—	3	1.2	1
	4063ER	★	60.2	**63**	60	63	**25.4**	9.5	6	25	4	1.0	2
	FMU 4080R	★	**80**	82.8	60	63	**25.4**	9.5	6	25	6	1.7	2
	4100R	★	**100**	102.8	76	63	**31.75**	12.7	8	38	8	2.5	3
	4125R	★	**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.9	3
	4160R	★	**160**	162.8	100	63	**50.8**	19.1	11	38	12	6.3	3
	4200R	★	**200**	202.8	130	63	**47.625**	25.4	14	40	16	9.3	4
	4250R		**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.5	4
	4315R		**315**	317.8	240	80	**47.625**	25.4	14	40	24	25.0	5

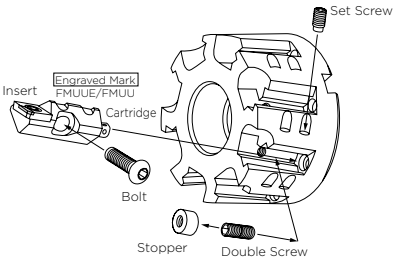
Inserts are sold separately.

Max. Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle: +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing			
ISO Cat. No.		BN7125	BN7000	Fig
SNEW1203ADTR		★	▲	1
1203ADTR-S		★	▲	2

-S denotes a low-thrust insert.

Fig 1

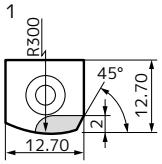
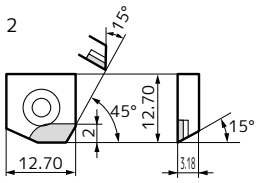


Fig 2



Cartridges

Cartridges	Flat Insert Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			 (For Flat Insert Screw)	
FMUU(E)*	BFTX0509N	**5.0**	FMUJ	P3	TTX20	TH015

*FMU4040ER/4050ER/4063ER use FMUUE type cartridges.
*FMUU/FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

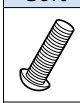
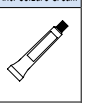
Setting Gauge



FMU-SET (Sold Separately)

*Dial gauge is not included.

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)	Anti-seizure Cream
				 (For Cartridges)	 (For Set Screws)	 (For Stoppers)	
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025	SUMI-P

*FMU4040ER, 4050ER and 4063ER use BH0615 bolts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800-**1,400**-2,000	0.10-**0.20**-0.30	BN7125(Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
Blank: Made-to-order item
N·m Recommended Tightening Torque (N·m)
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available

FM(F) type

K Cast Iron

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 45°

Face Milling



Fig 1

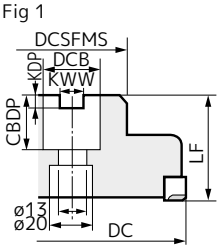


Fig 2

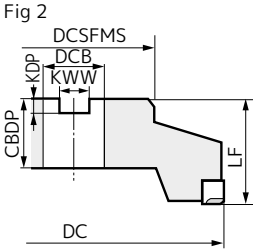


Fig 3

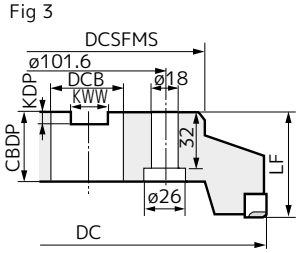
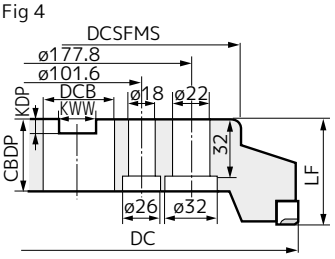


Fig 4



High-speed Finishing for Cast Iron

● **Specially designed cutting edge shape combined with SUMIBORON grade for cast iron machining, realising high-speed milling of grey cast iron.**

Body

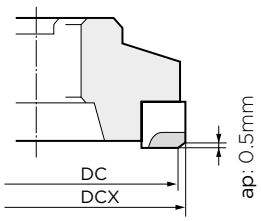
Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FM 5080 R/L**	★		**80**	82.8	60	50	**25.4**	9.5	6	25	6	1.6	1
	5100 R/L	★		**100**	102.8	75	50	**31.75**	12.7	8	32	8	2.4	2
	5125 R/L	★		**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.4	2
	5160 R/L	★		**160**	162.8	100	63	**50.8**	19.1	11	38	12	5.6	2
	5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	16	8.3	3
	5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.3	3
	5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	24	27.8	4
	FMF 5125 R/L			**125**	127.8	75	63	**38.1**	15.9	10	38	12	3.4	2
	5160 R/L			**160**	162.8	100	63	**50.8**	19.1	11	38	16	5.6	2
	5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	20	8.3	3
	5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	24	14.3	3
	5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	28	27.8	4

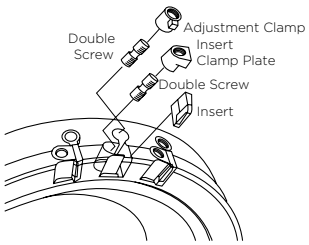
Inserts are sold separately.

Body

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle: +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON				
Process	High-speed/Light Cutting	K		K		
	Medium Cutting	K		K		
	Roughing					
ISO Cat. No.		BN7125 R	BN7125 L	BN7000 R	BN7000 L	Fig
SNEN 1504ADT R/L		★		▲		1
1504ADT R/L-S		★		▲		2

Fig 1

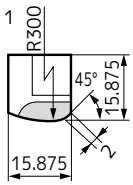
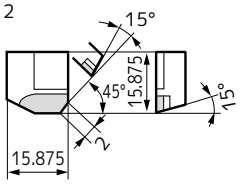


Fig 2



Parts

Applicable Cutter	Insert Clamp Plate	Adjustment Clamp	Adjustment Screw	Double Screw	Wrench	Wrench
FM(F) 5080R/L	FMW	—	FMJ	WB7F-20TL	TT25	1.8 x 45
FM(F) 5100R/L to FM(F) 5315R/L		FME	—			—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RM type

Rake Angle		
Radial	-6° 45'	
Axial	-5° 45'	

3mm 75°

Face Milling



Fig 1

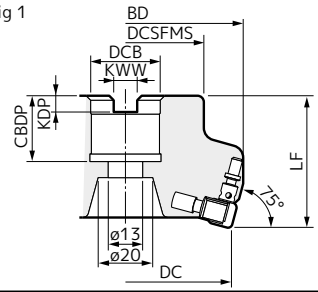
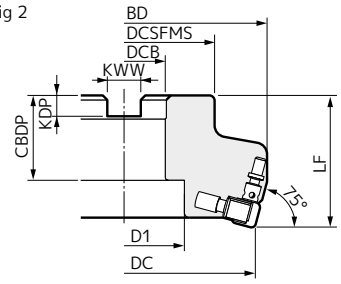


Fig 2



For High-speed, High-efficiency Milling of Cast Iron

● High-efficiency Milling of Grey Cast Iron
- Utilises solid SUMIBORON for high-speed cutting of vc = 1,500m/min
- High speed roughing with depth of cut up to 3.0mm
- Wiper insert for high-speed finishing

● Low Cost
- Economical double-sided insert with 8 usable corners
- Insert can be reground and used again

● Simple Runout Adjustment Mechanism
- Simple design for direct insert mounting
- Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Maximum Spindle Speed (min^{-1})	Weight (kg)	Fig
Inch	**RM 3080R**		**80**	90	60	50	**25.4**	9.5	6	25	—	6	9,000	1.6	1
	RM 3100R		**100**	110	70	50	**31.75**	12.7	8	32	46	8	8,000	2.1	2
	3125R		**125**	135	80	63	**38.1**	15.9	10	38	59	10	7,000	3.9	2
	3160R		**160**	170	100	63	**50.8**	19.1	11	38	80	12	6,000	5.9	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing	K	K	
ISO Cat. No.		BNS8125	BNC8115	Fig
SNGN 090308		★	★	1
090312		★	★	1
SNEN 090308W		★	★	2

Fig 1

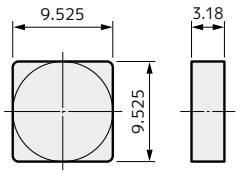
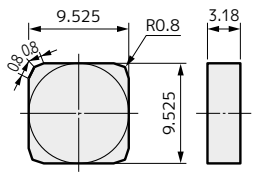
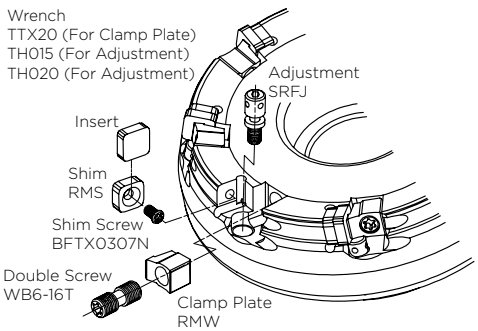


Fig 2 Wiper Insert





⚠ Precautions for Use
- Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts.
- Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

For hardened steel machining, use the SEC-ACE MILL DNF series.
Body: H45 Insert: L125

Parts

Shim	Shim Screw		Clamp Plate	Double Screw	Adjustment	Wrench (For Clamp Plate)	Wrench (For Adjustment)	Wrench (For Adjustment)
		N·m						
RMS	BFTX0307N	**2.0**	RMW	WB6-16T	SRFJ	TTX20	TH015	TH020

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800-**1,150**-1,500	0.05-**0.13**-0.20	BNS8125 (Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
Blank: Made-to-order item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

Modular Tools H

H251 to H272

		SEC-Modular Tools	H252
Shoulder Milling	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WEZ series	H254
	For High-feed Milling of Steel, Die Steel, Cast Iron, and Stainless Steel	SEC-WaveMill WEZR series	H258
	For High-efficiency Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WEX series	H262
	For Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFX series	H264
High-Feed	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-Sumi Dual Mill DMSL series	H265
	For High-feed Milling of Steel, Die Steel, Cast Iron, and Stainless Steel	SEC-Sumi Dual Mill DMSW series	H266
	For High-feed Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFXH series	H267
	For High-feed Milling of Steel, Cast Iron and Stainless Steel	SEC-Metal Slash Mill MSX series	H268
Radius	For Exotic Alloy	SEC-Wave Radius Mill RSX(F) series	H269
	For Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-Wave Radius Mill WRCX series	H270
Chamfering	For Chamfering of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFXC series	H271
Non-Ferrous Metal	For High-speed, High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	ALNEX ANXS series	H272

Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Modular Tools



■ Features

- 12 indexable modular head types available!

WEZ type　DMSL type　RSX type
WEZR type　DMSW type　WRCX type
WEX type　WFXH type　WFXC type
WFX type　MSX type　ANXS type

- In addition to carbide arbors and steel arbors, the lineup of integrated BBT types enables a variety of combinations
- General-purpose grade applicable to any work material Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron.

Suitable for milling with ***long overhangs*** *when combined with carbide or steel arbors*

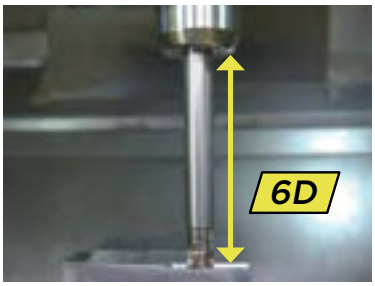
When combined with BBT integrated arbors, ***high load milling*** *is supported*

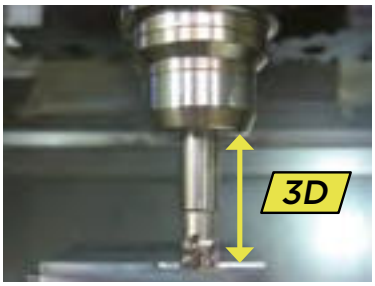
Easy-to-replace screw-on design





Modular type + Carbide Arbor　Standard type (Integrated Arbor)





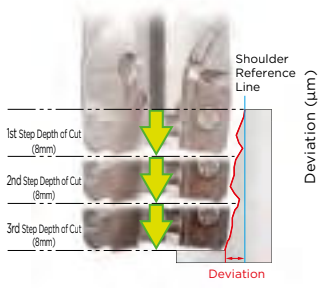
■ Screw Size and Mounting Cutter Size

Screw **CRKS**	Applicable Cutter Size (DC)
M8	ø16, ø18
M10	ø20, ø22
M12	ø24, ø28
M16	ø30, ø32, ø35, ø40

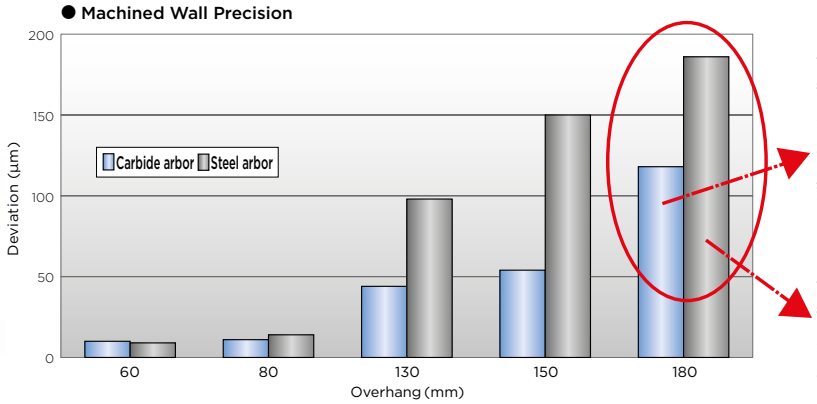
Note: Overhang varies depending on cutting conditions such as the tool used, machine rigidity and work clamp rigidity.

■ Cutting Performance

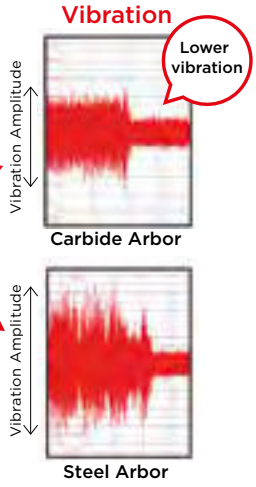
● Carbide arbors achieve greater precision and stable milling compared to steel arbors



● Machined Wall Precision



Vibration



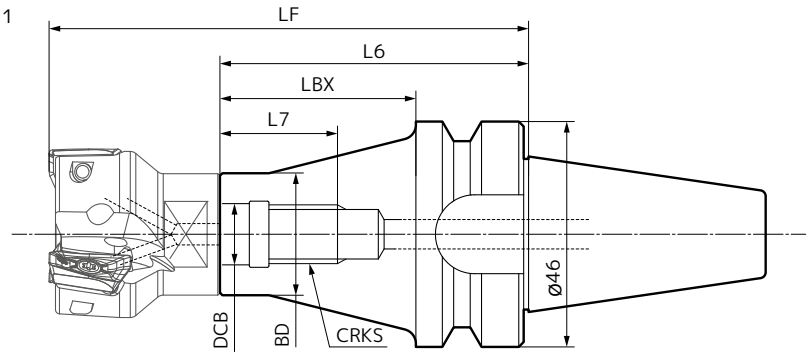
Work Material	: S50C
Tool	: WEX2025M12Z4 (ø25 x 4-tooth)
Cutting Conditions	: vc = 100m/min fz = 0.1mm/t ap = 8mm x 3 Passes ae = 2.0mm Machine: Machining Centre BT50

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BBT Integrated type - SEC-Modular Tools Special Arbors



Fig 1



BBT Integrated Arbor

Dimensions (mm)

ISO Cat. No.	Stock	Screw CRKS	Hole Dia. DCB	External Dia. BD	Body Overhang L6	Length LBX	Thread Depth L7	Overhang LF*1	Coolant Hole	Fig
BBT30-M8-50	★	**M8**	8.5	15.9	72	50	18	97	Yes	1
M10-45	★	**M10**	10.5	19.9	67	45	20	97	Yes	1
M12-40	★	**M12**	12.5	24.9	62	40	22	97	Yes	1
M16-35	★	**M16**	17	31.9	57	35	24	97	Yes	1

*1: Overhang length for LF is with head mounted.
Can also be used with BT30 spindle machines.

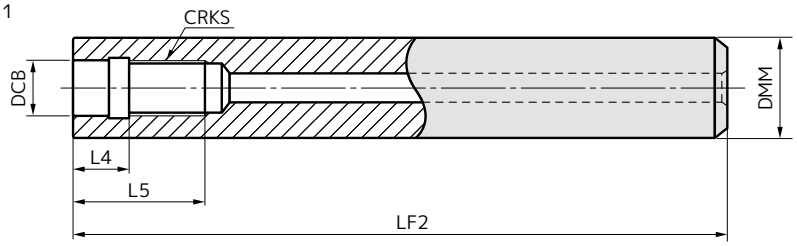
SEC-Modular Tools - Special Arbors (Carbide Arbor/Steel Arbor)

Carbide Arbor



Steel Arbor

Fig 1



Carbide Arbor

Dimensions (mm)

ISO Cat. No.	Stock	Screw CRKS	Hole Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*2	Fig
MA15M08L120C	★	**M8**	8.5	15	120	10	18	145	1
15M08L160C	★	**M8**	8.5	15	160	10	18	185	1
16M08L120C	★	**M8**	8.5	16	120	10	18	145	1
16M08L160C	★	**M8**	8.5	16	160	10	18	185	1
MA18M10L150C	★	**M10**	10.5	18	150	10	20	180	1
18M10L200C	★	**M10**	10.5	18	200	10	20	230	1
20M10L150C	★	**M10**	10.5	20	150	10	20	180	1
20M10L200C	★	**M10**	10.5	20	200	10	20	230	1
MA23M12L200C	★	**M12**	12.5	23	200	10	22	235	1
23M12L250C	★	**M12**	12.5	23	250	10	22	285	1
25M12L200C	★	**M12**	12.5	25	200	10	22	235	1
25M12L250C	★	**M12**	12.5	25	250	10	22	285	1
MA28M16L200C	★	**M16**	17	28	200	10	24	240	1
28M16L300C	★	**M16**	17	28	300	10	24	340	1
32M16L200C	★	**M16**	17	32	200	10	24	240	1
32M16L300C	★	**M16**	17	32	300	10	24	340	1

Steel Arbor

Dimensions (mm)

ISO Cat. No.	Stock	Screw CRKS	Hole Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*2	Fig
MA16M08L120S	★	**M8**	8.5	16	120	10	18	145	1
20M10L150S	★	**M10**	10.5	20	150	10	20	180	1
25M12L200S	★	**M12**	12.5	25	200	10	22	235	1
32M16L200S	★	**M16**	17	32	200	10	24	240	1

Identification Code

MA 15 **M08** **L120** **C**

Series Code	Shank Dia.	Mounting Screw Size	Arbor Overall Length	Arbor Materials (C: Carbide S: Steel)

● Set Dimensions (*2)



Recommended Tightening Torque (N·m)

***Take care when tightening the head.**

· When mounting the head to an arbor, follow the standard tightening torque in the table below.
· Check the mounting screw size for the head and arbor beforehand.

Screw Size	Regulated Tightening Torque (N·m)
M8	**23**
M10	**46**
M12	**60**
M16	**80**



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 11000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

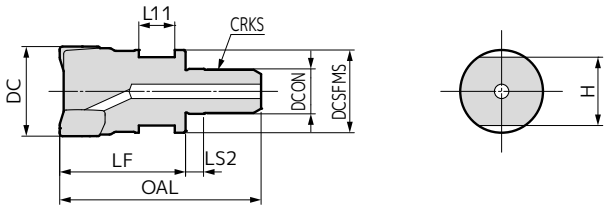
Rake Angle	Radial	-7° to -18°
	Axial	6° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling

Fig 1





Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
WEZ 11016M08Z2	★	16	14.5	8.5	**M8**	42(41.7)	25(24.7)	5	8	13	2	0.03	1
11018M08Z2	★	18	14.5	8.5	**M8**	42(41.7)	25(24.7)	5	8	13	2	0.03	1
11020M10Z2	★	20	18.0	10.5	**M10**	49(48.7)	30(29.7)	5	8	15	2	0.06	1
11020M10Z3	★	20	18.0	10.5	**M10**	49(48.7)	30(29.7)	5	8	15	3	0.05	1
11022M10Z3	★	22	18.0	10.5	**M10**	49(48.7)	30(29.7)	5	8	15	3	0.06	1
11025M12Z2	★	25	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	2	0.11	1
11025M12Z3	★	25	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	3	0.10	1
11025M12Z4	★	25	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	4	0.10	1
11026M12Z4	★	26	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	4	0.10	1
11026M12Z5	★	26	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	5	0.09	1
11028M12Z4	★	28	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	4	0.11	1
11028M12Z5	★	28	23.0	12.5	**M12**	56(55.7)	35(34.7)	5	10	19	5	0.10	1
11030M16Z2	★	30	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	2	0.20	1
11030M16Z4	★	30	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	4	0.19	1
11030M16Z5	★	30	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	5	0.17	1
11032M16Z2	★	32	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	2	0.22	1
11032M16Z3	★	32	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	3	0.20	1
11032M16Z4	★	32	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	4	0.20	1
11032M16Z5	★	32	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	5	0.19	1
11035M16Z2	★	35	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	2	0.24	1
11035M16Z5	★	35	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	5	0.22	1
11040M16Z2	★	40	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	2	0.28	1
11040M16Z4	★	40	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	4	0.26	1
11040M16Z5	★	40	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	5	0.26	1
11040M16Z6	★	40	28.5	17	**M16**	63(62.7)	40(39.7)	5	10	24	6	0.25	1

The OAL and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm. Arbors H253
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ11016M08Z2, WEZ11018M08Z2	BFTX0305IP	**1.5**	TRDR08IP	SUMI-P
WEZ11020M10Z2 to WEZ11040M16Z6	BFTX0306IP			

Identification Code

WEZ	11	016	M08	Z2
Series Code	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS			N	P		
	Medium Cutting	MSK		P		K		MS	MS	MS	MS	N	N			
	Roughing	MSK		P		K			MS		MS					
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
11T304PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
11T305PEER-G		★							★	▲	▲	—	—		0.5	1
11T308PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
11T310PEER-G		★							★	▲	▲	—	—		1.0	1
11T312PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
11T316PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
11T320PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
11T324PEER-G*		★							★	▲	▲	—	—		2.4	1
11T330PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	2
11T332PEER-G*		★							★	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
11T308PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
11T312PEER-H		★							★	▲	▲	—	—	—	1.2	1
11T316PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		★	—		—				★	—		—	—	—	0.2	1
11T304PEER-F		★	—		—				★	—		—	—	—	0.4	1
11T305PEER-F		★	—		—					—		—	—	—	0.5	1
11T308PEER-F		★	—		—				★	—		—	—	—	0.8	1
11T310PEER-F		★	—		—					—		—	—	—	1.0	1
11T312PEER-F		★	—		—				★	—		—	—	—	1.2	1
11T316PEER-F		★	—		—					—		—	—	—	1.6	1
11T320PEER-F		★	—		—				★	—		—	—	—	2.0	1
11T324PEER-F*		★	—		—					—		—	—	—	2.4	1
11T330PEER-F*		★	—		—				★	—		—	—	—	3.0	2
11T332PEER-F*		★	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		★	—		—					—		—	—	—	0.2	1
11T304PEER-P16		★	—		—					—		—	—	—	0.4	1
11T305PEER-P16		★	—		—					—		—	—	—	0.5	1
11T308PEER-P16		★	—		—					—		—	—	—	0.8	1
11T310PEER-P16		★	—		—					—		—	—	—	1.0	1
11T312PEER-P16		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		★	—		—					—		—	—	—	0.2	1
11T304PEER-P20		★	—		—					—		—	—	—	0.4	1
11T305PEER-P20		★	—		—					—		—	—	—	0.5	1
11T308PEER-P20		★	—		—					—		—	—	—	0.8	1
11T310PEER-P20		★	—		—					—		—	—	—	1.0	1
11T312PEER-P20		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		★	—		—					—		—	—	—	0.2	1
11T304PEER-P25		★	—		—					—		—	—	—	0.4	1
11T305PEER-P25		★	—		—					—		—	—	—	0.5	1
11T308PEER-P25		★	—		—					—		—	—	—	0.8	1
11T310PEER-P25		★	—		—					—		—	—	—	1.0	1
11T312PEER-P25		★	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2

Fig 1

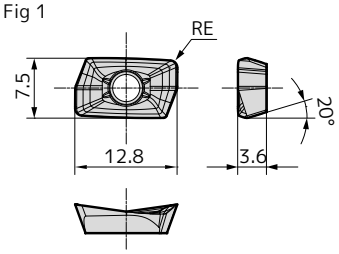
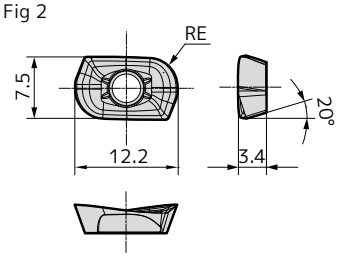


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.
* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20.
-P25 is applicable to cutter diameters ø25 and ø28.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

WEZ 17000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

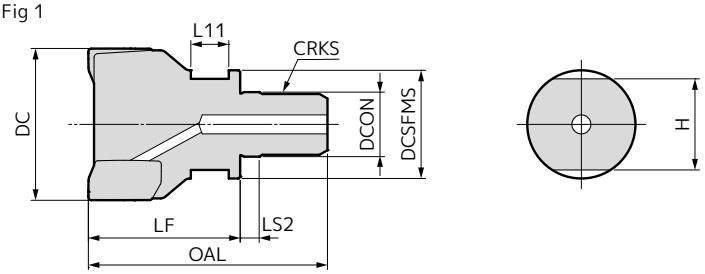
Rake Angle		
	Radial	-6° to -12°
	Axial	6° to 15°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
WEZ 17025M12Z2	★	**25**	23.0	12.5	**M12**	56(55.3)	35(34.3)	5	10	19	2	0.08	1
17025M12Z3	★	**25**	23.0	12.5	**M12**	56(55.3)	35(34.3)	5	10	19	3	0.07	1
17028M12Z2	★	**28**	23.0	12.5	**M12**	56(55.3)	35(34.3)	5	10	19	2	0.10	1
17030M16Z2	★	**30**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	2	0.17	1
17030M16Z3	★	**30**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	3	0.15	1
17032M16Z2	★	**32**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	2	0.19	1
17032M16Z3	★	**32**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	3	0.16	1
17032M16Z4	★	**32**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	4	0.14	1
17035M16Z2	★	**35**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	2	0.21	1
17035M16Z3	★	**35**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	3	0.19	1
17040M16Z2	★	**40**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	2	0.25	1
17040M16Z3	★	**40**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	3	0.23	1
17040M16Z4	★	**40**	28.5	17	**M16**	63(62.3)	40(39.3)	5	10	24	4	0.21	1

The OAL and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm.
Inserts are sold separately.

Arbors H253

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025M12Z2 to WEZ17030M16Z3	BFTX0407IP	**3.0**	TRDR15IP	SUMI-P
WEZ17032M16Z2 to WEZ17040M16Z4	BFTX0409IP			

Identification Code

WEZ Series Code | **17** Insert Size | **025** Dia. | **M12** Mounting Screw Size | **Z2** Number of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZ 17000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MK		P		K		MS	MS	MS	MS	N	N		
	Roughing	MK		P		K			MS		MS				
ISO ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	**170502PEER-L**	★	—	—	—				★	▲	▲	—	—		0.2	1
	170504PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
	170508PEER-L	★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
	170512PEER-L	★	—		—				★	▲	▲	—	—		1.2	1
	170516PEER-L	★	—		—				★	▲	▲	—	—		1.6	1
AOMT	**170502PEER-G**	★		★		★	★	★	★	▲	▲	—	—		0.2	1
	170504PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
	170505PEER-G	★							★	▲	▲	—	—		0.5	1
	170508PEER-G	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
	170510PEER-G	★							★	▲	▲	—	—		1.0	1
	170512PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.2	1
	170516PEER-G	★		★		★	★	★	★	▲	▲	—	—		1.6	1
	170520PEER-G	★		★		★	★	★	★	▲	▲	—	—		2.0	1
	170524PEER-G*	★							★	▲	▲	—	—		2.4	1
	170530PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.0	1
	170532PEER-G*	★		★		★	★	★	★	▲	▲	—	—		3.2	1
	170540PEER-G*	★		★		★	★	★	★	▲	▲	—	—		4.0	1
	170550PEER-G*	★		★		★	★	★	★	▲	▲	—	—		5.0	2
	170564PEER-G*	★							★	▲	▲	—	—		6.4	2
AOMT	**170504PEER-H**	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
	170508PEER-H	★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
	170512PEER-H	★							★	▲	▲	—	—	—	1.2	1
	170516PEER-H	★							★	▲	▲	—	—	—	1.6	1
AOET	**170502PEER-F**	★	—		—					—		—	—	—	0.2	1
	170504PEER-F	★	—		—				★	—		—	—	—	0.4	1
	170505PEER-F	★	—		—					—		—	—	—	0.5	1
	170508PEER-F	★	—		—				★	—		—	—	—	0.8	1
	170510PEER-F	★	—		—					—		—	—	—	1.0	1
	170512PEER-F	★	—		—				★	—		—	—	—	1.2	1
	170516PEER-F	★	—		—				★	—		—	—	—	1.6	1
	170520PEER-F	★	—		—				★	—		—	—	—	2.0	1
	170524PEER-F*	★	—		—					—		—	—	—	2.4	1
	170530PEER-F*	★	—		—				★	—		—	—	—	3.0	1
	170532PEER-F*	★	—		—				★	—		—	—	—	3.2	1
	170540PEER-F*	★	—		—				★	—		—	—	—	4.0	1
	170550PEER-F*	★	—		—					—		—	—	—	5.0	2
	170564PEER-F*	★	—		—					—		—	—	—	6.4	2
AOET	**170502PEER-P25**	★	—		—					—		—	—	—	0.2	1
	170504PEER-P25	★	—		—					—		—	—	—	0.4	1
	170505PEER-P25	★	—		—					—		—	—	—	0.5	1
	170508PEER-P25	★	—		—					—		—	—	—	0.8	1
	170510PEER-P25	★	—		—					—		—	—	—	1.0	1
	170512PEER-P25	★	—		—					—		—	—	—	1.2	1
AOET	**170502PEER-P32**	★	—		—					—		—	—	—	0.2	1
	170504PEER-P32	★	—		—					—		—	—	—	0.4	1
	170505PEER-P32	★	—		—					—		—	—	—	0.5	1
	170508PEER-P32	★	—		—					—		—	—	—	0.8	1
	170510PEER-P32	★	—		—					—		—	—	—	1.0	1
	170512PEER-P32	★	—		—					—		—	—	—	1.2	1
AOET	**170502PEFR-S**	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

Fig 1

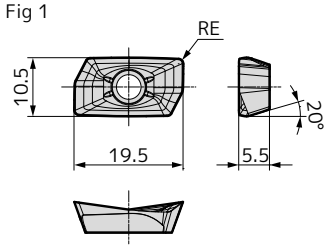
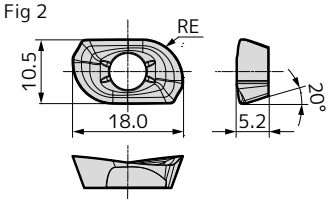


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P25/-P32: High-precision Machining, -S: Non-Ferrous Metals. * -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35. * marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZR 11000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

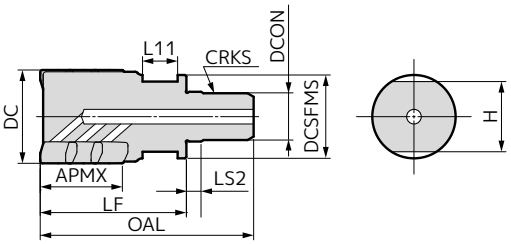
Rake Angle	Radial	-12°
	Axial	11°

27mm 90°

Shoulder Milling | Groove Milling | Side Milling

Fig 1





Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WEZR 11032M1627Z3	★	**32**	27(26)	28.5	17	**M16**	73(72.7)	50(49.7)	5	12	24	9	3	3	0.21	1

The APMX, OAL and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. Inserts are sold separately.

Arbors H253

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0306IP	**1.5**	TRDR08IP	SUMI-P

Identification Code

WEZR	11	032	M16	27	Z3
Series Code	Insert Size	Dia.	Mounting Screw Size	Max. Depth of Cut	Effective No. of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M S		P		K			M S		M S				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		★		★		★	★	★	★	▲	▲	—	—	★	0.2	1
11T304PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
11T305PEER-G		★							★	▲	▲	—	—		0.5	1
11T308PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
11T310PEER-G		★							★	▲	▲	—	—		1.0	1
11T312PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
11T316PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
11T320PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
11T324PEER-G*		★							★	▲	▲	—	—		2.4	1
11T330PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	2
11T332PEER-G*		★							★	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
11T308PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
11T312PEER-H		★							★	▲	▲	—	—	—	1.2	1
11T316PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		★	—		—				★	—		—	—	—	0.2	1
11T304PEER-F		★	—		—				★	—		—	—	—	0.4	1
11T305PEER-F		★	—		—					—		—	—	—	0.5	1
11T308PEER-F		★	—		—				★	—		—	—	—	0.8	1
11T310PEER-F		★	—		—					—		—	—	—	1.0	1
11T312PEER-F		★	—		—				★	—		—	—	—	1.2	1
11T316PEER-F		★	—		—					—		—	—	—	1.6	1
11T320PEER-F		★	—		—				★	—		—	—	—	2.0	1
11T324PEER-F*		★	—		—					—		—	—	—	2.4	1
11T330PEER-F*		★	—		—				★	—		—	—	—	3.0	2
11T332PEER-F*		★	—		—					—		—	—	—	3.2	2
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	2

Fig 1

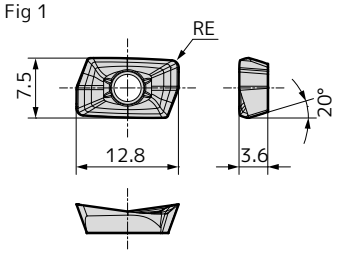
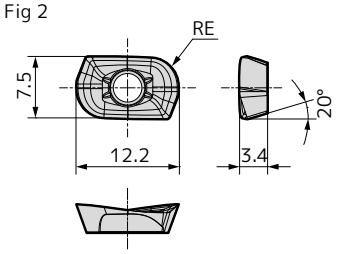


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H80 Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEZR 17000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

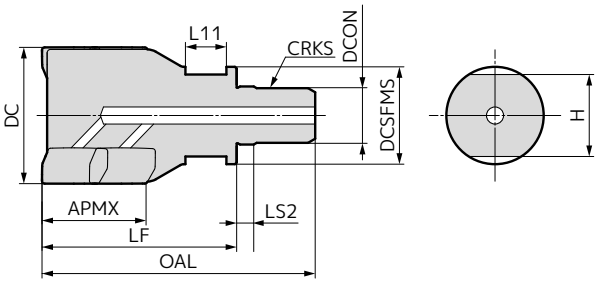
Rake Angle	Radial	-9°
	Axial	10°

29mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1



Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WEZR 17040M1629Z3	★	**40**	29(28)	28.5	17	**M16**	80(79.3)	57(56.3)	5	12	24	6	2	3	0.29	1

The APMX, OAL and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. Inserts are sold separately.

Arbors H253

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

WEZR	17	040	M16	29	Z3
Series Code	Insert Size	Dia.	Mounting Screw Size	Max. Depth of Cut	Effective No. of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S			N	P		
	Medium Cutting	M S		P		K		M S	M S	M S	M S	N	N			
	Roughing	M S		P		K			M S		M S					
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		★	—		—				★	▲	▲	—	—		0.2	1
170504PEER-L		★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.4	1
170508PEER-L		★	—	★	—	★	★	★	★	▲	▲	—	—	★	0.8	1
170512PEER-L		★	—		—				★	▲	▲	—	—		1.2	1
170516PEER-L		★	—		—				★	▲	▲	—	—		1.6	1
AOMT 170502PEER-G		★		★		★	★	★	★	▲	▲	—	—		0.2	1
170504PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.4	1
170505PEER-G		★							★	▲	▲	—	—		0.5	1
170508PEER-G		★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	1
170510PEER-G		★							★	▲	▲	—	—		1.0	1
170512PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.2	1
170516PEER-G		★		★		★	★	★	★	▲	▲	—	—		1.6	1
170520PEER-G		★		★		★	★	★	★	▲	▲	—	—		2.0	1
170524PEER-G*		★							★	▲	▲	—	—		2.4	1
170530PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.0	1
170532PEER-G*		★		★		★	★	★	★	▲	▲	—	—		3.2	1
170540PEER-G*		★		★		★	★	★	★	▲	▲	—	—		4.0	1
170550PEER-G*		★		★		★	★	★	★	▲	▲	—	—		5.0	2
170564PEER-G*		★							★	▲	▲	—	—		6.4	2
AOMT 170504PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.4	1
170508PEER-H		★	★	★	★	★	★	★	★	▲	▲	—	—	—	0.8	1
170512PEER-H		★							★	▲	▲	—	—	—	1.2	1
170516PEER-H		★							★	▲	▲	—	—	—	1.6	1
AOET 170502PEER-F		★	—		—					—		—	—	—	0.2	1
170504PEER-F		★	—		—				★	—		—	—	—	0.4	1
170505PEER-F		★	—		—					—		—	—	—	0.5	1
170508PEER-F		★	—		—				★	—		—	—	—	0.8	1
170510PEER-F		★	—		—					—		—	—	—	1.0	1
170512PEER-F		★	—		—				★	—		—	—	—	1.2	1
170516PEER-F		★	—		—				★	—		—	—	—	1.6	1
170520PEER-F		★	—		—				★	—		—	—	—	2.0	1
170524PEER-F*		★	—		—					—		—	—	—	2.4	1
170530PEER-F*		★	—		—				★	—		—	—	—	3.0	1
170532PEER-F*		★	—		—				★	—		—	—	—	3.2	1
170540PEER-F*		★	—		—				★	—		—	—	—	4.0	1
170550PEER-F*		★	—		—					—		—	—	—	5.0	2
170564PEER-F*		★	—		—					—		—	—	—	6.4	2
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	—	★	★	—	2.0	1
170524PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	2.4	1
170530PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.0	1
170532PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	3.2	1
170540PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	4.0	1
170550PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	5.0	2
170564PEFR-S*		—	—	—	—	—	—	—	—	—	—	★	★	—	6.4	2

Fig 1

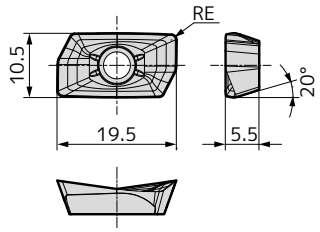
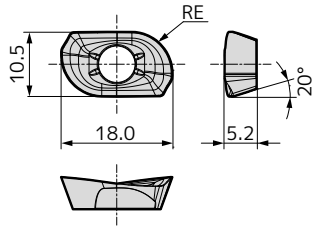


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge,
-F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H82
Precautions for Mounting Inserts H54

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WEX 2000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

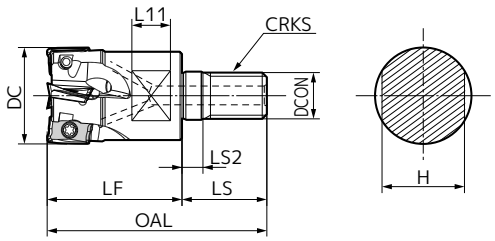
Rake Angle	Radial	10° to 18°
	Axial	14° to 25°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
WEX 2016M08Z2	★	**16**	15.0	8.5	**M8**	42	25	5	8	13	2	1
2018M08Z2	★	**18**	15.0	8.5	**M8**	42	25	5	8	13	2	1
2020M10Z3	★	**20**	18.0	10.5	**M10**	49	30	5	8	15	3	1
2022M10Z3	★	**22**	18.0	10.5	**M10**	49	30	5	8	15	3	1
2025M12Z4	★	**25**	23.0	12.5	**M12**	56	35	5	10	19	4	1
2028M12Z4	★	**28**	23.0	12.5	**M12**	56	35	5	10	19	4	1
2030M16Z4	★	**30**	28.5	17.0	**M16**	63	40	5	10	24	4	1
2032M16Z5	★	**32**	28.5	17.0	**M16**	63	40	5	10	24	5	1
2040M16Z6	★	**40**	28.5	17.0	**M16**	63	40	5	10	24	6	1

Inserts are sold separately.

Arbors H253

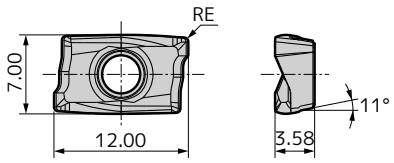
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC
Process	High-speed/Light Cutting	P			K		M/S		K/N	N
	Medium Cutting		P/M	P/M	K		M/S	M/S		N
	Roughing		P/M	P/M		K		M/S		

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G	★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-G	★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-G	★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-H	★	★	★	★	★	—	—	—	—	0.4	1
123508PEER-H	★	★	★	★	★	—	—	—	—	0.8	1
123512PEER-H	★	★	★	★	★	—	—	—	—	1.2	1
AXMT 123504PEER-E	—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E	—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E	—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH	—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S	—	—	—	—	—	—	—	★	★	0.2	1
123504PEFR-S	—	—	—	—	—	—	—	★	★	0.4	1
123508PEFR-S	—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Identification Code

WEX **2** **016** **M08** **Z2**

Series Code	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEX2016M, WEX2018M	BFTX0305IP	**2.0**	TRDR08IP	SUMI-P
WEX2020M to WEX2040M	BFTX0306IP			

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WEX 3000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

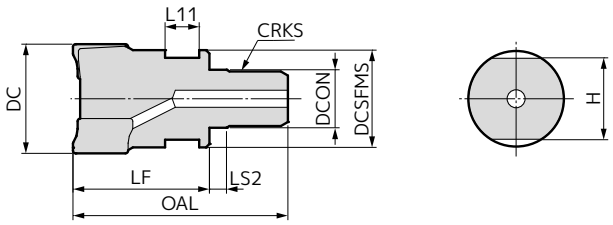
Rake Angle	Radial	8° to 15°
	Axial	16° to 24°

14mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
WEX 3025M12Z2	★	**25**	23.0	12.5	**M12**	56	35	5	10	19	2	1
3028M12Z2	★	**28**	23.0	12.5	**M12**	56	35	5	10	19	2	1
3030M16Z3	★	**30**	28.5	17.0	**M16**	63	40	5	10	24	3	1
3032M16Z3	★	**32**	28.5	17.0	**M16**	63	40	5	10	24	3	1
3035M16Z3	★	**35**	28.5	17.0	**M16**	63	40	5	10	24	3	1
3040M16Z4	★	**40**	28.5	17.0	**M16**	63	40	5	10	24	4	1

Inserts are sold separately.

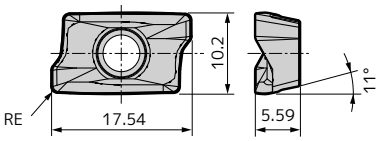
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC
Process	High-speed/Light Cutting	P			K		M S		K N	N
	Medium Cutting		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L	★	★	★	★	★	—	—	—	—	0.8	1
AXMT 170504PEER-G	★	★	★	★	★	—	—	—	—	0.4	1
170508PEER-G	★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-G	★	★	★	★	★	—	—	—	—	1.2	1
170516PEER-G	★	★	★	★	★	—	—	—	—	1.6	1
170520PEER-G*	★	★	★	★	★	—	—	—	—	2.0	1
170530PEER-G*	★	★	★	★	★	—	—	—	—	3.0	1
AXMT 170508PEER-H	★	★	★	★	★	—	—	—	—	0.8	1
170512PEER-H	★	★	★	★	★	—	—	—	—	1.2	1
AXMT 170504PEER-E	—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E	—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E	—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E	—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*	—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*	—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH	—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S	—	—	—	—	—	—	—	★	★	0.2	1
170504PEFR-S	—	—	—	—	—	—	—	★	★	0.4	1
170508PEFR-S	—	—	—	—	—	—	—	★	★	0.8	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H89

Identification Code

WEX **3** **025** **M12** **Z2**

Series Code	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEX3025M to WEX3030M	BFTX0407IP	**3.0**	TRDR15IP	SUMI-P
WEX3032M to WEX3040M	BFTX0409IP			

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WFX 08000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

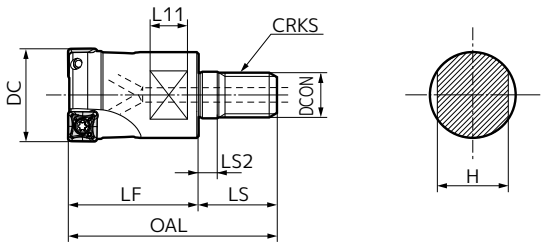
Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling

Fig 1





Head

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
WFX 08020M10Z2	★	**20**	18.0	10.5	**M10**	49	30	5	8	15	2	1
08022M10Z2	★	**22**	18.0	10.5	**M10**	49	30	5	8	15	2	1
08025M12Z2	★	**25**	23.0	12.5	**M12**	56	35	5	10	19	2	1
08028M12Z2	★	**28**	23.0	12.5	**M12**	56	35	5	10	19	2	1
08030M16Z3	★	**30**	28.5	17.0	**M16**	63	40	5	10	24	3	1
08032M16Z3	★	**32**	28.5	17.0	**M16**	63	40	5	10	24	3	1
08040M16Z3	★	**40**	28.5	17.0	**M16**	63	40	5	10	24	3	1

Inserts are sold separately.

Arbors H253

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K		M S	M S		M S		N			
	Medium Cutting			P M	P M	K			M S	M S	M S	M S		N	P M	
	Roughing			P M	P M		K			M S		M S			P	
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
XOEW 080308PZTR-W		★	—	—	—		★						—	—	★	—	2

Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Fig 1

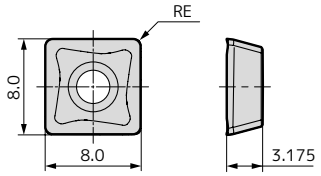
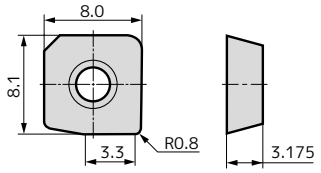


Fig 2 ワイパーインサート



Recommended Cutting Conditions H115

Identification Code

WFX **08** **020** **M10** **Z2**

WFX	08	020	M10	Z2
Series Code	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0306IP	**2.0**	TRDR08IP	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DMSL 06000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

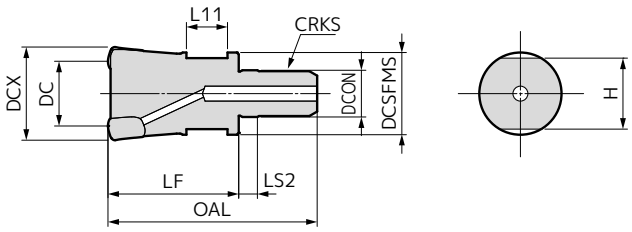
Rake Angle	Radial	-12.5° to -16.5°
	Axial	-8°

1.5mm 17°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Head

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
DMSL 06016M08Z2	★	**16**	8.4	14.5	8.5	**M8**	42	25	5	8	13	2	0.03	1
DMSL **06018M08Z2**	★	**18**	10.4	14.5	8.5	**M8**	42	25	5	8	13	2	0.03	1
DMSL 06020M10Z3	★	**20**	12.4	18	10.5	**M10**	49	30	5	10	15	3	0.05	1
DMSL **06020M10Z4**	★	**20**	12.4	18	10.5	**M10**	49	30	5	10	15	4	0.05	1
DMSL 06022M10Z3	★	**22**	14.3	18	10.5	**M10**	49	30	5	10	15	3	0.06	1
DMSL **06022M10Z4**	★	**22**	14.3	18	10.5	**M10**	49	30	5	10	15	4	0.06	1
DMSL 06025M12Z4	★	**25**	17.3	22	12.5	**M12**	56	35	5	11	19	4	0.10	1
DMSL **06025M12Z5**	★	**25**	17.3	22	12.5	**M12**	56	35	5	11	19	5	0.10	1
DMSL 06026M12Z4	★	**26**	18.3	22	12.5	**M12**	56	35	5	11	19	4	0.10	1
DMSL **06028M12Z4**	★	**28**	20.3	22	12.5	**M12**	56	35	5	11	19	4	0.11	1
DMSL 06028M12Z5	★	**28**	20.3	22	12.5	**M12**	56	35	5	11	19	5	0.11	1
DMSL **06030M16Z5**	★	**30**	22.3	28.5	17	**M16**	63	40	5	12	24	5	0.18	1
DMSL 06032M16Z5	★	**32**	24.3	28.5	17	**M16**	63	40	5	12	24	5	0.20	1
DMSL **06032M16Z6**	★	**32**	24.3	28.5	17	**M16**	63	40	5	12	24	6	0.20	1
DMSL 06035M16Z5	★	**35**	27.3	28.5	17	**M16**	63	40	5	12	24	5	0.21	1
DMSL **06035M16Z6**	★	**35**	27.3	28.5	17	**M16**	63	40	5	12	24	6	0.21	1
DMSL 06040M16Z6	★	**40**	32.3	28.5	17	**M16**	63	40	5	12	24	6	0.25	1
DMSL **06042M16Z6**	★	**42**	34.3	28.5	17	**M16**	63	40	5	12	24	6	0.26	1
DMSL 06042M16Z7	★	**42**	34.3	28.5	17	**M16**	63	40	5	12	24	7	0.26	1

Inserts are sold separately.

Arbors H253

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX02507IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

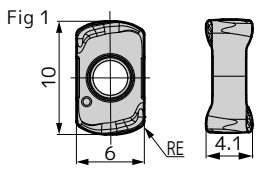
DMSL Series Code | **06** Insert Size | **025** Max. Dia. | **M12** Mounting Screw Size | **Z4** Number of Teeth

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									
Process	High-speed/Light Cutting		P		K		M S		M S		
	Medium Cutting	K P M S	P	P	K	K		M S	M S		
	Roughing	K P M S		P		K		M S			
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU 06T3ZNER-L		★	★	★			★	★	★	1.0	1
LNMU 06T3ZNER-G		★	★	★	★	★	★	★	★	1.0	1
LNMU 06T3ZNER-H		★	★	★			★	★	★	1.0	1

Fig 1



Recommended Cutting Conditions H175

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

DMSW 08000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

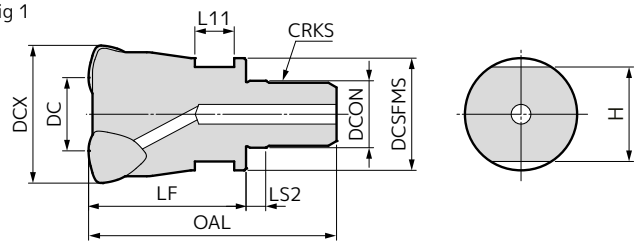
Rake Angle	Radial	-11° to -13°
	Axial	-6°

3mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Head

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
DMSW 08035M16Z2	★	**35**	18.6	28.5	17	**M16**	63	40	5	10	24	2	0.19	1
08040M16Z3	★	**40**	23.5	28.5	17	**M16**	63	40	5	10	24	3	0.21	1

Inserts are sold separately.

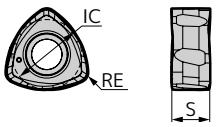
Arbors H253

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting		P		K		M S	M S					
	Medium Cutting	S P M	P	P	K	K		M S	M S				
	Roughing	S P M		P		K			M S				
ISO Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-L		★	★	★			★	★	★	13	7	1.6	1
WNMU 0807ZNER-G		★	★	★	★	★	★	★	★	13	7	1.6	1
WNMU 0807ZNER-H		★	★	★			★	★	★	13	7	1.6	1

Fig 1



Recommended Cutting Conditions H177

Identification Code

DMSW 08 040 M16 Z3

DMSW	08	040	M16	Z3
Series Code	Insert Size	Max. Dia.	Mounting Screw Size	Number of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0513IP	**5.0**	TRDR20IP	SUMI-P

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WFXH 08000M/12000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy | H Hardened Steel (WFXH08000M)

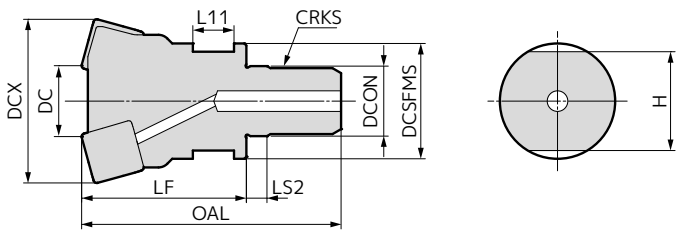
Rake Angle	Radial	-6°
	Axial	6°

1.5mm 15° (08000M type) | 2.5mm 15° (12000M type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling

Fig 1





Head (Applicable Insert SOMT08 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXH 08025M12Z2	★	25	*11.5	23.0	12.5	M12	56	35	5	10	19	2	0.1	1
08032M16Z3	★	32	*18.5	28.5	17.0	M16	63	40	5	10	24	3	0.2	1

* indicates value with corner radius 1.2 inserts mounted.
Refer to page H179 for details.

Head (Applicable Insert SOMT12 type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXH 12040M16Z3	★	40	*18.1	28.0	17.0	M16	63	40	5	10	24	3	0.2	1

Inserts are sold separately.
* indicates value with corner radius 1.6 inserts mounted.
Refer to page H179 for details.

Arbors H253

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K		M S	M S		M S		K N	N		
	Medium Cutting			P M	P M	K			M S	M S	M S	M S		N	P M	
	Roughing			P M	P M		K			M S		M S			P	
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	2
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	2
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	2
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	2
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	2
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	2
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	2

Fig 1

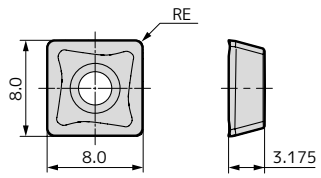
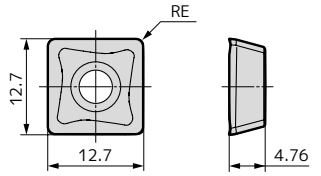


Fig 2



Recommended Cutting Conditions H180 | Precautions for Use H179

Identification Code

WFXH 08 025 M12 Z2

WFXH	08	025	M12	Z2
Series Code	Insert Size	Max. Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WFXH08000M type	BFTX0306IP	2.0	TRDR08IP	SUMI-P
WFXH12000M type	BFTX03512IP	3.0	TRDR15IP	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MSX 06000M/08000M/12000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle	Radial	-3° to -6°
	Axial	8°

1.0mm 20° (06000M type) | 1.5mm 20° (08000M type) | 2.0mm 20° (12000M type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1

Head (Applicable Insert WDMT06 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
MSX 06016M08Z2	▲	**16**	15.0	8.5	**M8**	42	25	5	8	13	2	1
06018M08Z2	▲	**18**	15.0	8.5	**M8**	42	25	5	8	13	2	1
MSX 06020M10Z3	▲	**20**	18.0	10.5	**M10**	49	30	5	8	15	3	1
06022M10Z3	▲	**22**	18.0	10.5	**M10**	49	30	5	8	15	3	1
06025M12Z3	▲	**25**	23.0	12.5	**M12**	56	35	5	10	19	3	1

Inserts are sold separately.

Head (Applicable Insert WDMT08 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
MSX 08025M12Z2	▲	**25**	23.0	12.5	**M12**	56	35	5	10	19	2	1
08028M12Z2	▲	**28**	23.0	12.5	**M12**	56	35	5	10	19	2	1
MSX 08030M16Z3	▲	**30**	28.5	17.0	**M16**	63	40	5	10	24	3	1
08032M16Z3	▲	**32**	28.5	17.0	**M16**	63	40	5	10	24	3	1
08035M16Z3	▲	**35**	28.5	17.0	**M16**	63	40	5	10	24	3	1

Inserts are sold separately.

Head (Applicable Insert WDMT12 type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
MSX 12032M16Z2	▲	**32**	28.5	17.0	**M16**	63	40	5	10	24	2	1
12035M16Z2	▲	**35**	28.5	17.0	**M16**	63	40	5	10	24	2	1
12040M16Z3	▲	**40**	28.5	17.0	**M16**	63	40	5	10	24	3	1

Inserts are sold separately.

Arbors H253

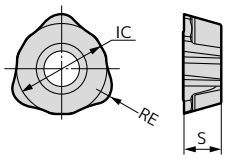
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting			★	
	Medium Cutting	★	★	★	
	Roughing	★	★		★

Applications	ISO Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0603ZDTR**	▲	▲	▲	▲	6.35	3.0	1.5	MSX 06000M type	1
	0804ZDTR	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000M type	1
	1205ZDTR	▲	▲	▲	▲	12.00	5.0	2.0	MSX 12000M type	1
Honed type	**WDMT 0603ZDTR-H**	▲	▲	▲	▲	6.35	3.0	1.5	MSX 06000M type	1
	0804ZDTR-H	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000M type	1
	1205ZDTR-H	▲	▲	▲	▲	12.00	5.0	2.0	MSX 12000M type	1

Fig 1



Recommended Cutting Conditions H185

Identification Code

MSX **06** **016** **M08** **Z2**

Series Code | Insert Size | Max. Dia. | Mounting Screw Size | Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Clamp Plate	C-Ring	Clamp Screw	Anti-seizure Cream
MSX 06000M type	BFTX02505IP	**1.5**	TRDR08IP	—	—	—	SUMI-P
MSX 08000M type	BFTX0306IP	**2.0**		CCH3.5	CR03	BFTX03510IP08	
MSX 12000M type	BFTX0409IP	**3.0**	TRDR15IP	CCH3.5	CR03	BFTX03510IP15	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RSX(F) 08000M/10000M/12000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

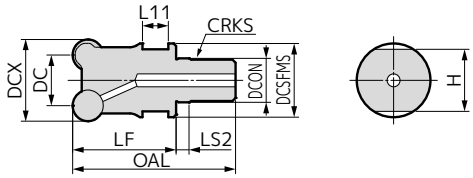
Rake Angle	Radial	-5° to -8°
	Axial	10°

4mm (08000M type) | 5mm (10000M type) | 6mm 4-cornered (12000M type) | 1.6mm 8-cornered (12000ES type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Head (Standard Pitch) Applicable Insert IC = 8mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
RSX 08020M10Z2	★	**20**	12	18.0	10.5	**M10**	49	30	5	8	15	2	0.1	1
08025M12Z3	★	**25**	17	23.0	12.5	**M12**	56	35	5	10	19	3	0.1	1
08032M16Z4	★	**32**	24	28.9	17.0	**M16**	63	40	5	10	24	4	0.2	1

Head (Extra Fine Pitch) Applicable Insert IC = 8mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
RSXF 08020M10Z3	★	**20**	12	18.0	10.5	**M10**	49	30	5	8	15	3	0.1	1
08025M12Z4	★	**25**	17	23.0	12.5	**M12**	56	35	5	10	19	4	0.1	1
08032M16Z5	★	**32**	24	28.9	17.0	**M16**	63	40	5	10	24	5	0.2	1

Head (Standard Pitch) Applicable Insert IC = 10mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
RSX 10025M12Z2	★	**25**	15	23.0	12.5	**M12**	56	35	5	10	19	2	0.1	1
10032M16Z3	★	**32**	22	28.5	17.0	**M16**	63	40	5	10	24	3	0.2	1

Head (Extra Fine Pitch) Applicable Insert IC = 10mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
RSXF 10025M12Z3	★	**25**	15	23.0	12.5	**M12**	56	35	5	10	19	3	0.1	1
10032M16Z4	★	**32**	22	28.5	17.0	**M16**	63	40	5	10	24	4	0.2	1

Head (Standard Pitch) Applicable Insert IC = 12mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
RSX 12032M16Z2	★	**32**	20	28.5	17.0	**M16**	63	40	5	10	24	2	0.2	1
12040M16Z3	★	**40**	28	28.5	17.0	**M16**	63	40	5	10	24	3	0.3	1

Head (Extra Fine Pitch) Applicable Insert IC = 12mm type

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
RSXF 12032M16Z3	★	**32**	20	28.5	17.0	**M16**	63	40	5	10	24	3	0.2	1
12040M16Z4	★	**40**	28	28.5	17.0	**M16**	63	40	5	10	24	4	0.3	1

Inserts are sold separately.

Arbors H253

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting			M S	M S		M S	M S					
	Medium Cutting	P M			M S	M S	M S	M S	M S				
	Roughing	P M	K			M S			M S				
ISO Cat. No.		ACP200	ACK300	ACS1000	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Applicable Cutter	Fig
RDET 0803M0EN-G		★	★	★	★	★	★	▲	▲	8	4.0	3.18	RSX(F) 08000M type	1
0803M0EN-H		★	★		★	★	★	▲	▲	8	4.0	3.18		1
RDET 10T3M0EN-G		★	★	★	★	★	★	▲	▲	10	5.0	3.97	RSX(F) 10000M type	1
10T3M0EN-H		★	★		★	★	★	▲	▲	10	5.0	3.97		1
RDET 1204M0EN-G		★	★	★	★	★	★	▲	▲	12	6.0	4.76	RSX(F) 12000M type	2
1204M0EN-H		★	★		★	★	★	▲	▲	12	6.0	4.76		2

Fig 1 4-cornered

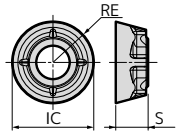
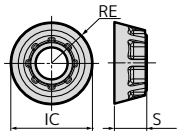


Fig 2 8-cornered



● Cross Section of Cutting Edge



Recommended Cutting Conditions H201

Precautions for Mounting Inserts H196

Identification Code

RSX **F** **10** **025** **M12** **Z2**

RSX	F	10	025	M12	Z2
Series Code	Extra Fine Pitch	Insert Size	Max. Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
		N·m		
RSX(F) 08000M type	BFTX02506IP	**1.5**	TRDR08IP	SUMI-P
RSX(F) 10000M type	BFTX03584IP	**3.0**	TRDR15IP	
RSX(F) 12000M type	BFTX0409IP	**3.0**		

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WRCX 08000M/10000M/12000M type

SEC-Modular Tool

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	-3° to 0°
	Axial	-3°

4mm 4-cornered (08000M type)

1.6mm 8-cornered (08000M type)

5mm (10000M type)

6mm (12000M type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



WRCX08000M型

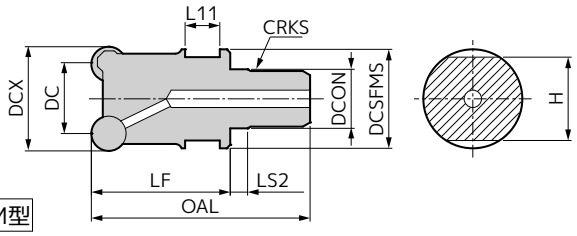


WRCX10000M型



WRCX12000M型

Fig 1



Head (Applicable Insert IC = 8mm type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
WRCX 08020M10Z2	★	**20**	12	18.0	10.5	**M10**	49	30	5	8	15	2	1
08025M12Z3	★	**25**	17	23.0	12.5	**M12**	56	35	5	10	19	3	1

Inserts are sold separately.

Head (Applicable Insert IC = 10mm type)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
WRCX 10025M12Z2	★	**25**	15	23.0	12.5	**M12**	56	35	5	10	19	2	1
10028M12Z2	★	**28**	18	23.0	12.5	**M12**	56	35	5	10	19	2	1
10030M16Z3	★	**30**	20	28.5	17.0	**M16**	63	40	5	10	24	3	1
10032M16Z3	★	**32**	22	28.5	17.0	**M16**	63	40	5	10	24	3	1

Inserts are sold separately.

Head (Applicable Insert IC = 12mm type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Fig
WRCX 12040M16Z4	★	**40**	28	28.5	17.0	**M16**	63	40	5	10	24	4	1

Inserts are sold separately.

Arbors H253

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cermet	DLC					
Process	High-speed/Light Cutting	P			K		K N	N					
	Medium Cutting		P M	P M	K			N					
	Roughing		P M	P M		K							
Application	ISO Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Applicable Cutter	Fig
General-purpose*1	**QPMT 080330 PPEN**		★	★	★	★	—	—	8	3.0	3.18	WRCX 08000M type	1
	080330 PPEN-H		★	★	★	★	—	—					1
	QPMT 10T335 PPEN		★	★	★	★	—	—	10	3.5	3.97	WRCX 10000M type	1
	10T335 PPEN-H		★	★	★	★	—	—					1
	QPMT 120440 PPEN		★	★	★	★	—	—	12	4.0	4.76	WRCX 12000M type	1
	120440 PPEN-H		★	★	★	★	—	—					1
For Non-Ferrous Metals	**QPET 10T350 PPFR-S**	—	—	—	—	—	★	★	10	5.0	3.97	WRCX 10000M type	2
	QPET 120460 PPFR-S	—	—	—	—	—	★	★	12	6.0	4.76	WRCX 12000M type	2
Surfing	**QPMT 120460 PPER-R**		★	★			—	—	12	6.0	4.76	WRCX 12000M type	3

Fig 1

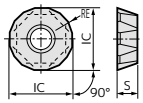


Fig 2

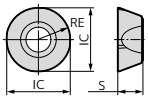
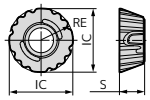


Fig 3

サーフィンインサート



*1: -H at the end means the strong edged type.

Recommended Cutting Conditions H206

Identification Code

WRCX 08 020 M10 Z2

WRCX	08	020	M10	Z2
Series Code	Insert Size	Max. Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
		N·m		
WRCX 08000M type	BFTX02506IP	**1.5**	TRDR08IP	SUMI-P
WRCX 10000M type	BFTX03584IP	**3.0**	TRDR15IP	
WRCX 12000M type	BFTX0409IP	**3.0**	TRDR15IP	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WFXC 08000M/12000M type

SEC-Modular Tool

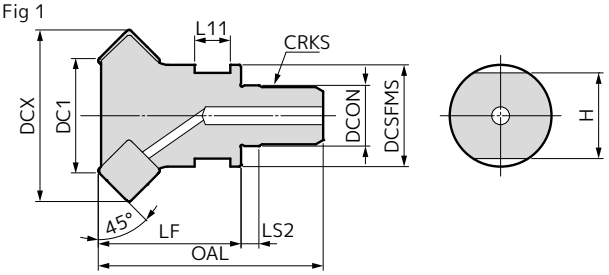
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake	Radial	0°
Angle	Axial	0°

45° Chamfering | Back Chamfering



Fig 1



Head (Applicable Insert SOMT08 type)

Dimensions (mm)

ISO Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXC 08016M08Z2	★	**16**	25.5	14.5	8.5	**M8**	42	25	5	8	13	2	0.1	1

DC1 and DCX dimensions are values with an insert with 0.8 corner radius mounted.

Head (Applicable Insert SOMT12 type)

Dimensions (mm)

ISO Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXC 12025M12Z3	★	**25**	41.0	23.0	12.5	**M12**	56	32	5	10	19	3	0.1	1
12032M16Z3	★	**32**	48.0	28.5	17.0	**M16**	63	40	5	10	24	3	0.2	1

DC1 and DCX dimensions are values with an insert with 0.8 corner radius mounted.

Arbors ☞H253

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet
Process	High-speed/Light Cutting		P			K		M S	M S		M S	K N	N	
	Medium Cutting	K M S		P M	P M	K			M S	M S	M S		N	P M
	Roughing	K M S		P M	P M		K			M S				P
ISO Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		★	★	★	★	★	★				▲	▲	—	—		0.4	1
080308PZER-L		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—		0.4	1
080308PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		0.8	1
080312PZER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		★	★	★	★	★	★		★	★	▲	▲	—	—		0.8	1
080312PZER-H		★	★	★	★	★	★			★	▲	▲	—	—		1.2	1
SOET 080304PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	0.4	1
080308PZER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	★	0.8	1
080312PZER-G		★	★	★	★	★	★				▲	▲	—	—	★	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	1
SOMT 120408PDER-L		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	2
SOMT 120404PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.4	2
120408PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	★	0.8	2
120412PDER-G		★	★	★	★	★	★		★	★	▲	▲	—	—	—	1.2	2
120416PDER-G		★	★	★	★	★	★	★	★	★	▲	▲	—	—	—	1.6	2
SOMT 120408PDER-H		★	★	★	★	★	★		★	★	▲	▲	—	—	—	0.8	2
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	★	★	—	0.8	2

Fig 1

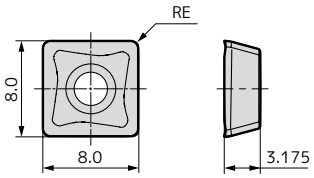
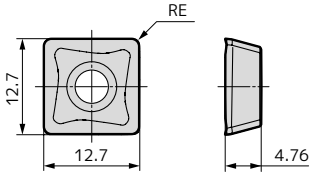


Fig 2



Recommended Cutting Conditions ☞H220, 221

Precautions for Use ☞H219

Identification Code

WFXC 08 016 M08 Z2

Series Code	Insert Size	Min. Machining Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WFXC 08000M type	BFTX0306IP	**1.5**	TRDR08IP	SUMI-P
WFXC 12000M type	BFTX03512IP	**3.0**	TRDR15IP	

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

ANXS 16000M type

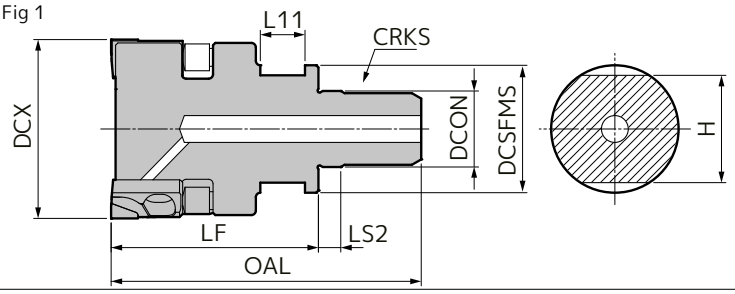
Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1



Body (Steel)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16025M12Z02**	★	**25**	23	23.0	12.5	**M12**	61	40	5	10	19	2	0.1	1
	16030M16Z03	★	**30**	28	28.5	17.0	**M16**	70	47	5	10	24	3	0.2	1
	16030M16Z04	★	**30**	28	28.5	17.0	**M16**	70	47	5	10	24	4	0.2	1
	16032M16Z03	★	**32**	30	28.5	17.0	**M16**	70	47	5	10	24	3	0.3	1
	16032M16Z04	★	**32**	30	28.5	17.0	**M16**	70	47	5	10	24	4	0.3	1
	16040M16Z04	★	**40**	38	28.5	17.0	**M16**	70	47	5	10	24	4	0.4	1
	16040M16Z06	★	**40**	38	28.5	17.0	**M16**	70	47	5	10	24	6	0.4	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Arbors H253

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

ISO Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G	★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1

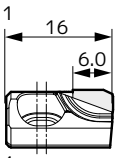


Fig 2

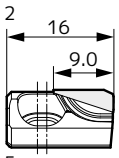


Fig 3

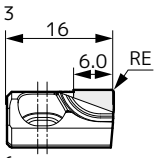
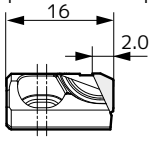
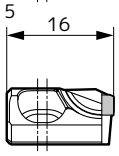


Fig 4



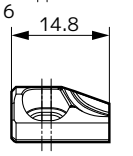
Wiper Blade

Fig 5



Wiper Blade

Fig 6



Dummy Blade

*1 Cast iron/aluminum alloy
*2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions H231

Identification Code

ANX	S	16	032	M16	Z03
Series Code	Steel Body	Blade Size	Max. Dia.	Screw Size	Number of Teeth

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS 16025M12Z02	10,000
16030M16Z03	10,000
16030M16Z04	10,000
16032M16Z03	10,000
16032M16Z04	10,000
16040M16Z04	10,000
16040M16Z06	10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

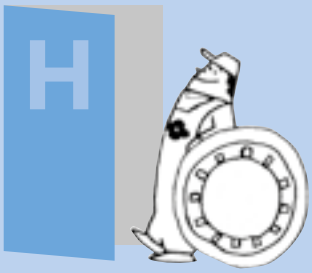
Parts

Cap Screw		Adjustment Screw	Wrench	Adjustment Wrench
				
BXA0310IP	**2.0**	HFJ	TRXW10IP	ANT

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

Milling Cutters (Special Purpose)
H273 to H287

H



For High Feed Cast Iron Milling	SEC-Goal Mill series	H274
	GFX(C) 13000 type	H276
	GFX 16000 type	H277
	GRHNM 17000 type	H278
	GRHNF 17000 type	H279
For High Feed Cast Iron Milling	SEC-High-Feed Mill series	H280
	Cutting Edge Reference System	H281
	NRV 4000 / 5000 type	H282
	DPV 4000 / 5000 type	H283
	NFV 4000 / 5000 type	H284
For High-Feed Milling of Non-Ferrous Alloys/Thin Workpieces	APV 5000 type	H285
QC System	IGETALLOY Quick Change System	H286
	Applicable Cutters for QC-System	H287

Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

GFX series / GRHN series



■ Features

SEC-Goal Mill series cutters have been developed for high-efficiency roughing and finishing of cast iron parts (such as engine cylinder blocks and transmission cases).

- Special cutters for high-feed milling of cast iron
- Multi-teeth design (approx. 3 teeth per inch)
- Equipped with an easy-to-use edge runout fine-adjustment mechanism for finishing
- Highly reliable cutter with tangential inserts for finishing
- Chipbreaker type inserts for low cutting force

■ Product Range

Series Code	GFX	GRHN
Applications	Finishing	Roughing
Surface Roughness	< Ra3.2	< Ra12.5
Appearance		

Refer to the QC system on pages H286 and H287 for details and specifications on the two-piece mounting system and adapter.

Work Material	Applications	High-speed Finishing	Finishing to General Cutting	Interrupted Cutting	Applicable Cutter
K Cast Iron	Finishing	BN7000	ACK260	ACK280	GFX series

Work Material	Applications	Light Cutting	General Cutting	Heavy Interrupted Cutting	Applicable Cutter
K Cast Iron	For Roughing	ACK100	ACK200	ACK300	GRHN series

■ Grade Characteristics

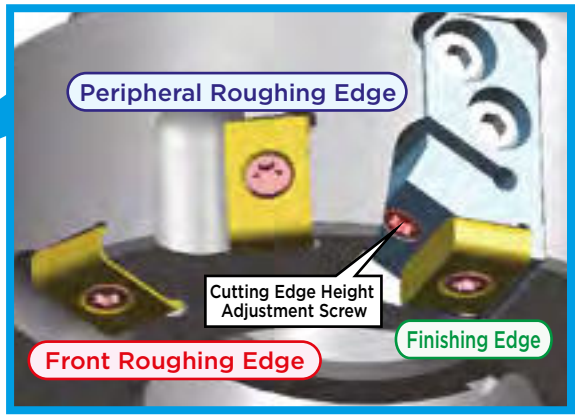
Work Material		Grade	Hardness	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
K Cast Iron	Coated Carbide	ACK100	92.0HRA	2.4	Super FF Coat	6	· High-speed milling grade that combines a high-strength carbide substrate and Super FF Coat for outstanding wear resistance.
		ACK200	91.7HRA	2.5	Super FF Coat	6	· High-speed milling grade that utilizes a tough carbide substrate with a thin Super FF Coat for excellent thermal crack and wear resistance.
		ACK260	92.6HRA	2.6	Super ZX Coat	3	· For finishing to general milling of cast iron and ductile cast iron. · Employs new super multi-layered PVD coating consisting of nanometre-thin layers of TiAlN and AlCrN. Combines with a tough, thermal-resistant substrate for long and stable tool life.
		ACK280	91.7HRA	3.0	Super ZX Coat	3	· For heavy interrupted cutting or wet cutting of cast iron and ductile cast iron. · Employs new super multi-layered PVD coating consisting of nanometre-thin layers of TiAlN and AlCrN. Coupled with an ultra-tough substrate for superior fracture resistance and thermal crack resistance during wet cutting.
		ACK300	91.4HRA	3.3	Super ZX Coat	3	· General-purpose to interrupted milling of cast iron and ductile cast iron. · Employs a super multi-layered PVD coating consisting of nanometre-thin layers. Provides excellent fracture resistance when combined with a fine-grained tough substrate.
	CBN	BN7000	41.0HV to 44.0HV	1.8 up to 1.9	—	—	· Grade exhibiting improved wear and fracture resistance in cutting of cast iron and exotic alloys.

BN7000 Characteristic Values ☞H15
ACK100, ACK200, ACK300 Characteristic Values ☞H15

■ GFX series Features

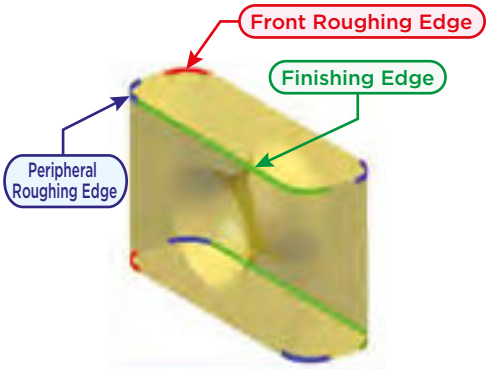
● Simple Runout Adjustment



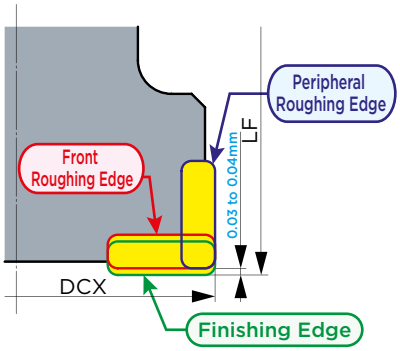


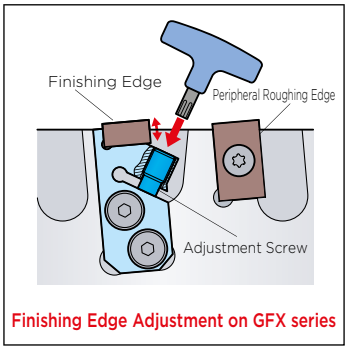
Finishing edge runout can be adjusted by 5 µm or less simply by turning the adjustment screw.

● Economical 8-Cornered Insert



Arraying the same number of vertical and horizontal inserts allows 8-corner configuration.

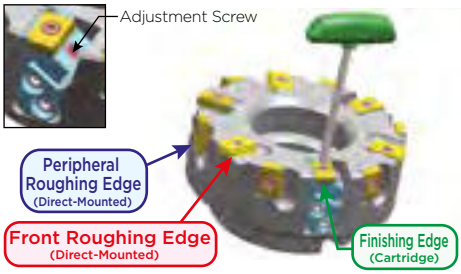




Finishing Edge Adjustment on GFX series

■ GFX series Finishing Edge Runout Adjustment Procedure

(1) Insert Assembly
Attach insert to cutter body. When doing so, check that the cartridge adjustment screw is completely loose.



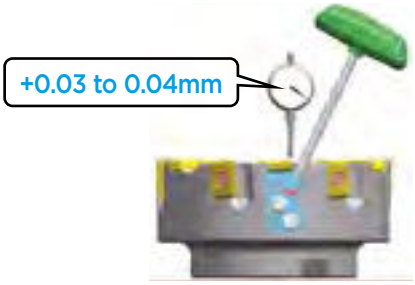
(2) Check Roughing Edge Runout
Measure face runout of the roughing edge and identify the cutting edge that protrudes the most.



(3) Set Reference Roughing Edge
Set the cutting edge height of the insert identified in (2) as "0".



(4) Adjust Finishing Edge Height
Select a finishing edge and adjust with the adjustment screw so that the edge protrudes around 0.03 to 0.04mm further than (3).



(5) Adjust Runout
With the finishing edge from (4) as a reference, adjust the position of the other finishing edges so that runout is equal to or less than 5 µm.



- Always adjust finishing edge height before use. Adjust the height in the screw tightening directions.
- Using the tool with the adjustment screw loosened may cause damage to the tool.

* Adjusting finishing edge runout to 2 µm or less will result in a better machined surface.

GFX 13000 / GFXC 13000 type

K Cast Iron

Rake Angle		
Radial	-8°	
Axial	-5°	

1mm 89°-89°30'

Face Milling



Fig 1

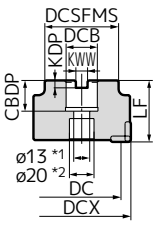


Fig 2

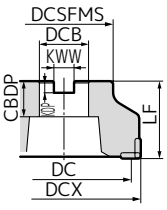


Fig 3

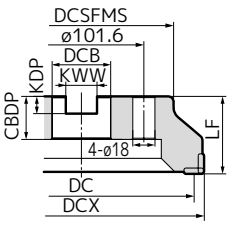
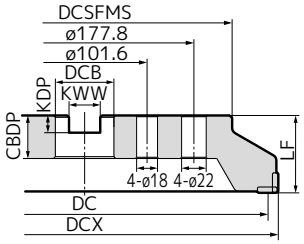


Fig 4



Body (Standard Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total No. of Teeth	Number of Finishing Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**GFX 13080R/L**	★		***80**	67.3	60	50	**25.4**	9.5	6	25	8	2	8	1.4	1
	13100R/L	★		**100**	87.3	70	50	**31.75**	12.7	8	32	12	3	12	1.9	2
	13125R/L	★		**125**	112.3	80	63	**38.1**	15.9	10	38	16	4	16	3.3	2
	13160R/L	★		**160**	147.3	120	63	**50.8**	19.1	11	38	20	5	20	6.4	2
	13200R/L			**200**	187.3	150	63	**47.625**	25.4	14	35	28	7	28	7.8	3
	13250R/L			**250**	237.3	200	63	**47.625**	25.4	14	35	36	9	36	12.6	3
	13315R/L			**315**	302.3	240	80	**47.625**	25.4	14	35	44	11	44	20.2	4

Body (Coarse Pitch)

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total No. of Teeth	Number of Finishing Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**GFXC13063RS/LS**	★		**63**	50.3	50	50	**22**	10.4	6.3	20	4	1	4	0.9	1
Inch	**GFXC13080R/L**	★		***80**	67.3	60	50	**25.4**	9.5	6	25	6	1	6	1.4	1
	13100R/L	★		**100**	87.3	70	50	**31.75**	12.7	8	32	8	2	8	1.9	2
	13125R/L	★		**125**	112.3	80	63	**38.1**	15.9	10	38	10	2	10	3.3	2
	13160R/L	★		**160**	147.3	120	63	**50.8**	19.1	11	38	12	3	12	5.9	2
	13200R/L	★		**200**	187.3	150	63	**47.625**	25.4	14	35	16	4	16	7.8	3
	13250R/L	★		**250**	237.3	184	63	**47.625**	25.4	14	35	20	5	20	9.4	3
	13315R/L	★		**315**	302.3	240	80	**47.625**	25.4	14	35	24	6	24	17.9	4

*1: In GFXC13063RS/LS, it is ø11. (Fig 1) *2: In GFXC13063RS/LS, it is ø18. (Fig 1) Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Fig 1

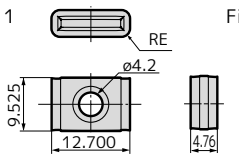
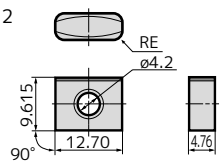


Fig 2



Grade Classification		Coated Carbide			Carbide	CBN			
Process	High-speed Finishing					K			
	Finishing/Medium Cutting	K							
	Roughing		K	K					
Cat. No.		ACK260	ACK280	ACK300	H10E	BN7125	BN7000	Corner Radius RE	Fig
LNGX 130508PNFN-W		★	★		★	—	—	0.8	1
130516PNFN-W		★	★		★	—	—	1.6	1
130516PNTN-W		—	—	—	—	★	★	1.6	2

Parts H277

● Allowable Spindle Speed for CBN Inserts by Size

H277

Precautions for Use of GFXC type

GFXC type can be used with fewer teeth attached. In this case, only mount inserts to the mounting positions with markings. Remove the screws from the mounting positions where inserts will not be mounted.



GFXC type with total no. of teeth and when mounting reduced no. of teeth.

Cat. No.	Dia. DC	Total No. of Teeth	Reduced No. of Teeth
GFXC 13063RS/LS	63mm	4	**2**
13080R/L	80mm	6	**2**
13100R/L	100mm	8	**4**
13125R/L	125mm	10	**4**

Cat. No.	Dia. DC	Total No. of Teeth	Reduced No. of Teeth
GFXC 13160R/L	160mm	12	**6**
13200R/L	200mm	16	**8**
13250R/L	250mm	20	**10**
13315R/L	315mm	24	**12**

The number of inserts mounted should always match either the "Total No. of Teeth" or "Reduced No. of Teeth" quantities.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	200- **250**- 350	0.1-**0.3**-0.5	ACK260
K	Cast Iron	250HB	800-**1,000**-1,200	0.1-**0.3**-0.5	BN7125

Note Calculate cutting conditions based on effective no. of teeth.
The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GFX 16000 type

K Cast Iron

Rake Angle	Radial	-8°
	Axial	-5°

1mm 89°-89°30'

Face Milling



Fig 1

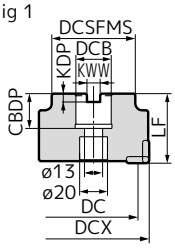


Fig 2

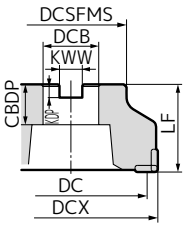


Fig 3

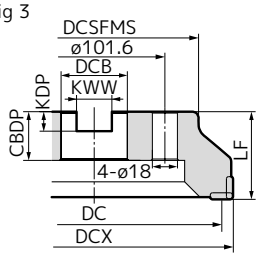
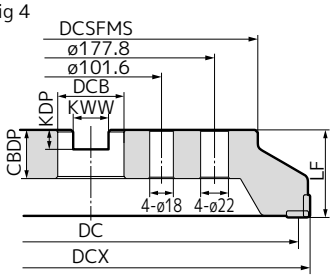


Fig 4



Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total No. of Teeth	Number of Finishing Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**GFX 16080R/L**			*80	64.1	60	50	**25.4**	9.5	6	25	8	2	8	1.4	1
	16100R/L	★		**100**	84.125	70	50	**31.75**	12.7	8	32	12	3	12	1.9	2
	16125R/L	★		**125**	109.125	80	63	**38.1**	15.9	10	38	16	4	16	3.3	2
	16160R/L	★		**160**	144.125	120	63	**50.8**	19.1	11	38	20	5	20	6.4	2
	16200R/L	★		**200**	184.125	150	63	**47.625**	25.4	14	35	28	7	28	7.8	3
	16250R/L			**250**	234.1	130	63	**47.625**	25.4	14	35	36	9	36	12.6	3
	16315R/L			**315**	299.125	240	80	**47.625**	25.4	14	35	44	11	44	20.8	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide			Carbide	CBN		
Process	High-speed Finishing					K		
	Finishing/Medium Cutting	K						
	Roughing		K	K				
ISO Cat. No.		ACK260	ACK280	ACK300	H10E	BN7125	BN7000	Fig
LNGX 160516PNFN-W		★	★		★	—	—	1
160516PNTN-W		—	—	—	—			2

Fig 1

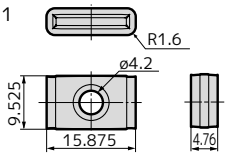
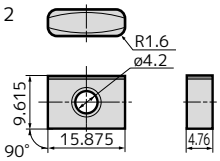


Fig 2



Parts

Cartridges (For 13000)	Cartridges (For 16000)	Wrench (For Cartridges)	Adjustment Screw	Wrench (For Adjustment Screw)	Flat Insert Screw		Wrench	Cap Screw/Radial Cartridge (For GFXK4R/L)	Cap Screw/Radial Cartridge (For GFVK5R/L)	Anti-seizure Cream
						N·m				
GFXK4R/L	GFVK5R/L	TH030	BTD05F09	LT15	BFTX03588	**3.0**	TTX15W	BX0414	BX0418	SUMI-P

Finishing cartridges do not come assembled with inserts.

● Allowable Spindle Speed for CBN Inserts by Size

Max. Dia. (mm) DCX	Allowable Spindle Speed (min-1) n max.
ø63	6,000
ø80	4,700
ø100	3,800
ø125	3,000

Max. Dia. (mm) DCX	Allowable Spindle Speed (min-1) n max.
ø160	2,300
ø200	1,900
ø250	1,500
ø315	1,200

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	200- **250**- 350	0.1-**0.3**-0.5	ACK260
K	Cast Iron	250HB	800-**1,000**-1,200	0.1-**0.3**-0.5	BN7125

Note Calculate cutting conditions based on effective no. of teeth.
The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GRHNM 17000 type / GRHNF 17000 type

K Cast Iron

Rake Angle		
	Radial	-6°30' to -5°
	Axial	-6°

6mm 60°

Face Milling

GRHNM 1700



Fig 1

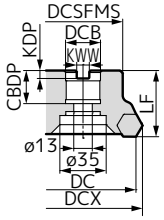


Fig 2

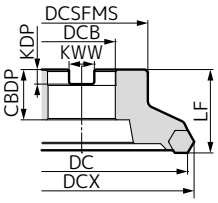


Fig 3

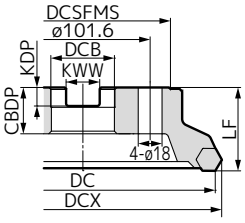
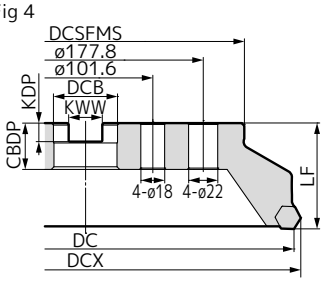


Fig 4



Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total No. of Teeth	Weight (kg)	Fig
Inch	**GRHNM 17080R/L**	★		*80	90.5	60	50	**25.4**	9.5	6	25	8	1.2	1
	GRHNM 17100R/L	★		**100**	110.5	70	50	**31.75**	12.7	8	32	10	1.7	2
	GRHNM 17125R/L	★		**125**	135.5	80	63	**38.1**	15.9	10	38	12	2.9	2
	GRHNM 17160R/L	★		**160**	170.5	100	63	**50.8**	19.1	11	38	16	4.5	2
	GRHNM 17200R/L	★		**200**	210.5	130	63	**47.625**	25.4	14	35	20	7.3	3
	GRHNM 17250R/L	★		**250**	260.5	130	63	**47.625**	25.4	14	35	24	13.1	3
	GRHNM 17315R/L	★		**315**	325.5	240	80	**47.625**	25.4	14	40	28	24.5	4

GRHNF 1700



Fig 1

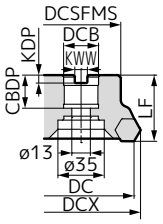


Fig 2

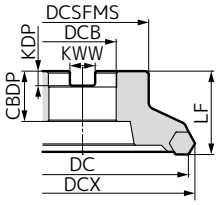


Fig 3

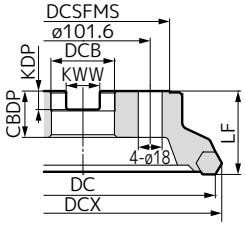
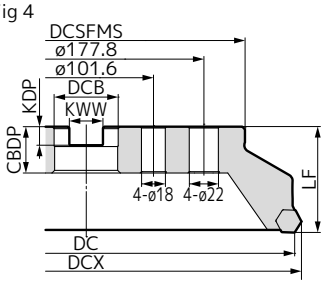


Fig 4



Body

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total No. of Teeth	Weight (kg)	Fig
Inch	**GRHNF 17080R/L**	★		*80	90.5	60	50	**25.4**	9.5	6	25	10	1.2	1
	17100R/L	★		**100**	110.5	70	50	**31.75**	12.7	8	32	14	1.8	2
	17125R/L	★		**125**	135.5	80	63	**38.1**	15.9	10	38	18	2.9	2
	17160R/L	★		**160**	170.5	100	63	**50.8**	19.1	11	38	22	4.5	2
	17200R/L	★		**200**	210.5	130	63	**47.625**	25.4	14	35	28	7.3	3
	17250R/L	★		**250**	260.5	130	63	**47.625**	25.4	14	35	36	13.1	3
	17315R/L	★		**315**	325.5	240	80	**47.625**	25.4	14	40	44	24.5	4

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

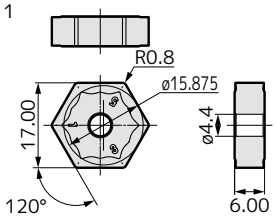
Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing			K

ISO Cat. No.	ACK100	ACK200	ACK300	Fig
HNEF 100608DNEN-G	★	★	★	1

Fig 1



Parts

Double Screw		Clamp Plate	Wrench	Anti-seizure Cream
				
WB6-20T	**6.0**	GRHNW	TTX20	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	200-**250**-300	0.15-**0.23**-0.30	ACK200

Note Calculate cutting conditions based on effective no. of teeth.
The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DNX series Multi-tooth type

Edge Chipping/Surface Roughness Countermeasures Cutter Design Inquiry Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact



Multi-tooth design via wedge clamp (3.5 teeth/inch)

Adjustment mechanism via adjustment screw





Compatible diameters: ø63 to ø400mm
(Contact us for diameters over ø400mm)

*Maximum number of teeth is the same as GRHNF type.
(Contact us for sizes not listed in the catalogue.)

Parts

Double Screw		Clamp Plate	Wrench	Anti-seizure Cream	Adjustment Screw	Wrench
						
WB6-20T	**6.0**	DNXW	TTX20	SUMI-P	BTD05F09	LT15

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting	K	K		P M	P M			
	Medium Cutting	K	K		P M	P M			
	Roughing			K	P M	P M			
ISO Cat. No.		ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Fig
SNMT 1205ZNEN-L			★	★	★		V-shaped Edge type	Light Cutting	1
1205ZNEN-G		★	★	★	★			General-purpose	1
1205ZNEN-H		★	★	★	★			Heavy Cutting	1
SNMT 1205ZNEN-SH		★	★	★	★	★	Straight type	Improved Chip Control	2
XNGT 1205ZNEN-W			★	★			Wiper Insert	Improved Surface Roughness	3

Fig 1

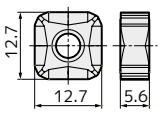


Fig 2

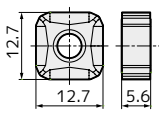
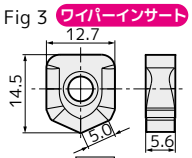
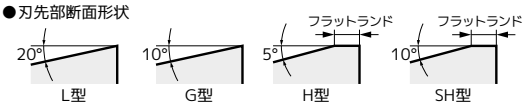


Fig 3 ワイパーインサート



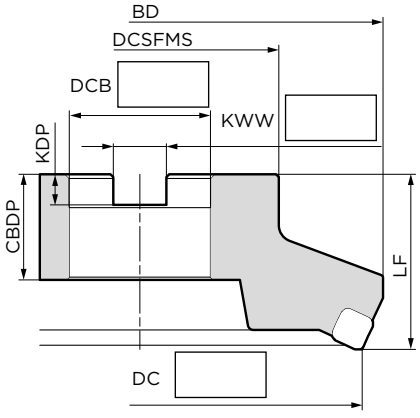
●刃先部断面形状



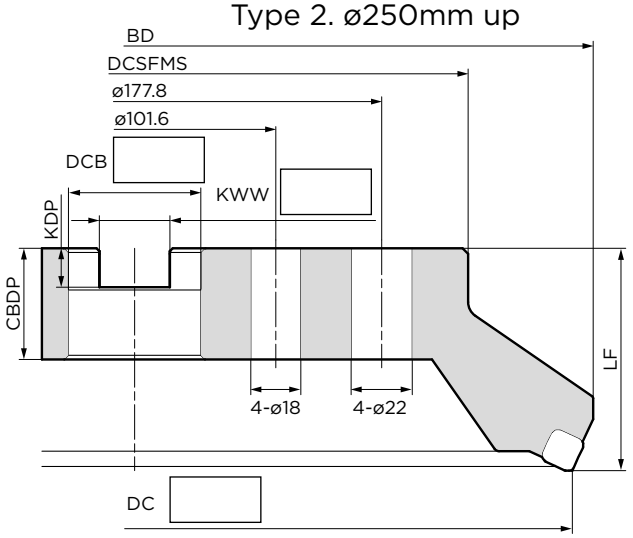
Refer to page H42 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Effective No. of Teeth
Desired: ☐
Feed Direction:
Right-handed ☐
Left-handed ☐

Type 1. ø63 to ø200mm

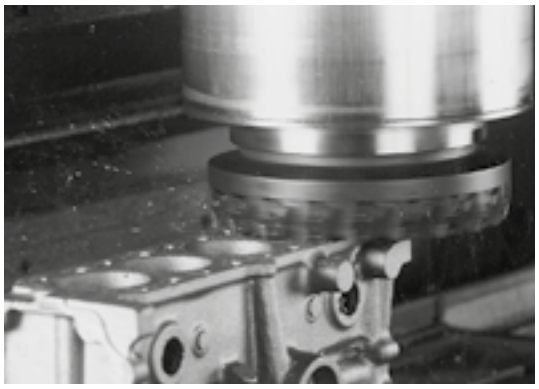


Type 2. ø250mm up



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High-Feed Face Mills



■ Features

Sumitomo Electric Hardmetal SEC-High-Feed Face Mills achieve high-performance milling particularly suited for cast irons, aluminum and light alloys.
Cutting edge reference system design is rugged, simple and easy to maintain.
A range of face mills are available to suit various applications.

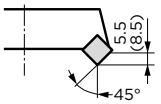
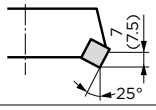
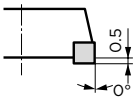
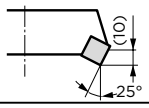
■ Series Common Features

- Dedicated cutter for high-feed milling of cast iron and light alloys.
- Cutting edge reference system provides simple, easy and fast runout management. (→ page H281)
- Fine-pitched cutter design (*3 teeth per inch) is ideal for high-efficiency machining. *Cutting edge to O.D. inch conversion (example: ø100 ≈ 4 inches x 3 = 12 teeth)
- An excellent range of cutter designs and insert grades to suit various applications.
- Quick change system enables fast replacement of cutter. (→ page H286)

	Cat. No.	Specifications	Applicable Cutter Size
(1)	F type / NF type*	Quick Change System	ø160mm and below
(2)	2-piece type	2-piece system	ø200mm and above
(3)		Two-piece cutter with centre bolt	

* The Quick Change System NF type is a made-to-order item. For details, please contact us directly.

■ Type / Specifications

Applications		Cat. No.	Approach Angle & Maximum Depth of Cut ( ) for 5000 type	Rake Angle		Insert Cat. No.	Page
Applications	Surface Roughness			Axial Rake	Radial Rake		
Roughing	25S	**NRV 4000 type**		-5°	-6°	SNC43MW	H282
		NRV 5000 type				SNC535	
Roughing / Finishing	18S	**DPV 4000 type**		+10°	+5°	SDCN42R/L	H283
		DPV 5000 type				SDCN53R/L	
Finishing	12.5S	**NFV 4000 type**		-5°	-6°	6SS43M	H284
		NFV 5000 type				6SS53M	
Roughing/ Finishing of Light Alloy	12.5S	**APV 5000 type**		+18°	-2°	SDC53R/L	H285

■ Recommended Cutting Conditions

Cat. No.	Insert Cat. No.	Insert Grades	Cutting Conditions (Min. - **Optimum** - Max.)		
			vc(m /min)	fz(mm/t)	ap(mm)
NRV 4000 type	SNC43MW	ACK200	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 3
NRV 5000 type	SNC535	ACK200	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 3
DPV 4000 type	SDCN42R/L	G10E	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 3
DPV 5000 type	SDCN53R/L	G10E	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 5
NFV 4000 type	6SS43M	H10E	120 - **160** - 200	0.1 - **0.15** - 0.2	up to 0.5
NFV 5000 type	6SS53M	H10E	120 - **160** - 200	0.1 - **0.15** - 0.2	up to 0.5
APV 5000 type	SDC53R/L	H1	< 400	0.1 - **0.20** - 0.3	up to 3

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Cutting Edge Reference System



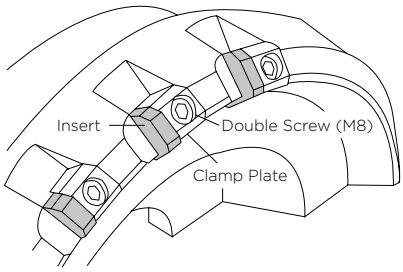
■ Features

Conventional indexable cutters are designed to position and clamp two or three faces of the insert with locators, etc. The cutting edge reference cutter, on the other hand, retains the insert only with a clamp plate. (See Fig 1) This system is adopted for our entire high-feed cutter series.

■ Features of the Cutting Edge Reference Cutter

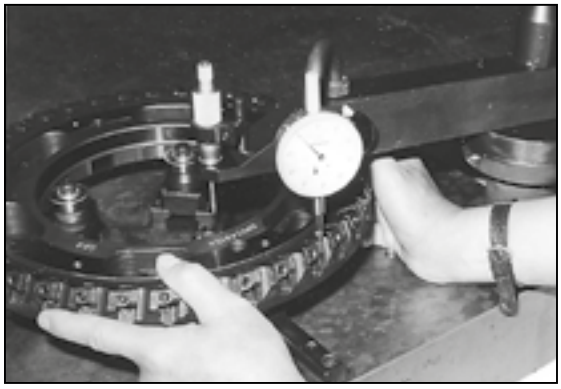
- Axial runout of the inserts is kept within 5 to 10μm to ensure stable surface roughness and longer tool life.
- Simple design with fewer parts compared to the locator type facilitates cleaning the typical cast iron machining dirt and is comparatively inexpensive.
- Fewer parts allow high-density cutter design, higher machining efficiency and longer tool life.

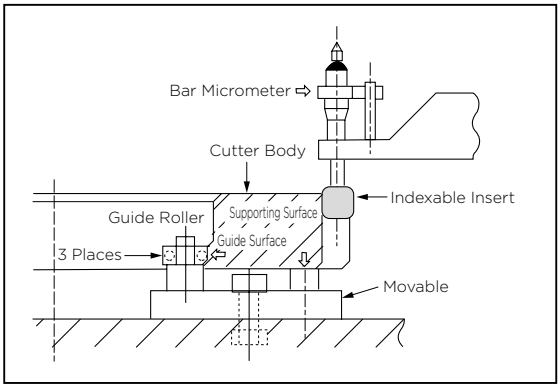
Fig 1



■ Assembly Jig

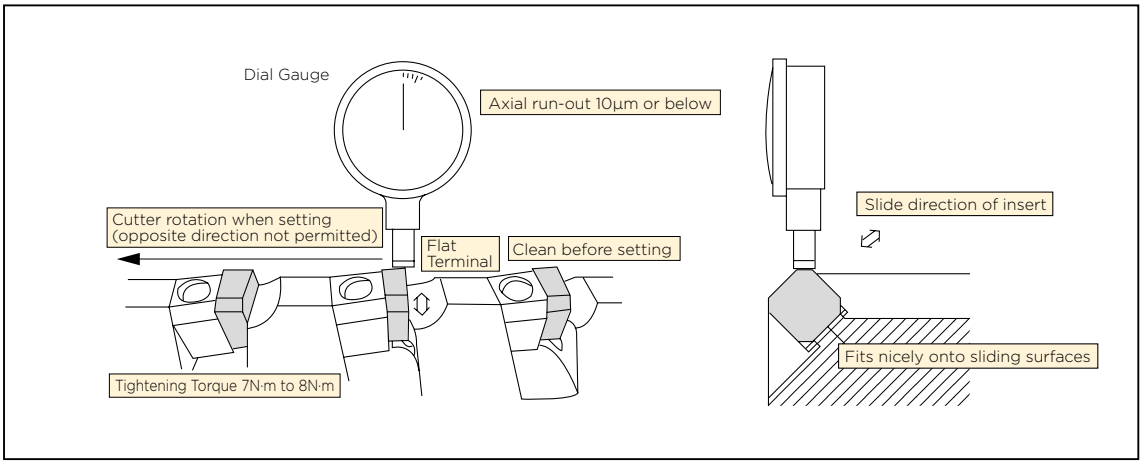
Application of a special assembly jig (as shown in the figure below) is recommended to accurately assemble the cutting edge reference cutter.





■ Insert Assembly Guidelines

When mounting (assembling) the inserts, pay careful attention to the points noted below in .



NRV 4000/5000 type

K Cast Iron

Rake Angle	Radial	-6°
	Axial	-5°

5.5mm 45° (4000 type)

8.5mm 45° (5000 type)

Face Milling

Fig 1

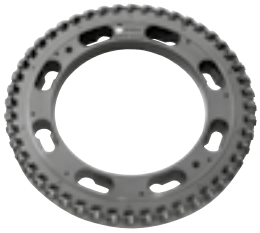
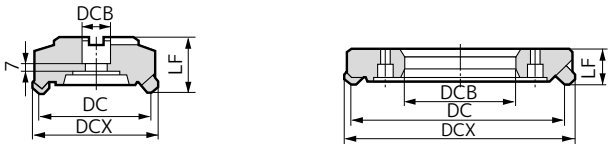


Fig 2



Body

Dimensions (mm)

Classification		ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX*	Height LF	Hole Dia. DCB	Number of Teeth	Weight (kg)	Fig
Inch	F type	**NRV○100QR/L**			**100**	112(118)	60	**31.75**	10	2.7	1
		○125QR/L			**125**	137(143)	60	**38.1**	14	3.8	1
		○160QR/L			**160**	172(177)	60	**50.8**	18	6.3	1
	2-piece type	**NRVZ○200R/L**			**200**	212(218)	40	**80**	24	5.8	2
		○250R/L			**250**	262(268)	40	**120**	30	9.0	2
		NRVZ○315R/L			**315**	326(332)	40	**180**	36	12.5	2
		○355R/L			**355**	366(372)	40	**220**	42	15.5	2
		NRVZ○400R/L			**400**	411(417)	40	**250**	48	18.8	2
		○450R/L			**450**	461(467)	40	**300**	54	22.0	2

Inserts are sold separately.
Put 4 or 5 in "○" in the catalogue number.
Refer to page H286 for dedicated arbors for the type of cutters shown in Fig 1.
Refer to page H286 for dedicated adapters for the type of cutters shown in Fig 2.
* marked dimensions in ( ) are for the 5000 type.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		Cemented Carbide					
Process	High-speed/Light Cutting	K							
	Medium Cutting	K		K					
	Roughing		K						
ISO Cat. No.		ACK200	ACK300	G10E	Inscribed Circle IC	Chamfering CHW	Corner Radius RE	Fig	Applicable Cutter
SNC 43MW				★	12.70	3.0	—	1	NRV(Z) 4○○○
SNC 433					12.70	—	1.2	2	NRV(Z) 4○○○
434					12.70	—	1.6	2	NRV(Z) 4○○○
435					12.70	—	2.0	2	NRV(Z) 4○○○
436					12.70	—	2.4	2	NRV(Z) 4○○○
SNC 535					15.875	—	2.0	3	NRV(Z) 5○○○
SNMN 432				★	12.70	—	0.8	3	NRV(Z) 4○○○
433			★	★	12.70	—	1.2	3	NRV(Z) 4○○○
434					12.70	—	1.6	3	NRV(Z) 4○○○
435					12.70	—	2.0	3	NRV(Z) 4○○○
436					12.70	—	2.4	3	NRV(Z) 4○○○

Fig 1

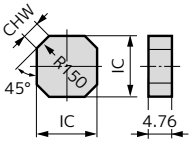


Fig 2

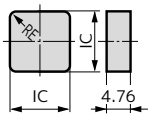
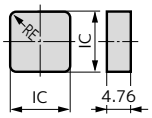


Fig 3



Recommended Cutting Conditions H280

Parts

Applicable Cutters	Clamp Plate ø160 and below	Clamp Plate ø200 and above	Double Screw	Wrench	Anti-seizure Cream	Jig
						
NRV(Z) 4○○○R	NW41RR	NW42RR	WB6-20	TH030	SUMI-P	· Arbor for F type · Adapter for 2-piece type
NRV(Z) 4○○○L	NW41RL	NW42RL				
NRV(Z) 5○○○R	NW51R	NW52R	WV6-20			
NRV(Z) 5○○○L	NW51L	NW52L				

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

DPV 4000/5000 type

Cast Iron

Rake Angle		
Radial	5°	
Axial	10°	

7mm 65° (4000 type)

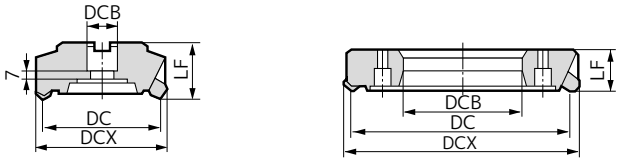
7.5mm 65° (5000 type)

Face Milling

Fig 1



Fig 2



Body

Dimensions (mm)

Classification		ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX*	Height LF	Hole Dia. DCB	Number of Teeth 4000	Number of Teeth 5000	Weight (kg)	Fig
Inch	F type	**DPV○100QR/L**			**100**	107.2(109.6)	60	**31.75**	12	10	2.6	1
		○125QR/L			**125**	131.5(133.6)	60	**38.1**	16	14	3.6	1
		○160QR/L			**160**	165.8(176.6)	60	**50.8**	20	18	6.0	1
	2-piece type	**DPVZ○200R/L**			**200**	206.5(208)	40	**80**	26	24	5.5	2
		○250R/L			**250**	256 (258)	40	**120**	32	32	9.0	2
		○315R/L			**315**	322.5(323)	40	**180**	38	36	12.0	2
		○355R/L			**355**	361.5(363)	40	**220**	44	42	15.0	2
		○400R/L			**400**	406.5(408)	40	**250**	50	48	17.8	2
		○450R/L			**450**	456.5(458)	40	**300**	56	54	20.8	2

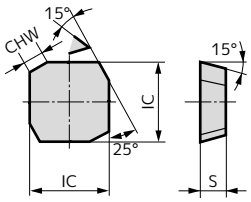
Inserts are sold separately.
Put 4 or 5 in "○" in the catalogue number.
Refer to page H286 for dedicated arbors for the type of cutters shown in Fig 1.
Refer to page H286 for dedicated adapters for the type of cutters shown in Fig 2.
* marked dimensions in ( ) are for the 5000 type.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		Cemented Carbide					
Process	High-speed/Light Cutting	K		K					
	Medium Cutting	K							
	Roughing		K						
ISO Cat. No.		ACK200	ACK300	H10E	Inscribed Circle IC	Thickness S	Chamfering CHW	Applicable Cutter	Fig
SDCN 42R				★	12.70	3.18	3.5	DPV(Z) 4○○○R	1
42L				★	12.70	3.18	3.5	DPV(Z) 4○○○L	1
SDCN 53R				★	15.875	5.0	5.0	DPV(Z) 5○○○R	1
53L					15.875	5.0	5.0	DPV(Z) 5○○○L	1

Fig 1



Recommended Cutting Conditions H280

Parts

Applicable Cutters	Clamp Plate ø160 and below	Clamp Plate ø200 and above	Double Screw	Wrench	Anti-seizure Cream	Jig
						
DPV(Z) 4○○○R	HTW40R	HTW41R	WB6-20	TH030	SUMI-P	· Arbor for F type · Adapter for 2-piece type
DPV(Z) 4○○○L	HTW40L	HTW41L				
DPV(Z) 5○○○R	HTW50R	HTW51R	WB6-20			
DPV(Z) 5○○○L	HTW50L	HTW51L				

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

NFV 4000/5000 type

K Cast Iron

Rake Angle	Radial	-6°
	Axial	-5°

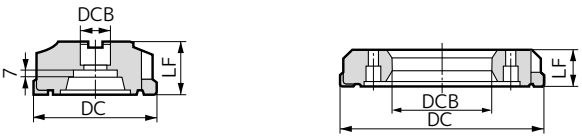
0.5mm 90°

Face Milling

Fig 1



Fig 2



Body

Dimensions (mm)

Classification		ISO Cat. No.	Stock R	Stock L	Dia. DC	Height LF	Hole Dia. DCB	Number of Teeth	Weight (kg)	Fig
Inch	F type	**NFV○100QR/L**			**100**	60	**31.75**	10	2.6	1
		○125QR/L			**125**	60	**38.1**	14	3.9	1
		○160QR/L			**160**	60	**50.8**	18	6.3	1
	2-piece type	**NFVZ○200R/L**			**200**	40	**80**	24	5.3	2
		○250R/L			**250**	40	**120**	30	9.0	2
		○315R/L			**315**	40	**180**	36	11.3	2
		○355R/L			**355**	40	**220**	42	14.0	2
		○400R/L			**400**	40	**250**	48	16.5	2
		○450R/L			**450**	40	**300**	54	21.0	2

Inserts are sold separately.
Put 4 or 5 in "○" in the catalogue number.
Refer to page H286 for dedicated arbors for the type of cutters shown in Fig 1.
Refer to page H286 for dedicated adapters for the type of cutters shown in Fig 2.

Insert

Dimensions (mm)

Grade Classification		Cemented Carbide
Process	High-speed/Light Cutting	K
	Medium Cutting	
	Roughing	

ISO Cat. No.	H10E	Inscribed Circle IC	Thickness S	Applicable Cutter	Fig
SNEF 43W	★	12.70	4.76	NFV(Z) 4○○○	1
6SS 43M	★	12.70	4.76	NFV(Z) 4○○○	2
SNEF 53W	★	15.875	4.76	NFV(Z) 5○○○	1
53WT		15.875	4.76	NFV(Z) 5○○○	1
6SS 53M	★	15.875	4.76	NFV(Z) 5○○○	2
SNEN 535W		15.875	4.76	NFV(Z) 5○○○	3

Fig 1

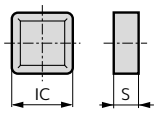


Fig 2

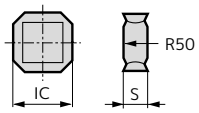
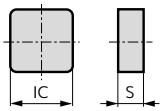


Fig 3



Recommended Cutting Conditions H280

Parts

Applicable Cutters	Clamp Plate ø160 and below	Clamp Plate ø200 and above	Double Screw	Wrench	Anti-seizure Cream	Jig
						
NFV(Z)4○○○R	NW41FR	NW42FR	WB6-20	TH030	SUMI-P	· Arbor for F type · Adapter for 2-piece type
NFV(Z)4○○○L	NW41FL	NW42FL				
NFV(Z)5○○○R	NW51R	NW52R				
NFV(Z)5○○○L	NW51L	NW52L				

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

APV 5000 type

P Steel K Cast Iron N Non-Ferrous Metal

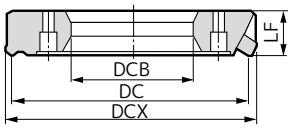
Rake Angle	Radial	-2°
	Axial	18°

10mm / 65°

Face Milling

Fig 1





Body

Dimensions (mm)

Classification		ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Height LF	Bore Dia. DCB	Number of Teeth	Weight (kg)	Fig
Inch	2-piece type	**APVZ 5200R/L**			**200**	211	40	**80**	18	7.0	1
		5250R/L			**250**	261	40	**120**	22	10.8	1
		5315R/L			**315**	326	40	**180**	26	13.7	1
		5355R/L			**355**	366	40	**220**	32	16.3	1
		5400R/L			**400**	411	40	**250**	36	20.0	1
		5450R/L			**450**	461	40	**300**	40	23.6	1

Inserts are sold separately.

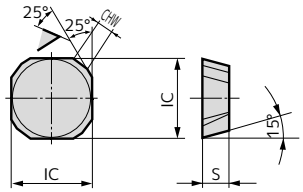
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide		Cermet
Process	High-speed/Light Cutting		K N	
	Medium Cutting	P		P
	Roughing			

ISO Cat. No.	A30N	H1	T250A	Inscribed Circle IC	Thickness S	Chamfering CHW	Applicable Cutter	Fig
SDC 53R		★		15.88	4.76	2.5	APVZ 5OOOR	1
53L		★		15.88	4.76	2.5	APVZ 5OOOL	1
53TR	★			15.88	4.76	2.5	APVZ 5OOOR	1
53TL				15.88	4.76	2.5	APVZ 5OOOL	1
53TR-R				15.88	4.76	2.5	APVZ 5OOOR	1
SDCH 53TR	★			15.88	4.76	2.5	APVZ 5OOOR	1
53TR-R				15.88	4.76	2.5	APVZ 5OOOR	1

Fig 1



Recommended Cutting Conditions ☞H280

Parts

Applicable Cutter	Clamp Plate ø200 and above	Double Screw	Wrench	Anti-seizure Cream	Jig
APVZ 5OOOR	AW52R	WB6-20	TH030	SUMI-P	· Adapter for 2-piece type
APVZ 5OOOL	AW52L				

★mark: Global stocked item

▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

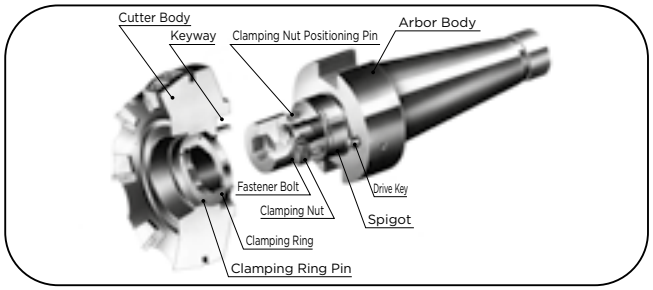
Blank: Made-to-order item

— mark: Not available

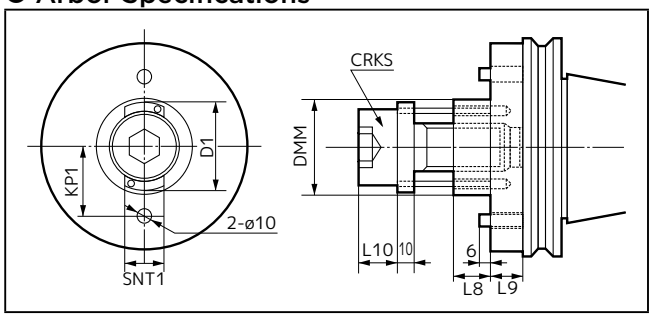
QC System

■ Quick-F series

● Structure



● Arbor Specifications



Dimensions (mm)

ISO Cat. No.	Shank DMM	Bolt D1	Screw CRKS	Keyway Width SNT1	Length L8	Length L9	Length L10	Key position KP1
○○○○**QF4R/L**	31.75	30.75	M14 P2.0	18	22	22	13	27.5
○○○○**QF5R/L**	38.1	37.1	M16 P2.0	20	20	24	14	27.5
○○○○**QF6R/L**	50.8	49.8	M20 P2.5	24	20	30	16	34

Enter the taper code in the ○ mark. (Example: BT50-QF4R)

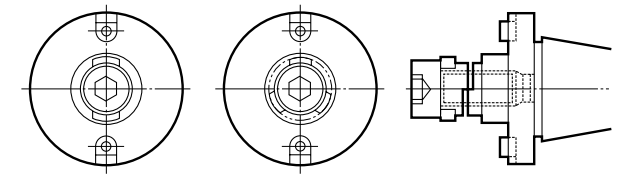
● Features and Applications

(1) Requires less time for mounting and removing.
(2) Can be used with cutter diameters of 4″ (ø100) to 6″ (ø160).

■ Quick-NF series (Applicable to cutter diameters of 3″ (ø80) to 6″ (ø160))

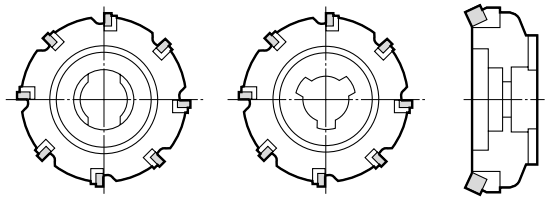
* Made-to-order item. Please contact us directly when ordering.

● Arbor Specifications



QNF3R/L to QNF5R/L　　QNF6R/L

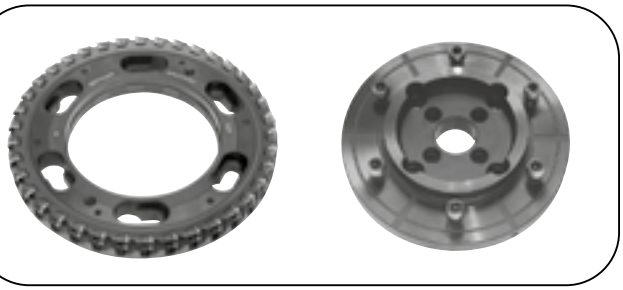
● Cutter Specifications



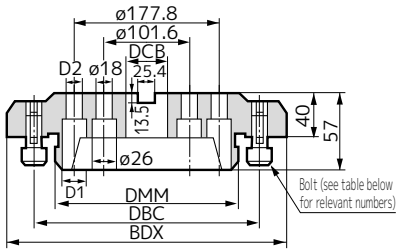
3 to 5 Inch　　6 Inch

■ Two-piece Cutter with Slotted Hole

● Appearance of Slotted Hole type Body



● Adapter Specifications



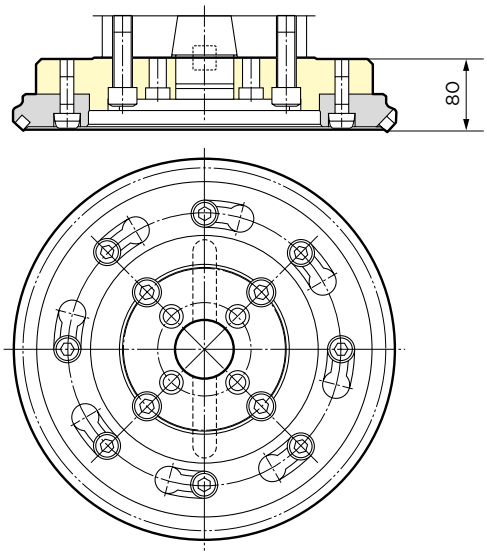
Dimensions (mm)

ISO Cat. No.	Shank DMM	Maximum O.D. BDX	Hole Dia. DCB	Bolt D1	Bolt D2	Hole Position DBC	No. of Bolts n	Cutter Size (mm)
QAD 200	80	180	**47.625**	—	—	120	4	ø200
250	120	230	**47.625**	—	—	170	4	ø250
315	180	295	**47.625**	32	22	230	6	ø315
355	220	335	**63.5**	32	22	270	6	ø355
400	250	370	**63.5**	32	22	300	6	ø400
450	300	420	**63.5**	32	22	350	6	ø450

● Features and Applications

(1) Lightweight ring cutter body.
(2) Cutter can be changed without removing the bolt.
(3) A tapered spline system is used to connect the adapter to the cutter.
(4) Can be used for cutters over ø200.
(5) Effective when mounting several cutter body sizes on the same adapter.

● Cutter Mounting Diagram

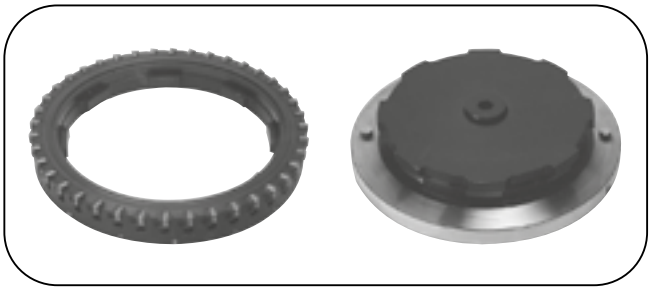


★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

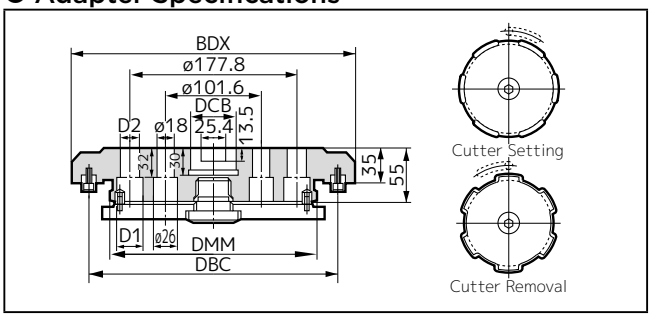
Applicable Cutter

■ Two-piece Cutter with Centre Bolt

● Appearance



● Adapter Specifications



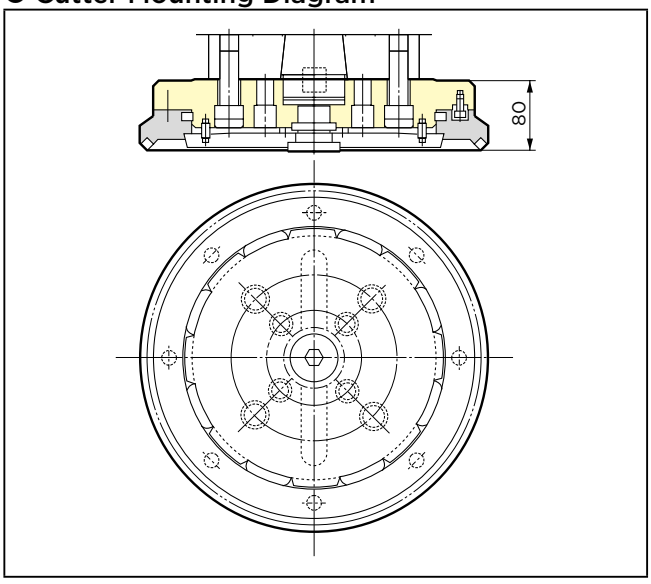
Dimensions (mm)

ISO Cat. No.	Shank DMM	Maximum O.D. BDX	Hole Dia. DCB	Bolt D1	Bolt D2	Hole Position DBC	Cutter Size (mm)
NQAD 200	105	180	**47.625**	—	—	155	ø200
250	155	240	**47.625**	—	—	205	ø250
315	220	305	**47.625**	32	22	270	ø315
355	260	345	**63.5**	32	22	310	ø355
400	305	390	**63.5**	32	22	355	ø400
450	355	440	**63.5**	32	22	405	ø450

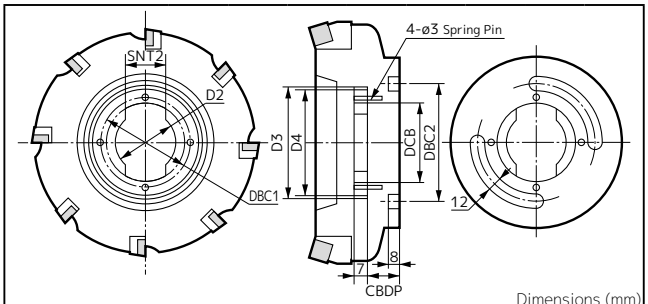
● Features and Applications

(1) With one clamping bolt, the total weight of the two-piece cutter is lighter.
(2) Cutter can be replaced quickly - simply turn one bolt halfway to mount and remove.
(3) A tapered spline system is used to connect the adapter to the cutter.
(4) Can be used for cutters over ø200.

● Cutter Mounting Diagram



■ Quick-F QF type Cutter Specifications

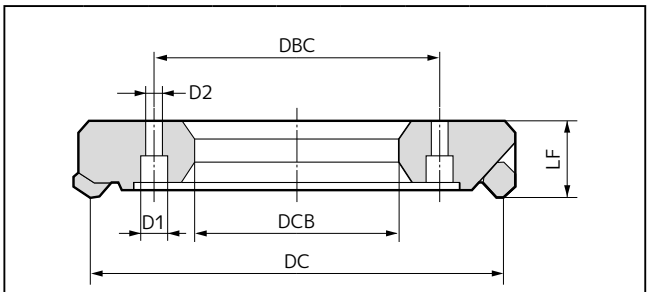


Dimensions (mm)

Cutter Size (mm)	Hole Dia. DCB	Bolt D2	Bolt D3	Diameter D4	Hole Position DBC1	Hole Position DBC2	Keyway Width SNT2	Mounting Depth CBDP
ø100	31.75	22	43.75	43.5	37.75	55	20	24
ø125	38.1	29	50.1	49.8	44.1	55	22	22
ø160	50.8	41	62.8	62.5	56.8	68	26	22

This design applies to all F type high-feed cutters (→ pages H282 to H285). Conventional cutter can be easily adapted to quick change through slight modification.

■ QAD Cutter (Two-piece type) Specifications

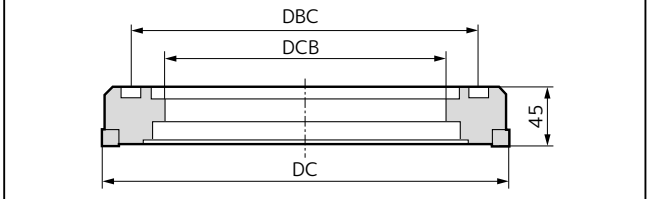


Dimensions (mm)

Cutter Size (mm)	Dia. DC	Hole Dia. DCB	Bolt D1	Bolt D2	Hole Position DBC	Height LF	No. of Bolts n	Adapter Cat. No.
ø200	**200**	**80**	24	14	120	40	4	QAD200
ø250	**250**	**120**	30	18	170	40	4	QAD250
ø315	**315**	**180**	30	18	230	40	6	QAD315
ø355	**355**	**220**	30	18	270	40	6	QAD355
ø400	**400**	**250**	30	18	300	40	8	QAD400
ø450	**450**	**300**	30	18	350	40	8	QAD450

This design applies to the 2-piece type high-feed cutters (→ pages H282 to H285).

■ NQAD Cutter (Two-piece type with Centre Bolt) Specifications



Dimensions (mm)

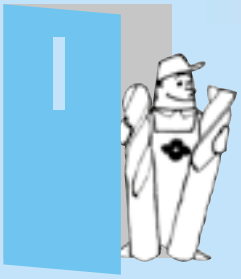
Cutter Size (mm)	Dia. DC	Hole Dia. DCB	Hole Position DBC	Adapter Cat. No.
ø200	**200**	**105**	155	NQAD200
ø250	**250**	**155**	205	NQAD250
ø315	**315**	**220**	270	NQAD315
ø355	**355**	**260**	310	NQAD355
ø400	**400**	**305**	355	NQAD400
ø450	**450**	**355**	405	NQAD450

This design applies to all two-piece type high-feed cutters with a centre bolt (→ pages H282 to H285).

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Endmills

I1 to I140



Selection Guide I2
Endmill Coatings I6
EPMP Series I8
EPMS Series I9
GSX MILL series I10
New SUMIDIA Coated AVIX type I15
SUMIDIA Coated SSDC series I16
SSEH series I17
GS MILL Hard series I18
AURORA Coat Endmills I19
Mold Finish Master series I20
New AVIC type I24

Square	General-purpose	GSX MILL 2 Flutes	GSX 20000C-1.5D I26
		GSX MILL 2 Flutes	GSX 20000S-2D/20000C-2D I28, I32
		GSX MILL 2 Flutes	GSX 20000S-3D/20000C-3D I34, I36
		GSX MILL 2 Flutes	GSX 20000S-4D/20000C-4D I38, I40
		GSX MILL 3 Flutes	GSX 30000C-1.5D I42
		GSX MILL 3 Flutes	GSX 30000C-2D I44
		GSX MILL 4 Flutes	GSX 40000C-1.5D I46
		GSX MILL 4 Flutes	GSX 40000S-2D/40000C-2D I48, I50
		GSX MILL 4 Flutes	GSX 40000S-3D/40000C-3D I52, I54
		GSX MILL 4 Flutes	GSX 40000S-4D/40000C-4D I56, I58
	High Efficiency	Endmills for Steel Machining	EPMP 4000 2.5D I60
		Endmills for Steel Machining	EPMP 5000 3D I62
		GSX MILL Anti-vibration 4 Flutes	GSV 4000-2.5D I64
		GSX MILL Anti-vibration 4 Flutes	GSXVL 4000-2.5D I66
		UP MILL 4 Flutes	SSUP 4000ZX I68
		Long Neck UP MILL 4 Flutes	SSUPR 4000ZX I69
	Hardened Steel	GS MILL Hard 4/6/8 Flutes	GSH 4000SF/6000SF/8000SF I70, I71, I72
		Hard HHM 4/6/8 Flutes	HHM 4000ZX/6000ZX/8000ZX I73, I74, I75
		Hard LHHM 4/6/8 Flutes	LHHM 4000ZX/6000ZX/8000ZX I76, I77, I78
		Hard EHHM 4/6/8 Flutes	EHHM 4000ZX/6000ZX/8000ZX I79, I80, I81
	Roughing	GS MILL Roughing 4 Flutes	GSRE 4000SF I82
	Non-Ferrous Metal	Non-Ferrous Metals AURORA Coat 2/4 Flutes	ASM 2000DL/4000DL I84, I85
		Non-Ferrous Metals 2 Flutes	ASM 2000 ..... I86
		Non-Ferrous Metals SUMIDIA 2/4 Flutes	DFE I87
		Non-Ferrous Metals SUMIDIA 1/2 Flutes	DAE I89
	CFRP Graphite	SUMIDIA Coated for CFRP 4/5/6 Flutes	New AVIX I91
		SUMIDIA Coated for CFRP 4 Flutes	SSDC 4000(RL) I92
Radius		Raduis Endmills for Exotic Alloys	EPMS 4000-R 2.5D / EPMS 5000-R 2.5D I94
		Raduis Endmills for Exotic Alloys	EPMS 6000-R 2.5D I95
		GSX MILL 4 Flutes	GSX 40000-R-2D I98
		GSX MILL Anti-vibration 4 Flutes	GSV 4000-R-2.5D I100
		GSX MILL Anti-vibration 4 Flutes	GSXVL 4000-R-2.5D I102
		Exotic Alloy SSEH Anti-vibration 4 Flutes	SSEHVL 4000W-R I104
		Exotic Alloy SSEH 4 Flutes	SSEH 4000W-R I106
		UP MILL 4 Flutes	SSUP 4000ZX-R I108
		Long Neck UP MILL 4 Flutes	SSUPR 4000ZX-R I110
		GS MILL Hard 6/8 Flutes	GSH 6000SF-R/8000SF-R I112, I113
		Exotic Alloy SSEH Anti-vibration 4 Flutes	SSEHVL 4000-R I114
		Exotic Alloy SSEH 4 Flutes	SSEH 4000-R I115
		Mold Finish Master series 1 Flute	NPDRS I116
		Mold Finish Master series 2 Flutes	BNBR I118
Ballnose		GSX MILL Ballnose 2 Flutes	GSXB 20000 ..... I120
		GS MILL Hard Ballnose 2 Flutes	GSBH 20000SF I122
		Non-Ferrous Metals AURORA Coat Ballnose 2 Flutes	SNB 2000DL I123
		Non-Ferrous Metals AURORA Coat Long Neck Ballnose 2 Flutes	SNB2 ..... I124
		Mold Finish Master series 1 Flute	NPDBS/NPDB I126, I127
		SUMIDIA Coated Ballnose 2 Flutes	SDCB I128
		Mold Finish Master series 2 Flutes	BNBP/BNBC I130, I132
Multi-purpose		GSX MILL Slot 3 Flutes	GSXSLT 30000C-1.5D I134
		UP MILL 3 Flutes	SSUP 3000ZX I136
Chamfering		Chamfering 3 Flutes	New AVIC I138

Stock Markings and Symbols

★ mark: Global stocked item

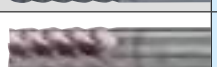
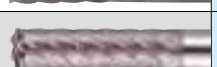
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

Square Endmill Selection Guide

◉: Best (1st Recommendation)
◎: Best, ○: Good, Blank: Not recommended, ×: Unsuitable

Applications / Features	Diameter DC (Min. to Max.) (mm)	Series Name / Series Code	Ref. Page	Appearance	Work Material: P — General Structure Rolled Steel	P — Carbon Steel	P — Alloy Steel	P — Pre-hardened Steel	P — Tempered Steel/Die Steel	H — Hardened Steel 45 to 55HRC	H — Hardened Steel 55 to 60HRC	H — Hardened Steel 60 up HRC	M — Stainless Steel	S — Titanium Alloy/Heat-Resistant Alloy	K — Cast Iron	N — Aluminum Alloy	N — Copper Alloy	N — Graphite	N — CFRP
General-purpose	ø0.5 to 25	**GSXMILL 2 Flutes** GSX 20000C	126,132, 136,140		◉	◉	◉	◉	◉	◉	○		◉	○	◉				
	ø0.5 to 25 (2D: ø0.3 to 25)	**GSXMILL 2 Flutes** GSX 20000S	128 to 130, 134, 138		○	◎	◎	◎	◎	◎	○		◎	○	○				
	ø1 to 12	**GSXMILL 3 Flutes** GSX 30000C	142,144		○	◎	◎	◎	◎	◎			◎	○	○				
	ø1 to 25	**GSXMILL 4 Flutes** GSX 40000C	146,150, 154,158		◉	◉	◉	◉	◉	◉	○		◉	○	◉				
	ø1 to 25	**GSXMILL 4 Flutes** GSX 40000S	148,152, 156		○	◎	◎	◎	◎	◎	○		◎	○	○				
High Efficiency	ø3 to 20	**EPMP Series 4 Flutes** EPMP 4000	18		◉	◉	◉	◉	○	○			○		○				
	ø6 to 20	**EPMP Series 5 Flutes** EPMP 5000	18		◉	◉	◉	◉	○	○			○		○				
	ø2 to 25	**GSXMILL Anti-vibration 4 Flutes** GSXVL 4000	166		◉	◉	◉	◉	◉	◉	○		◉	○	○				
	ø2 to 25	**GSV Anti-vibration 4 Flutes** GSV 4000	164		◎	◎	◎	◎	◎	◎	○		◎	○	○				
	ø2 to 20	**UPMILL** SSUP 4000ZX	168		◎	◎	◎	◎	◎		○		◎	○	○				
	ø3 to 20	**UPMILL Long Neck** SSUPR 4000ZX	169		◎	◎	◎	◎	◎	◎	○		◎	○	○				
Hardened Steel	④ø1 to 2 ⑥ø3 to 12 ⑧ø16 to 20	**GS MILL Hard** GSH 4/6/8000SF	170 to 172		◉	◉	◉	◉	◉	◉	◉								
	④ø3 to 5 ⑥ø6 to 12 ⑧ø16 to 32	**Hard** HHM 4/6/8000ZX	173 to 175		○	○	○	◎	◎	◎	◎								
	④ø3 to 5 ⑥ø6 to 12 ⑧ø16 to 32	**Long Hard** LHHM 4/6/8000ZX	176 to 178		○	○	○	◎	◎	◎	○								
	④ø3 to 5 ⑥ø6 to 12 ⑧ø16 to 32	**Extra-Long Hard** EHHM 4/6/8000ZX	179 to 181		○	○	○	◎	◎	◎	○								
Roughing	ø6 to 20	**GS MILL Roughing** GSRE 4000SF	182		◎	◎	◎	◎	◎	◎			◎	○	◎				

④⑥⑧: Number of Flutes

■ Examples of Icons on Product Stock Pages

Coating: GS Coat / GS HARD Coat / GSX Coat / ZX Coat / AURORA Coat DLC / SUMIDIA Coat

No. of Flutes: 1 Flute / 2 Flutes / 3 Flutes / 4 Flutes / 6 Flutes / 8 Flutes

Shape: Gash Land / Sharp Corner / Corner r / Ballnose R / 15° Helix Angle

Applications: Shoulder Milling / Groove Milling / Helical Milling / Ramping / Profiling



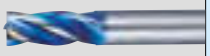
Our square endmill cutting edge shapes have concave ends.

Therefore, they do not make flat bottoms in spot facing.

If a flat bottom is required, we recommend using the **Flat MULTIDRILL MDF series**. J26

Square Endmill and Others Selection Guide

●: Best (1st Recommendation)
◎: Best, ○: Good, Blank: Not recommended, ×: Unsuitable

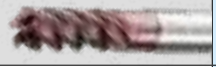
Applications / Features	Diameter DC (Min. to Max.) (mm)	Series Name / Series Code	Ref. Page	Appearance	Work Material: P: General Structure Rolled Steel	P: Carbon Steel	P: Alloy Steel	P: Pre-hardened Steel	P: Tempered Steel/Die Steel	H: Hardened Steel 45 to 55HRC	H: Hardened Steel 55 to 60HRC	H: Hardened Steel 60 up HRC	M: Stainless Steel	S: Titanium Alloy/Heat-Resistant Alloy	K: Cast Iron	N: Aluminum Alloy	N: Copper Alloy	N: Graphite	N: CFRP
Aluminum and Non-Ferrous Metal	ø2 to 16	**AURORA Coat 2 Flutes** ASM 2000DL	I84													●	○		
	ø2 to 16	**AURORA Coat 4 Flutes** ASM 4000DL	I85													◎	◎		
	ø2 to 16	**Solid Carbide Endmills for Non-Ferrous Cutting** ASM 2000	I86													◎	○		
	①ø4 to 5 ②ø6 to 12	**SUMIDIA Endmills DAE series** DAE	I89, I90		×	×	×	×	×	×	×	×	×	×	×	◎	◎	○	
	②ø4 to 10 ④ø9 to 13	**SUMIDIA Endmills DFE series** DFE	I87, I88		×	×	×	×	×	×	×	×	×	×	×	◎	◎	○	
CFRP/ Graphite	ø6 to 12	**SUMIDIA Coated AVIX type** AVIX	I91		×	×	×	×	×	×	×	×	×	×	×			○	●
	ø6 to 12	**SUMIDIA Coated SSDC series** SSDC 4000	I92		×	×	×	×	×	×	×	×	×	×	×			○	◎
	ø6 to 12	**SUMIDIA Coated SSDCRL series** SSDC 4000RL	I92		×	×	×	×	×	×	×	×	×	×	×			○	●
Multi-purpose	ø1 to 12	**GSX MILL Slot 3 Flutes** GSXSLT 30000C	I134		○	●	●	●	●	●			●	○	○				
	ø2 to 16	**UPMILL Slot** SSUP 3000ZX	I136		◎	◎	◎	◎	◎	◎	○		◎	○	○				
Chamfering	ø2 to 16	**Endmills for Chamfering AVIC type** AVIC	I138		○	○	○	○	○		×	×	◎	◎	○	○	○	×	×

①②④: Number of Flutes

Target Work Material (What do you want to machine?)	Cutting Applications	Recommended Tool	Ref. Page
Steel, Cast Iron, Stainless Steel, Titanium Alloy	High-efficiency Machining Chatter Countermeasures	**GSXVL series GSV series**	I66 I64
	Medium Finishing to Finishing (Good Machining Accuracy)	**GSX series**	I26 to I59
	Medium Finishing (Medium Stock Removal)	**GSH series**	I70 to I72
	Roughing (Large Stock Removal)	**GSXVL series GSRE series**	I66 I82
	Chamfering	**AVIC type**	I138
Hardened Steel (45HRC up)	All Hardened Steels	**GSH series**	I70 to I72
Aluminum Alloy	All Aluminum Alloys	**ASM series**	I84 to I86
CFRP, Graphite	Roughing, Cut-off	**AVIX type SSDC series SSDCRL series**	I91 I92

Corner Radius Endmill Selection Guide

◉: Best (1st Recommendation)
◎: Best, ○: Good, Blank: Not recommended, ×: Unsuitable

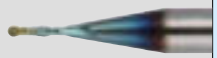
Applications / Features	Diameter DC (Min. to Max.) (mm)	Series Name / Series Code	Ref. Page	Appearance	Work Material: P — General Structure Rolled Steel	P — Carbon Steel	P — Alloy Steel	P — Pre-hardened Steel	P — Tempered Steel/Die Steel	H — Hardened Steel 45 to 55HRC	H — Hardened Steel 55 to 60HRC	H — Hardened Steel 60 up HRC	M — Stainless Steel	S — Titanium Alloy/Heat-Resistant Alloy	K — Cast Iron	N — Aluminum Alloy	N — Copper Alloy	N — Graphite	N — CFRP
General Endmilling with Corner Radius	ø3 to 12	**GSX MILL Radius** GSX 40000-R	I96		◎	◎	◎	◎	◎	◎			◎	○	○				
High-efficiency Endmilling with Corner Radius	ø3 to 25	**GSX MILL Anti-vibration Radius**	I100		○	◉	◉	◉	◉	◉	○		◉	○	○				
	ø3 to 25	**GSV Anti-vibration Radius** GSV 4000-R	I98		○	◎	◎	◎	◎	◎	○		◎	○	○				
	ø3 to 20	**UPMILL Radius** SSUP 4000ZX-R	I106		◎	◎	◎	◎	◎	◎	○		◎	○	◎				
	ø3 to 20	**UPMILL Long Neck Radius** SSUPR 4000ZX-R	I108		◎	◎	◎	◎	◎				○		◎				
Hardened Steel Endmilling with Corner Radius	⑥ø6 to 12 ⑧ø16 to 20	**GS MILL Hard Radius** GSH 6/8000SF-R	I110, I111			◉	◉	◉	◉	◉	◉	◉							
Exotic Alloy	ø10 to 16	**EPMS Series 4 Flutes** EPMS 4000-R	I??										◉	◉					
	ø10 to 20	**EPMP Series 5 Flutes** EPMP 5000-R	I??										◉	◉					
	ø10 to 20	**EPMP Series 6 Flutes** EPMP 6000-R	I??										◉	◉					
	ø4.5 to 25	**SSEH Anti-vibration Radius** SSEHVL 4000W-R	I102										◉	◉					
	ø4.5 to 25	**SSEH Radius** SSEH 4000W-R	I104										◎	◎					
	ø4.5 to 16	**SSEH Anti-vibration Radius** SSEHVL 4000-R	I112										○	◎					
	ø4.5 to 16	**SSEH Radius** SSEH 4000-R	I113										○	◎					
High-precision Mold Profiling	ø0.2 to 2	**Mold Finish Master SUMIBORON Radius Endmills** BNBR	I116					○		○	◎	◎				×	×		
Cemented Carbide and Hard Brittle Materials	ø0.2 to 2	**Mold Finish Master SUMIDIA BINDERLESS Radius Endmills** NPDRS	I114		Cemented Carbide					◎			Hard Brittle Materials						○

⑥⑧: Number of Flutes

Target Work Material (What do you want to machine?)	Cutting Applications	Recommended Tool	Ref. Page
Steel, Cast Iron, Stainless Steel, Titanium Alloy	High-efficiency Machining Chatter Countermeasures	**GSXVL series GSV series**	I100 I98
	Medium Finishing to Finishing (Good Machining Accuracy)	**GSX series SSUP series**	I96 I106
	Roughing (Large Stock Removal)	**GSXVL series**	I100
	Stainless Steel, Titanium Alloy	**SSEH series SSEHVL series**	I102,I104 I112,I113
Hardened Steel (45HRC up)	All Hardened Steels Endmilling with Corner Radius	**GSH series**	I110,I111
	High-precision Mold Profiling	**BNBR series**	I116
CFRP, Graphite	Roughing, Cut-off	**AVIX type SSDC series SSDCRL series**	I93 I94
Cemented Carbide, Hard Brittle Materials	Finishing	**NPDRS type**	I114

Ballnose Endmill Selection Guide

●: Best (1st Recommendation)
◎: Best, ○: Good, Blank: Not recommended, ×: Unsuitable

Applications / Features	Ballnose Radius (Min. to Max.) / Tolerance (mm)	Series Name / Series Code	Ref. Page	Appearance	Work Material: P — General Structure Rolled Steel	P — Carbon Steel	P — Alloy Steel	P — Pre-hardened Steel	P — Tempered Steel/Die Steel	H — Hardened Steel 30 to 45HRC	H — Hardened Steel 45 to 55HRC	H — Hardened Steel 55 to 60HRC	H — Hardened Steel 60 up HRC	M — Stainless Steel	S — Titanium Alloy/Heat-Resistant Alloy	K — Cast Iron	N — Aluminum Alloy	N — Copper Alloy	N — Graphite	N — CFRP
General-purpose	R0.2 to 10 ± 0.01	**GSXMILL Ballnose** GSXB 20000	I118		●	●	●	●	●	●	○		●	○	○					
Hardened Steel	R0.2 to 6 +0.003 up to -0.007	**GS MILL HARD Ballnose** GSBH 20000SF	I120			◎	◎	◎	○	◎	●	●								
Aluminum and Non-Ferrous Metal	R1 to 8 ± 0.01	**AURORA Coat Ballnose** SNB 2000DL	I121														◎	◎		
Copper Electrodes	R0.05 to 2 ± 0.005	**AURORA Coat Long Neck Ballnose Endmills** SNB2	I122														◎	●		
	R0.1 to 0.5 ± 0.005	**Mold Finish Master SUMIBORON Ballnose Endmills** BNBC	I130															●		
High-precision Mold Profiling	R0.2 to 1 ± 0.005	**Mold Finish Master SUMIBORON Ballnose Endmills** BNBP	I128					○		○	◎	◎					×	×		
Cemented Carbide and Hard Brittle Materials	R0.1 to 1	**Mold Finish Master SUMIDIA BINDERLESS Ballnose Endmills** NPDBS (For Standard Finishing)	I124		Cemented Carbide					◎				Hard Brittle Materials		○				
	R0.1 to 1	**Mold Finish Master SUMIDIA BINDERLESS Ballnose Endmills** NPDB (For Precision Finishing)	I125		Cemented Carbide					◎				Hard Brittle Materials		○				
	R0.5 to 1	**SUMIDIA Coat Ballnose Endmills** SDCB	I126		Cemented Carbide					◎				Hard Brittle Materials		○				

Target Work Material (What do you want to machine?)	Cutting Applications	Recommended Tool	Ref. Page
Steel, Cast Iron, Stainless Steel, Titanium Alloy	General Machining	**GSXB series**	I118
Hardened Steel (45HRC up)	All Hardened Steels	**GSBH series**	I120
	High-precision Mold Profiling	**BNBP series**	I128
Aluminum Alloy Copper Alloy	All Aluminum Alloys, Copper	**SNB series**	I121
Copper Electrodes	All Copper Alloys	**SNB2 type BNBC series**	I122 I130
Cemented Carbide, Hard Brittle Materials	Roughing to Medium Finishing	**SDCB type**	I126
	Finishing	**NPDBS (Standard Finishing) NPDB (Precision Finishing)**	I124 I125

Endmill Coatings

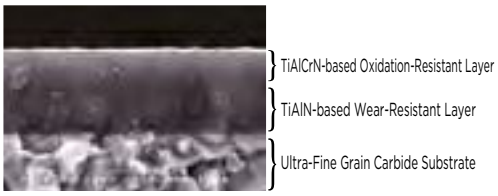
■ Types of Endmill Coatings

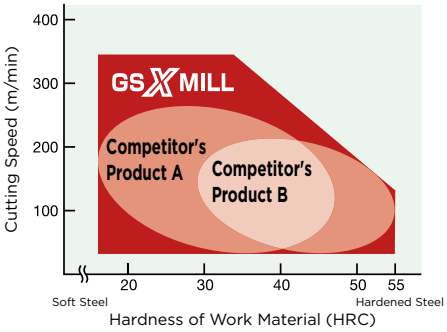
Coating Name	GSX Coat	GS Hard Coat	ZX Coat	AURORA Coat	SUMIDIA Coat
Coating type	TiAlCrN	TiAlCrSiCN	TiAlN	DLC	Diamond
Wear Resistance	◎	◎	○	○	◎
Adhesion Resistance	◎	◎	○	◎	△
Thermal Resistance	◎	◎	○	△	○
Coating Thickness	up to 2μm	up to 2μm	up to 2μm	up to 0.5μm	up to 15μm
Feature	Excellent thermal resistance and adhesion resistance	Excellent hardness, thermal resistance and adhesion resistance	General-purpose	Low coefficient of friction and excellent adhesion resistance	Excellent hardness and wear resistance
Main Application	For general steel and stainless steel milling	For general steel and high-hardness steel milling	For general steel and cast iron milling	For aluminum alloy and copper alloy milling	For CFRP milling
Main Applicable Products	GSX/GSXB/GSXVL series	GSH/GSBH/SSEH/SSEHVL series	UPMILL/HHM series	ASM/SNB/SNB2 series	SSDC

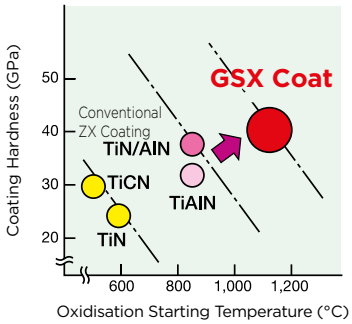
● GSX Coat

- Micro-grain carbide substrate provides high transverse rupture strength and excellent thermal shock resistance, improving reliability in wet cutting applications.
- Adopts GSX Coat for better wear resistance and thermal resistance, improving reliability and tool life when machining a wide range of work materials.

[Coating Structure]

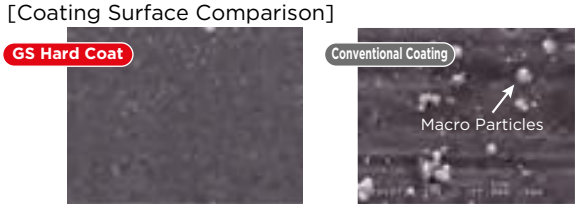




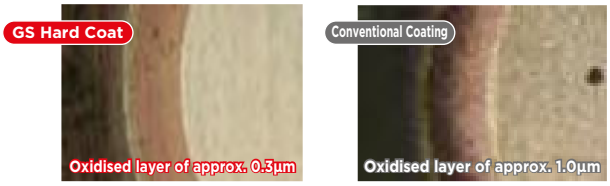


● GS Hard Coat

[Coating Surface Comparison]

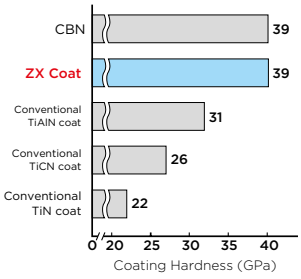


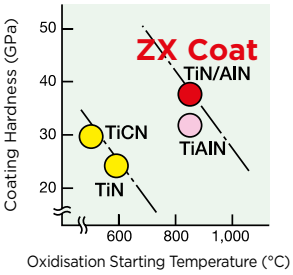
[Oxidation Resistance Evaluation] (Scratches from calotest performed after one-hour exposure to air at 1,100°C)



● ZX Coat

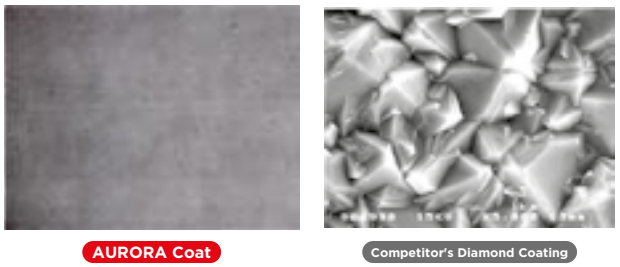
- Hardness almost equivalent to that of CBN
- Improvement in wear resistance, oxidation resistance and peel-off resistance
- Approx. 6 times longer tool life compared with uncoated products





● AURORA Coat

- Very smooth AURORA COAT results in low adhesion as well as good surface finish
- Low cutting force enables high feed milling and milling of low rigidity workpieces
- Perfect for milling non-ferrous metal/copper electrodes



● SUMIDIA Coat

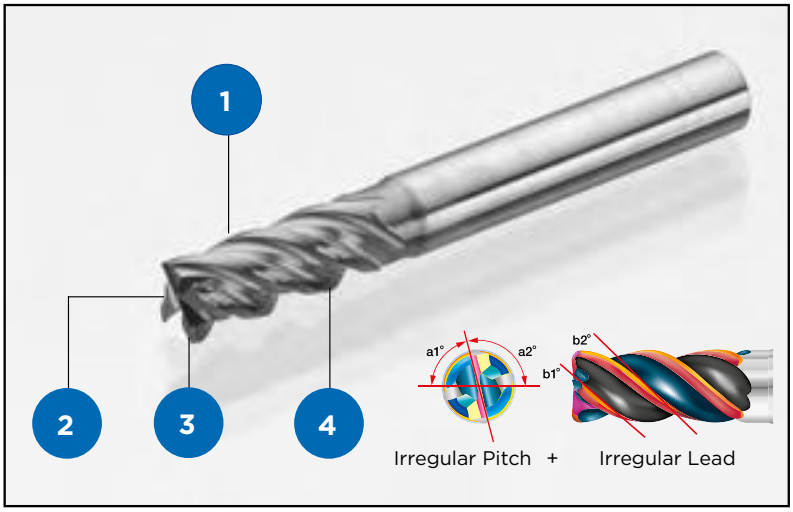
- Our original polycrystalline diamond coating technology achieves over 10 times higher wear resistance than uncoated carbide
- Realizes a micro-grain diamond film that provides the required combination of high strength and high wear resistance on smooth surfaces for CFRP milling



MEMO

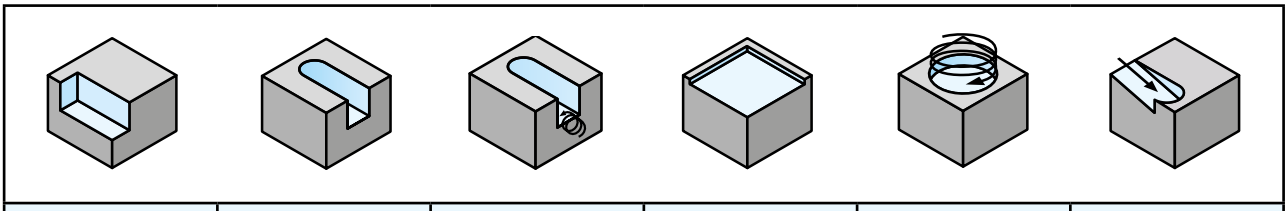
EPMP Series

■ Features



1. The optimised flute geometry ensures reliable chip removal.
2. Anti-vibration design - the irregular pitch and irregular lead of the mill prevent vibrations.
3. Stable cutting corner increases process reliability and productivity.
   Enhanced cutting edge stability due to double relief angle.
4. The Power-Mill coating and a newly developed carbide substrate ensure high wear protection with long tool life.

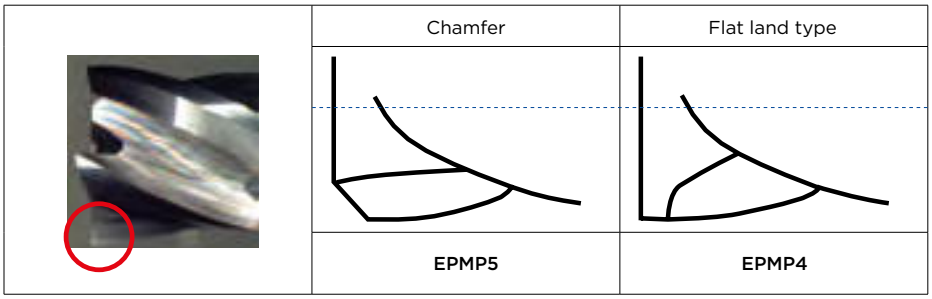
■ Suitable Applications



Side Milling	Slotting	Trochoidal Milling	Face Milling	Helical Milling	Ramping

■ Corner Geometry

Increased fracture resistance due to enhanced cutting edge stability.



■ Endmill - Stock Situation

EPMP 4000

ISO. Cat. No.	Stock
EPMP 4030U2.5CECP300	★
4040U2.5CECP300	★
4050U2.5CECP300	★
4060U2.5CECP300	★
4080U2.5CECP300	★
EPMP 4100U2.5CECP300	★
4120U2.5CECP300	★
4120U2.5WCECP300	★
4160U2.5CECP300	★
4160U2.5WCECP300	★
EPMP 4200U2.5CECP300	★
4200U2.5WCECP300	★

EPMP 5000

ISO. Cat. No.	Stock
EPMP 5060U3BCTECP300	★
5060U3BWCTECP300	★
5080U3BCTECP300	★
5080U3BWCTECP300	★
EPMP 5100U3BCTECP300	★
5100U3BWCTECP300	★
5120U3BCTECP300	★
5120U3BWCTECP300	★
5160U3BCTECP300	★
5160U3BWCTECP300	★
EPMP 5200U3BCTECP300	★
5200U3BWCTECP300	★

EPMS Series

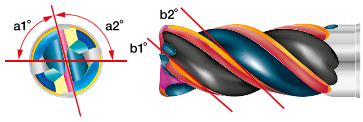
■ Features



- Solid endmill EPMS-Series (European Performance Mill) for high-performance milling applications
- Higher efficiency and tool life due to new technology of latest developed carbide substrate and coating combined with the new optimized tool design
- Available with 4/5/6 flutes, different diameters and edge radius
- Excellent performance in machining of exotic alloys like Ti-alloys, super alloys and heat resistant steels
- Suitable for Titanium structure parts for airplane
- Anti-vibration design for reliable and efficient machining in a wide application range

■ Anti-Vibration design

Reduce the vibration dramatically, especially for poor clamping and thin wall work geometry, increase the parts accuracy and parts surface quality for customers.

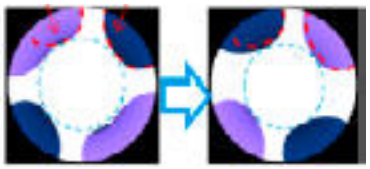


Irregular Pitch + Irregular Lead

■ Optimized flute geometry

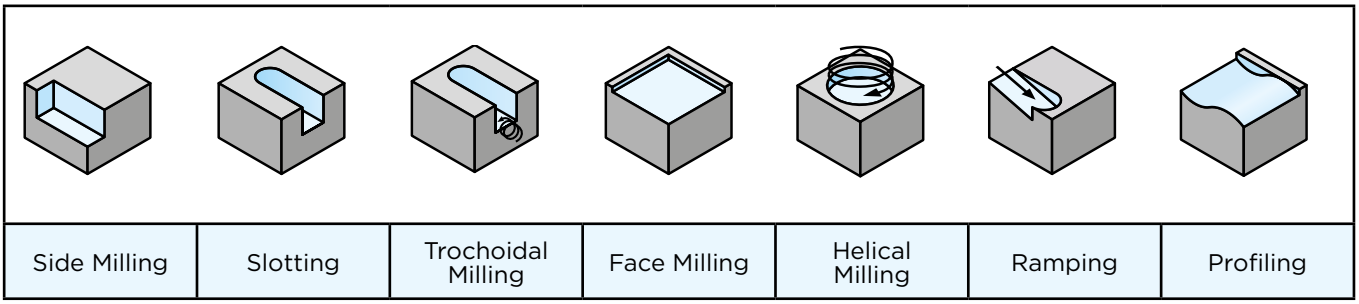
Smooth chip evacuation and high rigidity are realized to ensure stable and efficient milling process.

Effect range of chip evacuation



Conventional New design

■ Suitable Applications



Side Milling	Slotting	Trochoidal Milling	Face Milling	Helical Milling	Ramping	Profiling

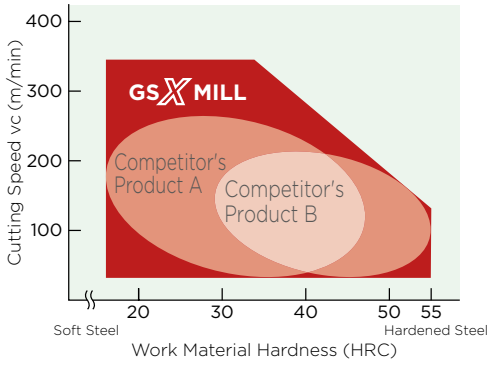
GSX MILL series



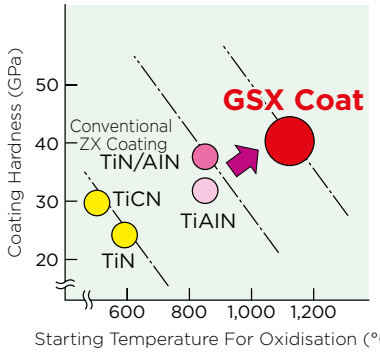
■ Features and Applications

- A wide selection with 3 types of cutting flute configurations and 4 cutting lengths to cover a wide range of applications
- Micro-grained carbide substrate provides high transverse rupture strength and excellent thermal shock resistance, improving reliability in wet cutting applications
- GSX Coat has increased wear resistance and thermal resistance for improved reliability and longer tool life
- Large rake angle and unique flute design improve sharpness and chip evacuation
- Utilizing a gash land improves cutting edge corner strength

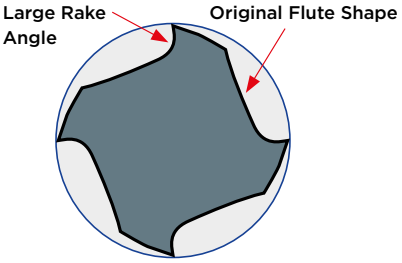
● Wear resistance



● Thermal resistance



● Improved chip evacuation

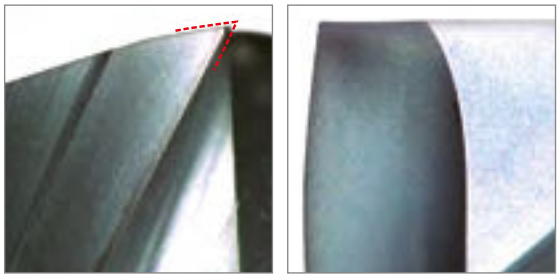


Large rake angle combined with our unique flute design improve sharpness and chip evacuation.

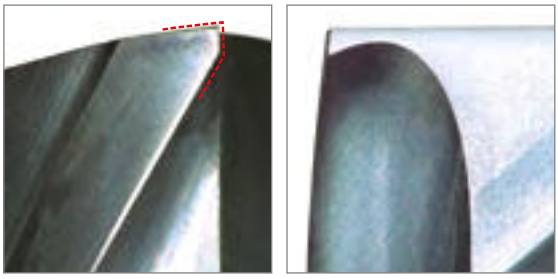
■ Expanded machining applications with 2 cutting edge corner styles

Sharp edged S type and fracture-resistant C type are available.

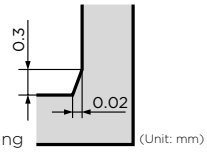
Sharp Corner: Sharper Edge Design S type



Gash Land: Fracture Resistant Design C type



Note: When using endmills with gash land, some material remains on the right. Use the S type to obtain sharp corners.



Example: Corner after ø10mm milling (Unit: mm)

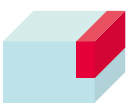
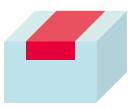
■ Work Material

◎: Best ○: Suitable Blank: Not recommended

P					H			M	S		K	N			
General Structural Rolled Steel	Carbon Steel	Alloy Steel	Pre-hardened Steel	Die Steel	Hardened Steel 45 to 55HRC	Hardened Steel 55 to 60HRC	Hardened Steel 60HRC	Stainless Steel	Titanium Alloy	Heat-Resistant Alloy	Cast Iron	Aluminum Alloy	Copper Alloy	Graphite	CFRP
○	◎	◎	◎	◎	◎ *1			◎	○	○	○				

*1: GSXSLT30000C is recommended for 50 HRC or less.

■ Recommended Machining Examples (General-purpose type)

Applications	Side Milling		Groove Milling		Groove Finishing	
Form						
Cutting Edge Corner	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
S type		◎		○ *2		◎
C type	◎	○	◎	◎	◎	○

The S type is best for removing inside corners. *2: Use with small depth of cut.

GSX MILL series

■ Product Range

Applications	Number of Flutes	Cutting Edge Length						
		1.5D	2D		3D		4D	
		C type	S type	C type	S type	C type	S type	C type
General-purpose	2 Flutes	GSX20000C-1.5D ø0.5 to ø25.0mm → I32	GSX20000S-2D ø0.3 to ø25.0mm → I34	GSX20000C-2D ø0.5 to ø25.0mm → I38	GSX20000S-3D ø0.5 to ø25.0mm → I40	GSX20000C-3D ø0.5 to ø25.0mm → I42	GSX20000S-4D ø0.5 to ø25.0mm → I44	GSX20000C-4D ø0.5 to ø25.0mm → I46
	3 Flutes	GSX30000C-1.5D ø1.0 to ø12.0mm → I48		GSX30000C-2D ø1.0 to ø12.0mm → I50				
	4 Flutes	GSX40000C-1.5D ø1.0 to ø25.0mm → I52	GSX40000S-2D ø1.0 to ø25.0mm → I54	GSX40000C-2D ø1.0 to ø25.0mm → I56	GSX40000S-3D ø1.0 to ø25.0mm → I58	GSX40000C-3D ø1.0 to ø25.0mm → I60	GSX40000S-4D ø1.0 to ø25.0mm → I62	GSX40000C-4D ø1.0 to ø25.0mm → I64
Multi-purpose	3 Flutes	GSXSLT30000C-1.5D ø1.0 to ø12.0mm → I132						
Radius	4 Flutes		GSX40000-R-2D ø3.0 to ø12.0mm → I96					

High-efficiency Square type: GSV4000-2.5D →I66 GSXVL4000-2.5D →I68 High-efficiency Radius type: GSV4000-R-2.5D →I98 GSXVL4000-R-2.5D →I100
Ball type: GSXB20000 →I118

■ High Precision

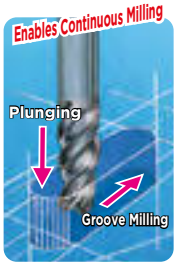
● **Endmill tolerance is reduced to 2/3 of conventional types, so diameter compensation is not required when changing tools.**

■ Multi-purpose

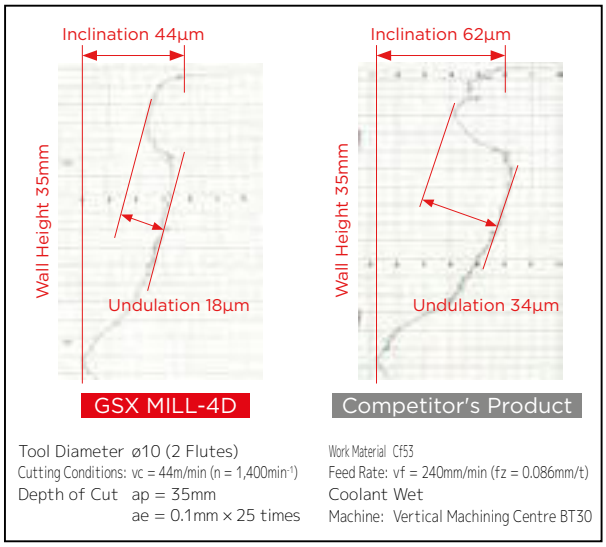
● **Optimised flute design of slot mill 3 flute (short) type reduces cutting force.**

(1) Continuous (composite) applications such as plunging and groove milling is possible

(2) Perfect for use with thin plates and small machining centres.



■ Long Cutting Edge Length with High Rigidity (C type)

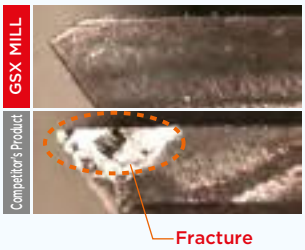


Tool Diameter ø10 (2 Flutes)
Cutting Conditions: vc = 44m/min (n = 1,400min⁻¹)
Depth of Cut ap = 35mm
ae = 0.1mm × 25 times

Work Material Cf53
Feed Rate: vf = 240mm/min (fz = 0.086mm/t)
Coolant Wet
Machine: Vertical Machining Centre BT30

■ Application Examples (Square)

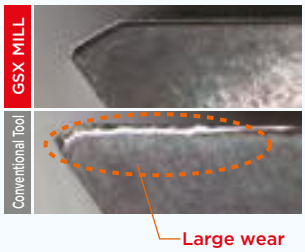
● Carbon Steel Groove Milling with GSX20000C



Gash land for stronger cutting edge

Tool Diameter ø6 (2 Flutes)
Work Material Cf53
Cutting Conditions: vc = 87m/min (n = 4,615min⁻¹)
vf = 553mm/min (fz = 0.06mm/t)
ap = 3mm
ae = 6mm
Dry
Machine: Vertical Machining Centre BT50

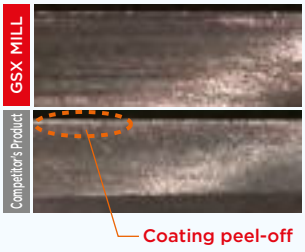
● Cast Iron Groove Milling with GSX20000C



GSX Coat for improved wear resistance

Tool Diameter ø10 (2 Flutes)
Work Material GGG-60 equivalent
Cutting Conditions: vc = 66m/min (n = 2,100min⁻¹)
vf = 302mm/min (fz = 0.072mm/t)
ap = 5mm × 5 times
ae = 10mm
Dry
Machine: Vertical Machining Centre BT40

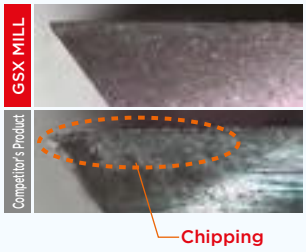
● Stainless Steel Milling with GSX20000C



Improved reliability even with wet machining

Tool Diameter ø10 (2 Flutes)
Work Material X5CrNi18-10
Cutting Conditions: vc = 50m/min (n = 1,591min⁻¹)
vf = 127mm/min (fz = 0.04mm/t)
ap = 10mm
ae = 0.5mm
Dry
Machine: Vertical Machining Centre BT50

● S50C Side Milling with GSX20000S



The S type delivers optimum sharpness

Tool Diameter ø6 (2 Flutes)
Work Material Cf53
Cutting Conditions: vc = 87m/min (n = 4,615min⁻¹)
vf = 553mm/min (fz = 0.06mm/t)
ap = 10mm
ae = 0.3mm
Dry
Machine: Vertical Machining Centre BT50

GSX MILL series



☞I66, I102

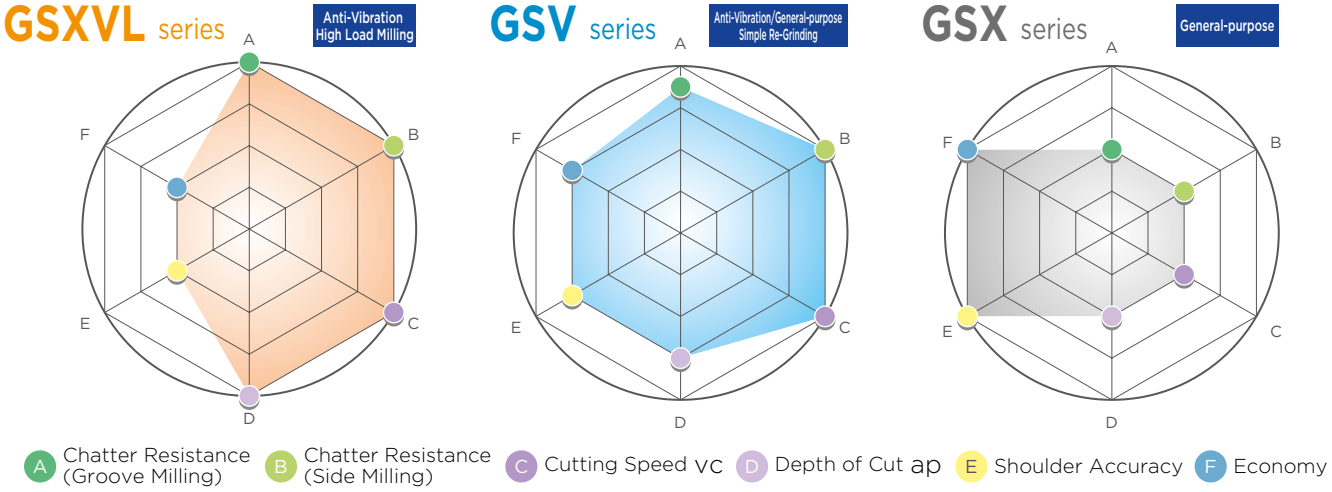
☞I64, I100

■ Recommended Milling Examples

Applications	Side Milling		Groove Milling		Groove Finishing	
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
GSXVL series	◎	○	◎	◎	◎	○
GSV series	◎	◎	○	◎	◎	○

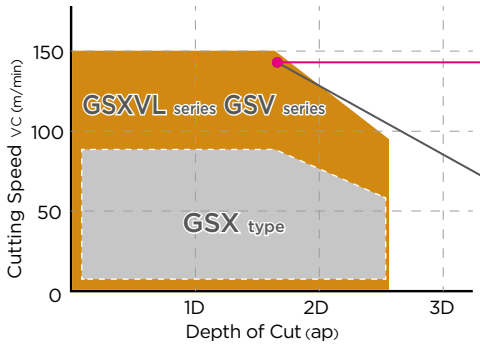
■ Differentiating the Usage of Anti-vibration GSXVL series / GSV series

GSXVL types exhibit outstanding performance for high load milling. GSV series is both chatter-resistant and economical.

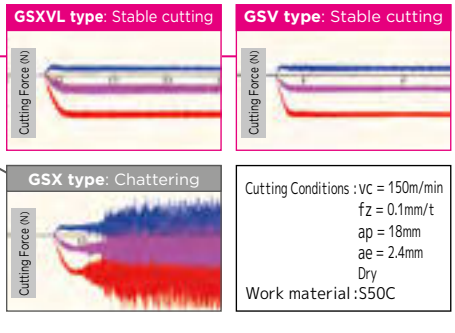


■ Application Range

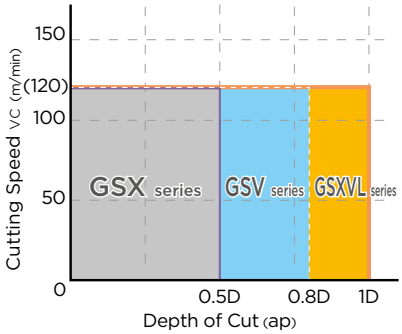
● Side Milling



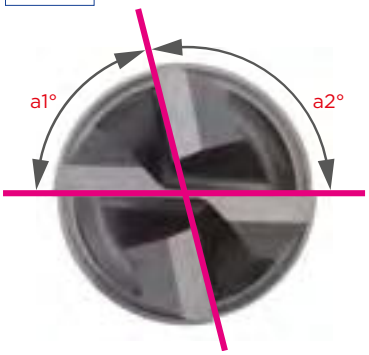
● Cutting Force



● Groove Milling



Irregular Pitch a1° ≠ a2°



Irregular Lead b1° ≠ b2°



Regular Lead b2° = b2°



Rounded Land (Used for ø5mm and larger sizes)



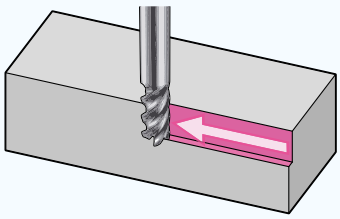
GSX MILL series

■ Application Examples (Anti-vibration type)



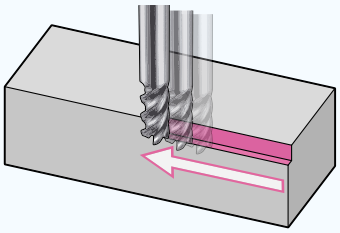
Work Material: Cf53 Tool Diameter: ø12 Cutting Conditions: Dry (Air Blow)

(1) Side Milling GSXVL series ◯ / GSV series ◎



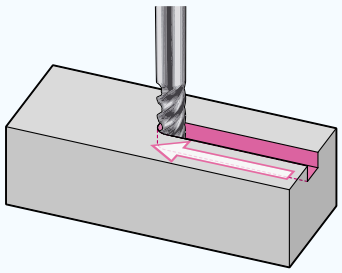
Cutting Conditions: vc = 102m/min (n = 4,100min^{-1}) Tool Diameter: ø8
vf = 1,080mm/min (0.1mm/t)
ap = 24mm, ae = 2.0mm

(2) High-speed Side Milling GSXVL series ◎ / GSV series ◎



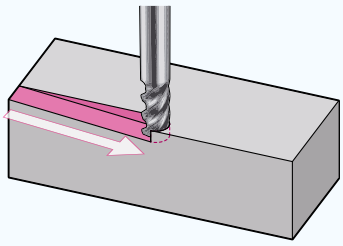
Cutting Conditions: vc = 151m/min (n = 4,000min^{-1}) Tool Diameter: ø12
vf = 4,800mm/min (0.3mm/t)
ap = 12mm, ae = 2.0mm

(3) Groove Milling GSXVL series ◎ / GSV series ◯



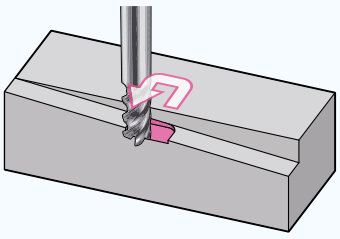
Cutting Conditions: vc = 90m/min (n = 2,400min^{-1}) Tool Diameter: ø12
vf = 960mm/min (0.1mm/t)
ap = 12mm

(4) Ramping GSXVL series ◎ / GSV series ◯



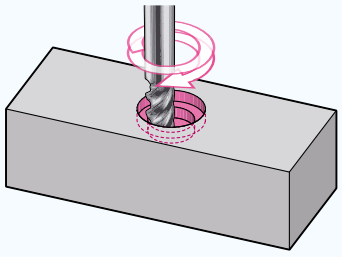
Cutting Conditions: vc = 90m/min (n = 2,400min^{-1}) Tool Diameter: ø12
vf = 480mm/min (0.05mm/t)
Ramp Angle 5°

(5) Seat Face Expansion Milling GSXVL series ◎ / GSV series ◎



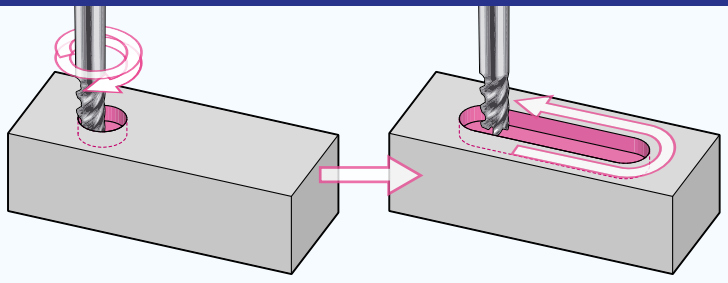
Cutting Conditions: vc = 90m/min (n = 2,400min^{-1}) Tool Diameter: ø12
vf = 960mm/min (0.1mm/t)

(6) Helical Milling x 2 GSXVL series ◎ / GSV series ◎



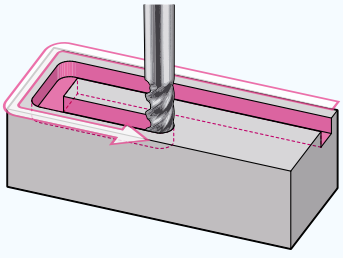
Cutting Conditions: vc = 90m/min (n = 2,400min^{-1}) Tool Diameter: ø12
vf = 480mm/min (0.05mm/t)
Ramp Angle 3°

(7) Helical Milling to Groove Expansion Milling x 2 GSXVL series ◎ / GSV series ◎



Cutting Conditions: vc = 90m/min (n = 2,400min^{-1}) Tool Diameter: ø12
[Helical] vf = 480mm/min (0.05mm/t) [Groove Expansion] vf = 672mm/min (0.07mm/t) [Finishing] vf = 1,920mm/min (0.2mm/t)
Ramp Angle 3°
ap = 24mm, ae = 0.1mm

(8) Engraving GSXVL series ◎ / GSV series ◯



Cutting Conditions: vc = 79m/min (n = 2,100min^{-1}) Tool Diameter: ø12
vf = 588mm/min (0.07mm/t)
ap = 12mm

GSX MILL series



I120

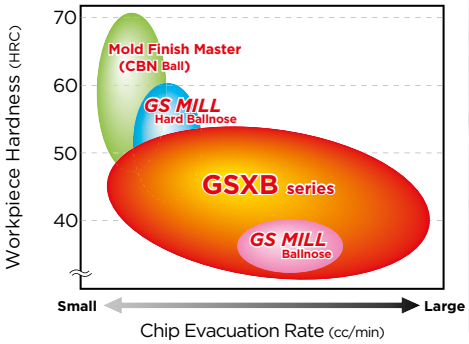
■ Recommended Milling Examples

Applications	Radius Milling		Profiling		Pocketing	
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
GSXB type	◎	◎	◎	◎	◎	◎

■ Improved Thermal Resistance and Wear Resistance

New coating combined with an ultra-fine grained carbide substrate for better thermal and wear resistance.

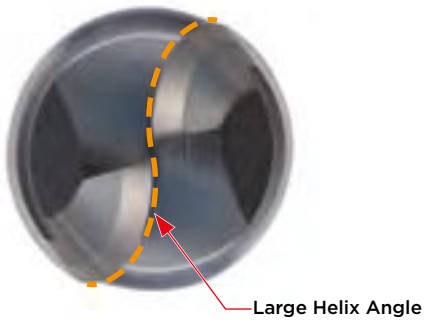
■ Application Range





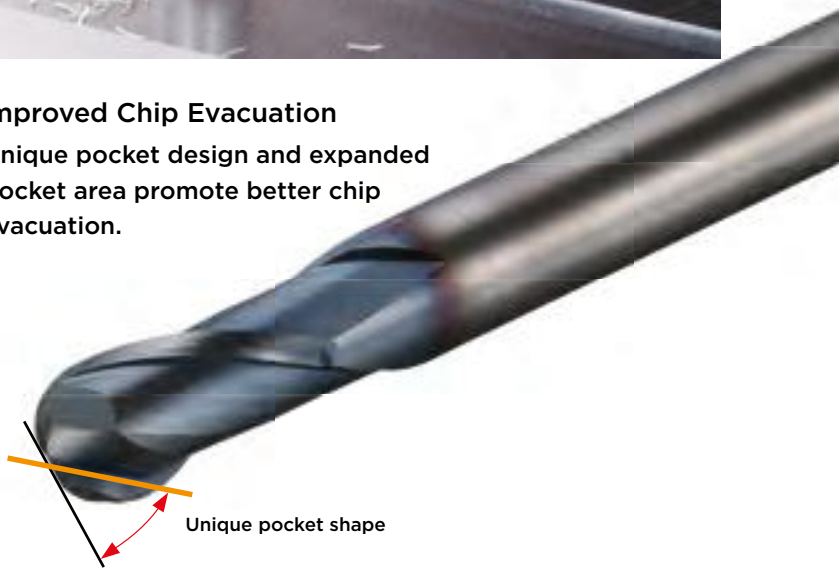
■ Reduced Cutting Force

Large helix angle on curved cutting edge reduces cutting force



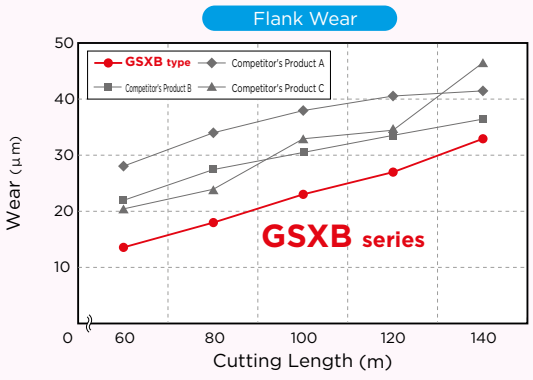
■ Improved Chip Evacuation

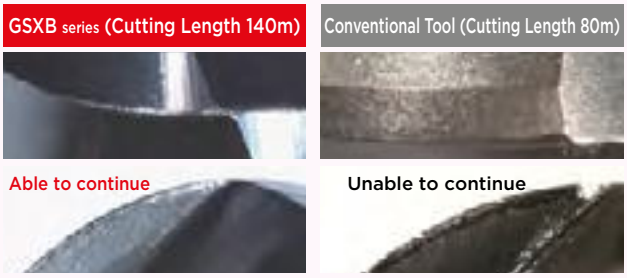
Unique pocket design and expanded pocket area promote better chip evacuation.



■ Application Examples

● Die Steel Milling with GSXB20000





Work Material: X40CrMoV5-1 (50HRC)
Tool Diameter: R3.0 (2 Flutes)
Cutting Conditions: vc = 179m/min (n = 9,500min^{-1}), vf = 2,250mm/min (fz = 0.12mm/t)
ap = 0.2 to 1.0mm, pf = 0.3mm Wet
Equipment: Vertical Machining Centre BT40

SUMIDIA Coated AVIX type

New



■ Features

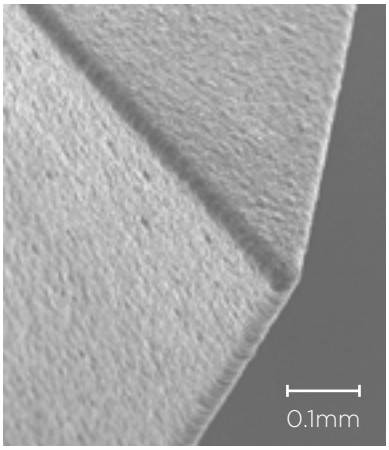
- The use of a complex cross-nicked edge shape reduces cutting force and realises stability in high-efficiency machining
- Sharp cutting edge and uniform coating thickness along the cutting edge length realise high quality and long tool life

■ Complex Cross-nicked Shape



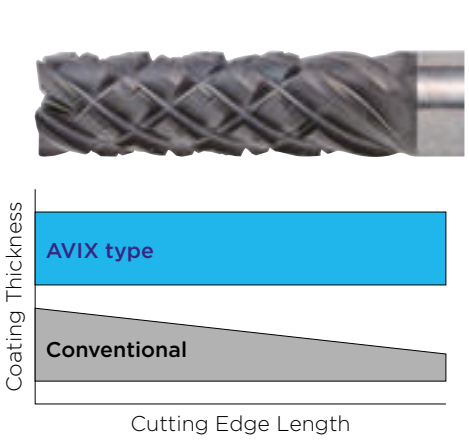
Variably sized nicked cutting edge shape realises stable machining with low resistance

■ Sharp Cutting Edge



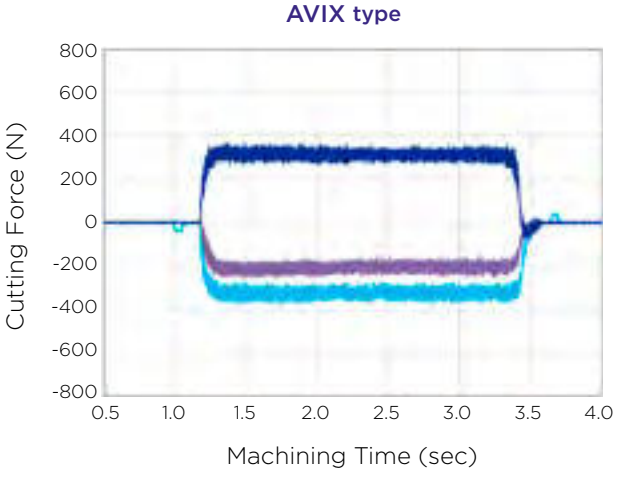
New coating process provides high quality sharp cutting edges

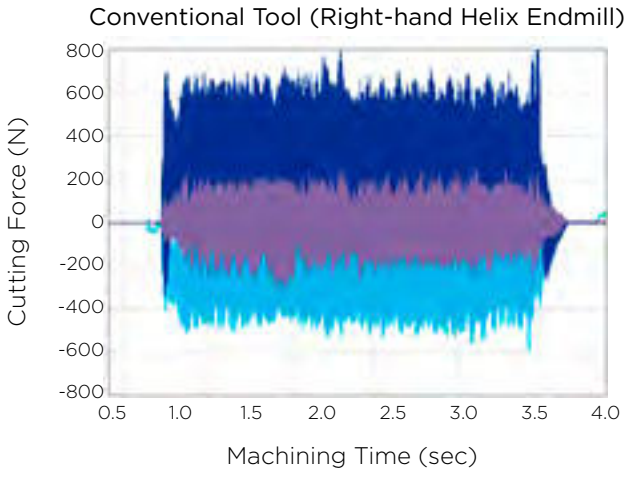
■ Diamond Coating with Uniform Thickness



Uniform coating thickness realises stable tool life

■ Cutting Performance

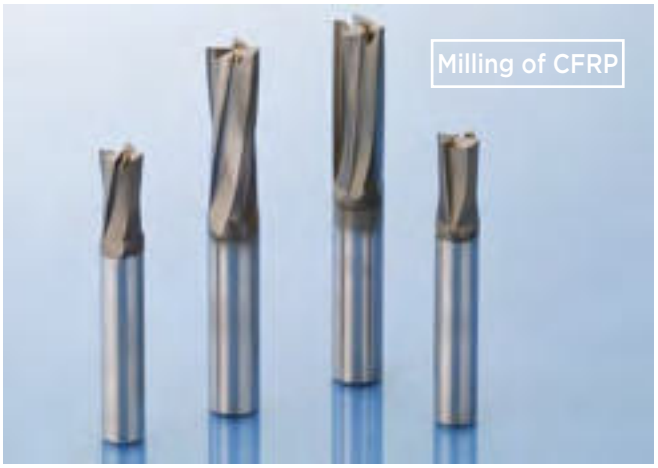




Work Material	: CFRP (Thickness 9.5mm)
Tool	: AVIX510000-R03 (Tool Diameter ø10, 5 flutes)
Cutting Conditions	: vc = 200m/min, vf = 2,000mm/min, Dry, Cutting

Suppresses chatter to realise stable machining

SUMIDIA Coated SSDC series



☞192

■ Product Range

Cat. No.	Number of Flutes	Shape	Diameter (mm)
SSDC 4000	4 Flutes	Right-hand Helix ☞192	ø6 to ø12
SSDC 4000RL	4 Flutes	Right-Left-hand Helix ☞192	ø6 to ø12

■ Features and Applications

● **Two different types of flute shapes are available.**

SSDC series (Right-hand Helix type)

Achieving both better sharpness and longer tool life through optimising the rake and relief angles, along with a small helix angle.



SSDCRL series (Right-Left-hand Helix type)

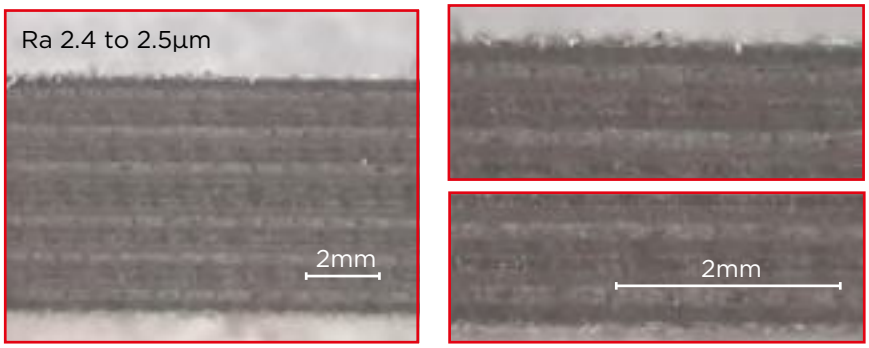
Right-Left-hand helix prevents delamination on top and bottom surfaces.
Cutting force is dispersed even with unstable clamping, improving surface quality.



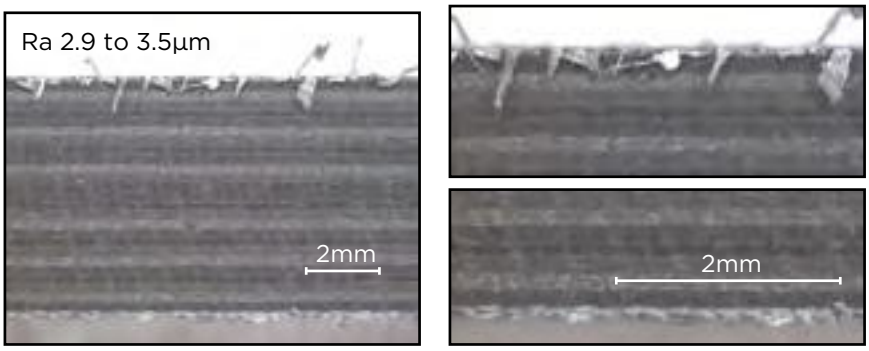
■ Performance

● **Surface Finish Comparison**

SSDC series



Competitor's Product



Work Material: CFRP
Tool Diameter: ø10 (4 Flutes)
Cutting Conditions: vc = 314m/min
(n = 10,000min^{-1})
vf = 1,000mm/min
(fz = 0.025mm/t)
Dry

Results

SSDC series

High surface quality with no burrs

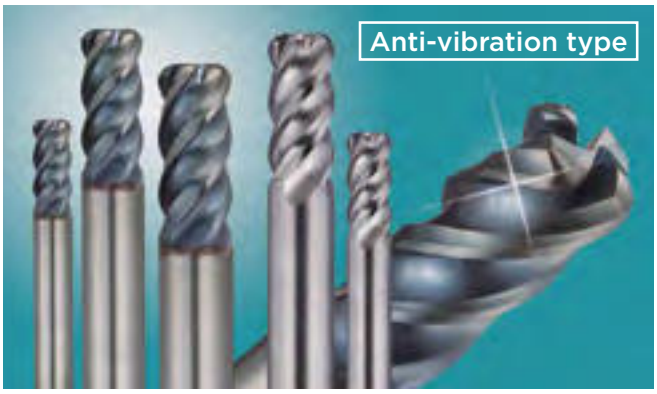
Competitor's Product

Burrs are formed. Poor surface quality

SSEH series



☞I106, I115



☞I104, I114

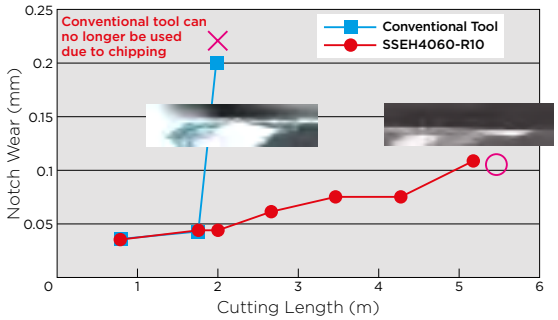
SSEH series Radius

■ Features and Applications

- High helix (45° helix) improves sharpness
- Combination of unique flute design and semi-mirrored rake face improves chip evacuation and adhesion resistance.
- Ultra-smooth coating with improved hardness and thermal resistance combined with tough carbide substrate improves tool life when working with heat-resistant alloys.
- Unique, smooth radius shape mitigates cutting impact and improves fracture resistance.
- Both coated and uncoated types are in stock to meet various conditions.

■ Application Examples

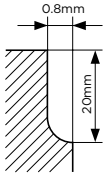
- Inconel 718 (Side Milling)



Tool Diameter: ø6 x R1
Cutting Conditions: vc = 20m/min, fz = 0.025mm/t,
ap = 5mm, ae = 0.5mm, Wet

- Inconel 713 (Side Milling)





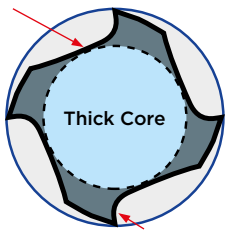
In Sumitomo Electric Hardmetal tests, the special coating with excellent adhesion resistance provided less cutting edge adhesion than the competitor's product and enabled fracture-free machining. The competitor's product suffered from edge adhesion leading to breakage.

Tool Diameter: ø10 x R1 Number of Workpieces: 150pcs./unit
Cutting Conditions: vc = 32m/min, fz = 0.018mm/t,
ap = 20mm, ae = 0.8mm, Dry

Unique, smooth radius design



Original wide arc flute



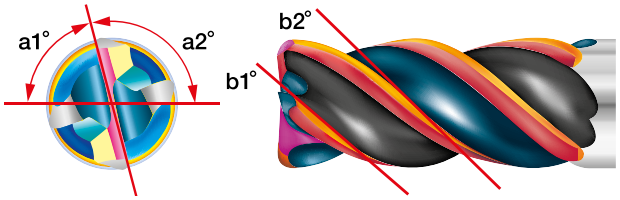
Semi-mirrored Rake Face

SSEH series Anti-vibration type

■ Features and Applications

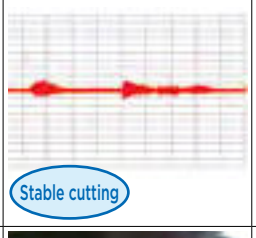
- New anti-vibration type added to the SSEH type endmill for exotic alloys.
- Builds on the same features of existing endmills by adding an irregular lead for exceptional anti-vibration performance.
- Compatible with a wide range of milling for exotic alloys including SUS, Inconel and Titanium.
- Reduces chattering for high-speed, high-feed cutting.
- Both coated and uncoated types are in stock to meet various conditions.

Irregular Pitch + Irregular Lead



■ Application Examples

- Corner Finishing for Titanium Alloy

	SSEH Radius Anti-Vibration Endmill SSEHVL 4120W-30	No Anti-Vibration Mechanism Endmill ø12 x R3.0
Machined Surface		
Vibration Data		
Tool Breakage		

Cutting Conditions: vc = 42.4m/min (n = 1,125min^{-1})
vf = 200mm/min (fz = 0.044min/t)
ap = 5.0mm, ae = 12mm Wet

GS MILL Hard series



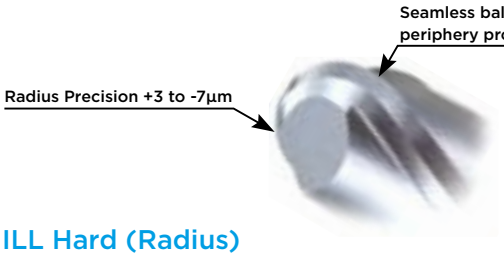


Side Milling of SKD61 (53HRC) with GS MILL Hard Radius

■ Features

GS MILL Hard (Square/Ballnose/Radius)

- With the high-Al content Al-Ti-Cr coating GS HARD Coat, oxidation resistance is now 3 times higher at 1,100°C, thereby improving thermal and wear resistance under ultra-high speed machining conditions.
- Coating surface roughness is similar to the standard GS Coat, which reduces cutting friction while enhancing smooth cutting.
- Ultra-fine grained high-hardness cemented carbide substrate with low cobalt content has been newly developed to improve substrate strength. This increases tool durability and prevents micro-plastic deformation of the cutting edge that occurs during ultra-high speed machining.
- New unique cross-sectional design achieves better chip evacuation and tool rigidity.
- Hard (Radius) / New endmill series with improved fracture resistance.
- Hard (Ballnose) / Utilises a new coating with excellent lubricity and thermal resistance. Achieves precision finishing of hardened steel, with a precise radial tolerance of +3 to -7µm and a seamless ball to periphery profile.



■ Product Range

● GS MILL Hard (Square/Ballnose)

Cat. No.	No. of Flutes	Shape	Diameter (mm)
GSH 4000SF **GSH 6000SF** **GSH 8000SF**	4 Flutes 6 Flutes 8 Flutes	 I170, I71, I72	ø1 to ø20
GSBH 20000SF	2 Flutes	 I122	R0.2 to R6.0 (ø0.4 to ø12)

● GS MILL Hard (Radius)

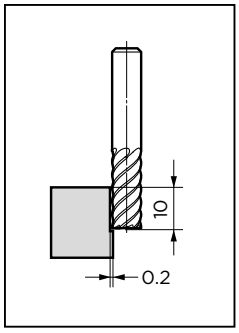
Cat. No.	No. of Flutes	Shape	Diameter (mm)
GSH 6000SF-R **GSH 8000SF-R**	6 Flutes 8 Flutes	 I112, I113	ø6 to ø20

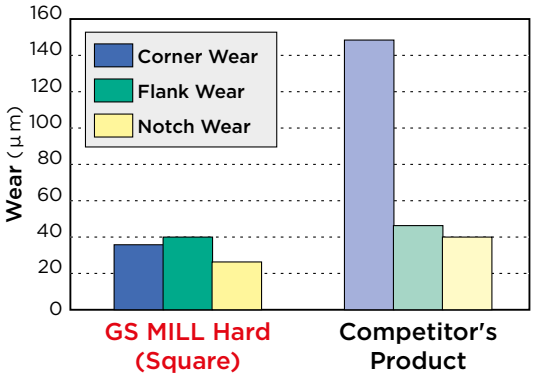
■ GS MILL Hard (Square)

● Cutting Performance (6 Flutes, ø10 Side Milling)

Work Material: X40CrMoV5-1 (53HRC)
Tool: GSH 6100SF (ø10)
Cutting Length: 75m
Cutting Conditions: vc = 800m/min (n = 25,460min^{-1})
fz = 0.07mm/t (f = 10,500mm/min)
ap = 10mm, ae = 0.2mm
Dry (Air Blow), Down Cut

Dimensions (mm)



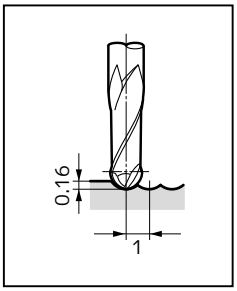


■ GS MILL Hard (Ballnose)

● Application Example (Precision Forging Die for Automotive Components)

Work Material: HS6-5-2 (62HRC)
Tool: GSBH 20300SF (R3)
Cutting Length: Approx. 150m
Cutting Conditions: vc = 75m/min (n = 4,000min^{-1})
n = 4,000min^{-1}
fz = 0.075mm/t (f = 600mm/min)
ap = 0.16mm, pf = 1mm

Dimensions (mm)





AURORA Coat Endmills



☞I84, I85, I123



☞I124

■ Features and Applications

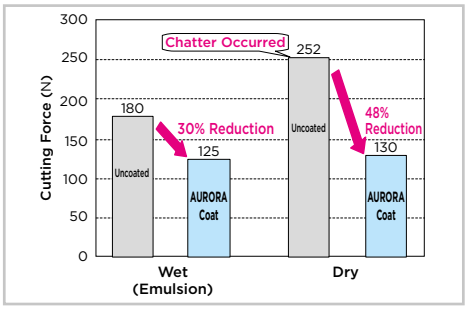
- Very smooth AURORA Coat results in low adhesion as well as a good surface finish
- With lower cutting forces and high rigidity, this series is suitable for low rigidity machines
- Available in 2- and 4-flutes square type as well as ballnose type endmills
- Added R0.05 to R2.00mm long neck ballnose endmills for machining copper electrodes

■ Product Range

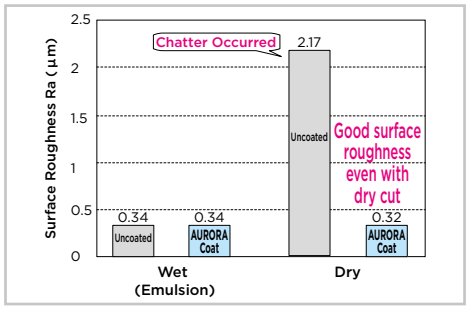
Cat. No.	No. of Flutes	Shape	Diameter (mm)
ASM 2000DL	2 Flutes	Square  ☞I84	ø2 to ø16
ASM 4000DL	4 Flutes	Square  ☞I85	ø2 to ø16
SNB 2000DL	2 Flutes	Ballnose  ☞I123	R1 to R8 (ø2 to ø16)
SNB2	2 Flutes	Long Neck Ballnose  ☞I124	R0.05 to R2 (ø0.1 to ø4)

■ Performance

● Comparison of Cutting Force



● Surface Roughness Comparison



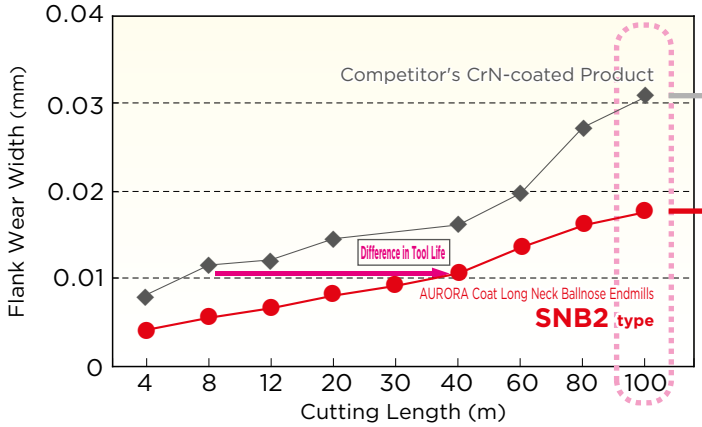
Work Material: A5052
Tool: ASM4100DL
ø10 (4 Flutes)
Cutting Conditions:
vc = 200m/min
n = 6,300min^{-1}
fz = 0.05mm/t
vf = 1,300mm/min
ap = 10mm
ae = 1mm
Down Cut

■ AURORA Coat Long Neck Ballnose Endmill SNB 2 type

- Achieves longer tool life compared with chromium nitride (CrN) coated carbide tools
- Products with ballnose radii of 0.05 to 2.00mm
- Reduced coefficient of friction
- Extremely smooth coating layer



● Tool Wear Comparison



Tool	Cutting Length 100m	Cutting Conditions
Competitor's CrN-coated Product	 Large amount of wear	Work Material: Tough-pitch Copper Tool: R0.3mm Ballnose Endmill Cutting Conditions: vc = 57m/min n = 30,000min^{-1} vf = 700mm/min ap = 0.035mm ae = 0.03mm Oil Mist
SNB2 type	 Uniform Wear	

Excellent adhesion resistance in copper alloy milling with long tool life!

Mold Finish Master series



MOLD FINISH MASTER

SUMIDIA BINDERLESS Endmills

NPDRS type/NPDBS type/NPDB type

SUMIDIA Coated Endmills

SDCB type

SUMIBORON Endmills

BNBR type/BNBP type/BNBC type

SUMIDIA BINDERLESS Radius Endmills

NPDRS type

Corner r

Binderless PCD

For Standard Finishing

I116



For Finishing of Cemented Carbide and Hard Brittle Materials

SUMIDIA BINDERLESS Ballnose Endmills

NPDBS type/NPDB type

Ballnose R

Binderless PCD

For Standard Finishing

For Precision Finishing

I126, I127



For Finishing of Cemented Carbide and Hard Brittle Materials

- Nano-polycrystalline diamond, which is harder than single-crystal diamond, is used for the cutting edge
- Enables direct engraving of cemented carbide, which is impossible for existing single-crystal or polycrystalline diamonds
- Ideal for finishing hard brittle materials, including cemented carbide. Realizes high-precision machining and long tool life
- Standard finish NPDBS type dramatically reduces machining cost
- Precision finish NPDB type prevents deformation by eliminating polishing process

SUMIDIA Coat Ballnose Endmills

SDCB type

Ballnose R

SUMIDIA Coat

For Rough/Medium-Finishing

I128



For Rough/Medium Finishing of Cemented Carbide and Hard Brittle Materials

- Realizes high-efficiency rough/medium finishing of carbide molds
- Newly developed diamond coating exhibits stable tool life
- Achieves the highest level of precision when used in combination with SUMIDIA BINDERLESS endmills

SUMIBORON Radius Endmills

BNBR type

Corner r

CBN

I118



For Hardened Steel

SUMIBORON Ballnose Endmills

BNBP type

Ballnose R

CBN

I130



For Hardened Steel

- Achieves longer tool life in high-speed, high-precision machining from pre-hardened steel to high-hardness steel in excess of **60HRC**
- Excellent machined surface quality drastically reduces the grinding process
- Edge design suited for profiling and face milling plus an extensive selection of grades allows a wide range of machining applications

SUMIBORON Ballnose Endmills

BNBC type

Ballnose R

CBN

I132



For Copper Electrodes

- Ballnose radii of **R0.1mm to R0.5mm** are available in this series
- Utilising a high CBN content grade provides excellent edge sharpness and wear resistance
- Achieves high quality milling with high precision cutting edge

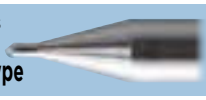
Mold Finish Master series

SUMIDIA BINDERLESS Radius Endmills
NPDRS type



Hard Brittle Materials

SUMIDIA BINDERLESS Ballnose Endmills
NPDBS type/NPDB type



Hard Brittle Materials

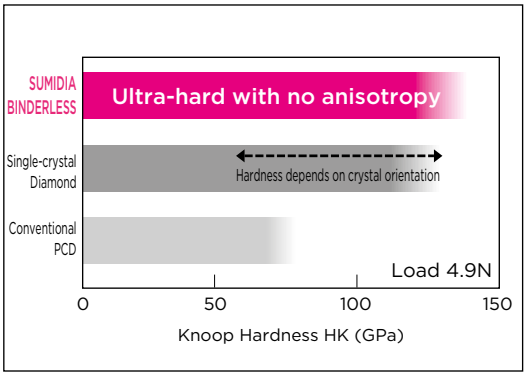
■ General Features

SUMIDIA BINDERLESS is polycrystalline diamond that directly binds nano-sized diamond particles with high strength without using any binders. Harder than single-crystal diamond, it has no cleavability, enabling machining of hard brittle materials such as cemented carbide and making new machining methods possible.

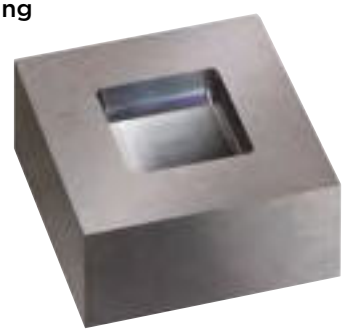
■ Features

- SUMIDIA BINDERLESS is a pure diamond material, but unlike single-crystal diamonds, it has no anisotropy. It therefore displays excellent wear resistance with less uneven wear.
- Thanks to its polycrystalline structure, SUMIDIA BINDERLESS does not have the cleavability peculiar to single-crystal diamonds and displays excellent fracture resistance.

■ Hardness

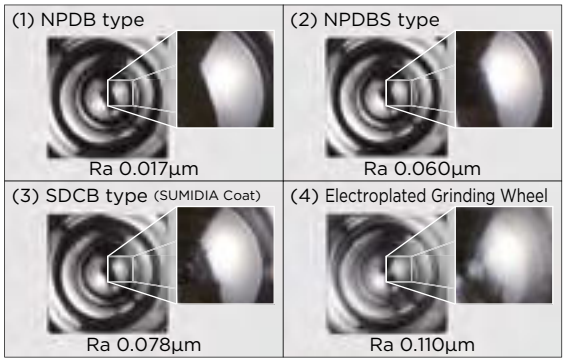


● Pocketing



Work Material	: Cemented Carbide VF20 (Ultra-fine Grain AF1, 92.5HRA)
Machining Application	: 10mm x 10mm x Depth 2mm
Tool	: NPDRS 1100R005-030 (ø1 x Corner Radius R0.05mm)
Cutting Conditions	: n = 40,000min^{-1}, vf = 200mm/min pf = 0.005mm, Oil Mist
Surface Roughness	: Ra 0.015µm
Cutting Time	: 2 Hours

● Hemispherical Surface Milling



Work Material	: Cemented Carbide VF20 (Ultra-fine Grain AF1, 92.5HRA)
Machining Application	: ø6 (Hemispherical Surface Milling)
Tool	: (1) NPDB 1050-020 (Ballnose R0.5mm) (2) NPDBS 1050-020 (Ballnose R0.5mm) (3) SDCB 2R050-020 (Ballnose R0.5mm) (4) R0.5, #400
Cutting Conditions	: n = 40,000min^{-1}, vf = 120mm/min pf = 0.005mm, Oil Mist
Cutting Time	: 1 Hour 30 Minutes

● Application for Medical Use (µ-TAS Mold)



Work Material	: Cemented Carbide VF20 (Ultra-fine Grain AF1, 92.5HRA)
Tool	: NPDB 1030-010 (Ballnose R0.3mm)
Cutting Conditions	: n = 38,000min^{-1}, vf = 95mm/min pf = 0.001mm Wet (Oil-based)
Machining Allowance	: 0.003mm
Surface Roughness	: Ra 0.016 to 0.020µm
Machining Distance	: 8.3m
Cutting Time	: Finishing 1 Hour 28 Minutes

● Application for Optical Use (Fly-Eye Lens Mold)



Work Material	: Cemented Carbide VF20 (Ultra-fine Grain AF1, 92.5HRA)
Tool	: Finishing NPDB 1050-020 (Ballnose R0.5mm) Roughing Diamond-Coated Endmill (Ballnose R0.5mm)
Cutting Conditions	: n = 60,000min^{-1}, vf = 300mm/min pf = 0.005mm, Oil Mist
Surface Roughness	: Ra 0.015µm
Cutting Time	: Finishing 2 Hours 40 Minutes Roughing 55 Minutes

Mold Finish Master series

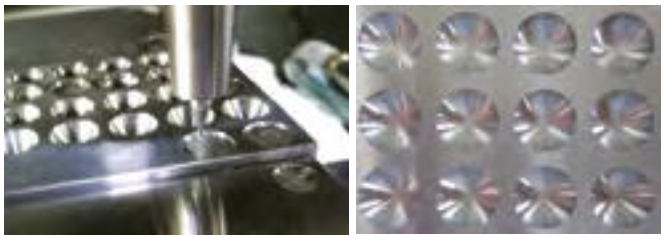
SUMIDIA Coat Ballnose Endmills SDCB type

Ballnose R — Hard Brittle Materials



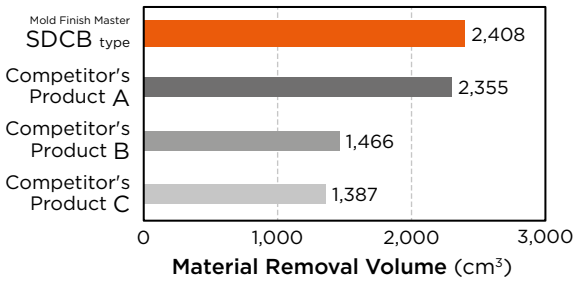
- Realizes high-efficiency roughing/medium finishing of carbide molds
- Newly developed diamond coating exhibits stable tool life
- Achieves the highest level of precision when used in combination with SUMIDIA BINDERLESS endmills

ø10mm hemispherical machining

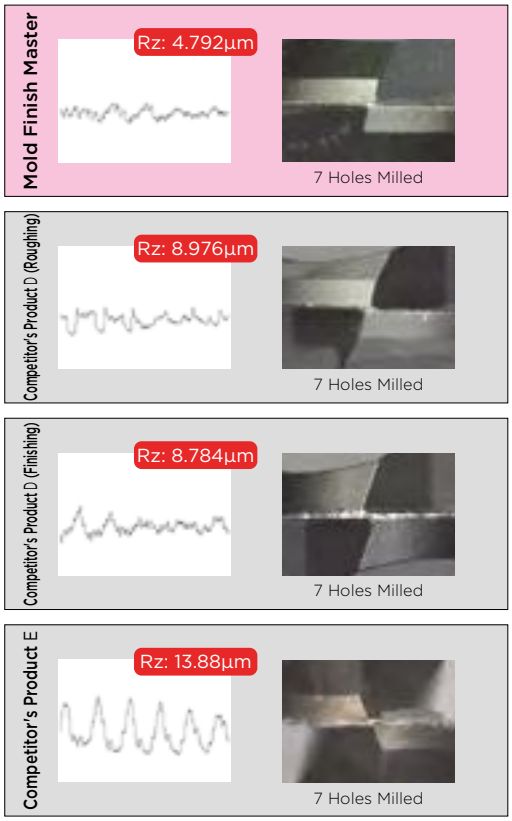


Work Material: Cemented Carbide AF1 (Ultra-Fine Grained Carbide)
Tool: SDCB 2R100-060
Cutting Conditions: n = 30,000min^{-1}, vf = 300mm/min
ae = 0.3mm, ap = 0.1mm, Air Blow

Tool Life



ø2.0 (ball radius R1.0mm) number of workpieces and tool damage (delamination)

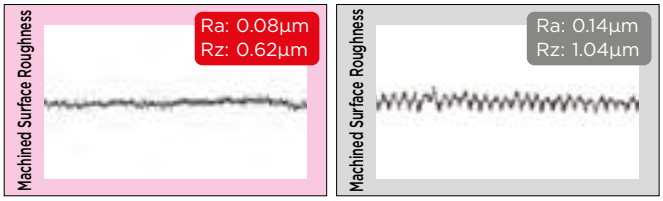


SUMIBORON Mold Finish Master BNBR type

Corner r — H

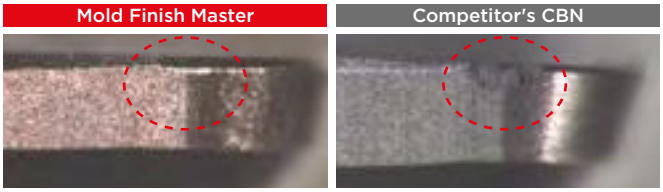
- Improved machined surface quality through use of a wiper edge (available on ø1.0mm endmills and larger)

Machined Surface Comparison



With Wiper Edge — Without Wiper Edge

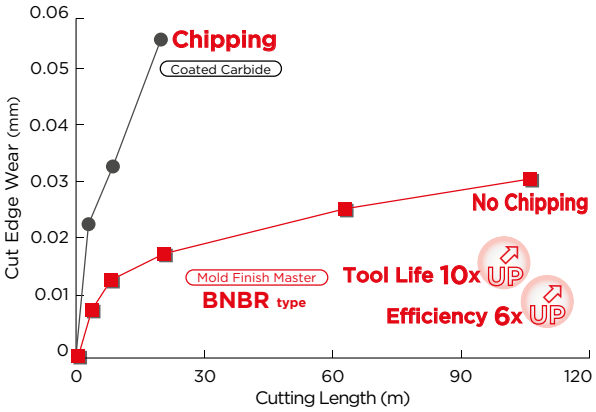
- Achieving longer tool life with the combination of SUMIBORON BNX20, which has excellent wear resistance, and an optimised cutting edge design



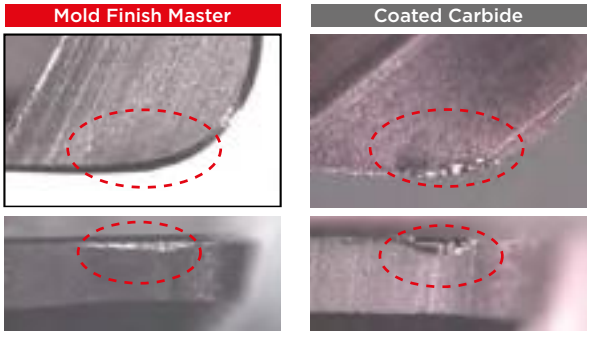
Small amount of wear — Breakage

Work Material: STAVAX (52HRC)
Tool: BNBR 2D200R050-0604 (ø2 x Corner Radius R0.5mm)
Cutting Conditions: n = 20,000min^{-1}, vf = 400mm/min
ap = 0.03mm, pf = 0.70mm Oil Mist

- Excellent wear resistance delivers almost 10 times longer tool life than carbide endmills



Tool Wear Comparison



Small amount of wear — Breakage

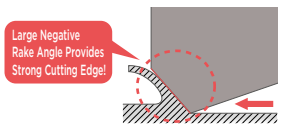
Work Material: STAVAX (52HRC)
Tool: BNBR 2D200R050-0604 (ø2 x Corner Radius R0.5mm)
Mold Finish Master
Cutting Conditions: n = 20,000min^{-1}, vf = 800mm/min
ap = 0.03mm, pf = 0.70mm Oil Mist
Coated Carbide
Cutting Conditions: n = 4,800min^{-1}, vf = 120mm/min
ap = 0.03mm, pf = 0.70mm Oil Mist

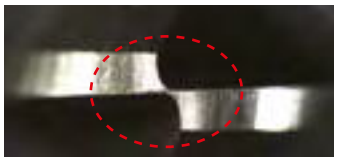
Mold Finish Master series

SUMIBORON Mold Finish Master BNBP type



- Achieves high-precision machining with precise ball radius of ±0.005mm.
- Achieving stable interrupted milling with the combination of SUMIBORON BN350, which has excellent fracture resistance, and a cutting edge with a negative rake angle design.

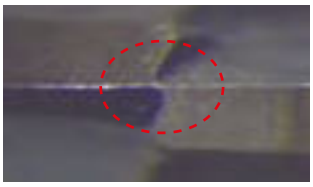




Center cutting edge, stable machined surface quality

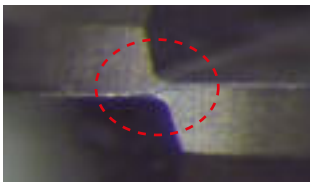
- Strong cutting edge enables use in roughing applications

Mold Finish Master



No fracture

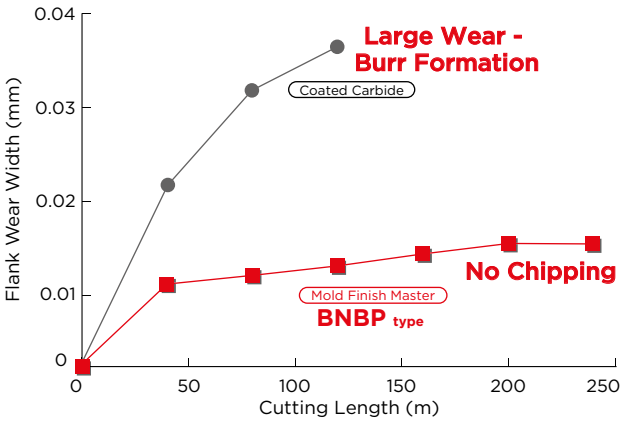
Coated Carbide



Chipping at center cutting edge

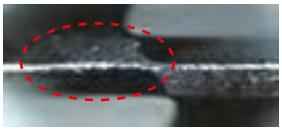
Work Material: STAVAX (52HRC)
Tool: BNBP 2R100-0554 (Ballnose R0.1mm)
Cutting Conditions: n = 25,000min^{-1}, vf = 1,500mm/min
ap = 0.10mm, pf = 0.20mm Oil Mist

- Excellent wear resistance and machined surface quality



Tool Wear Comparison

Mold Finish Master (6 passes)



Small amount of wear

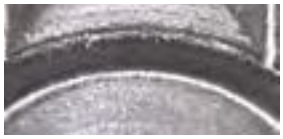
Coated Carbide (2 passes)



Large amount of wear



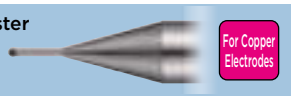
Good machined surface



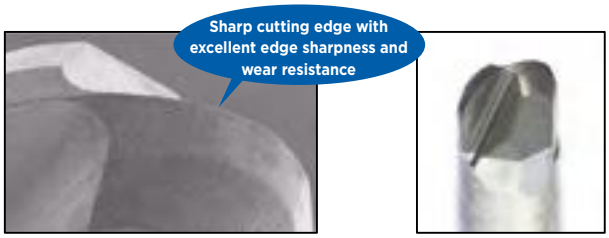
Burr formation

Work Material: STAVAX (52HRC)
Tool: BNBP 2R030-0154 (Ballnose R0.3mm)
Cutting Conditions: n = 25,000min^{-1}, vf = 1,500mm/min
ap = 0.05mm, pf = 0.10mm Oil Mist

SUMIBORON Mold Finish Master BNBC type



- Ballnose radii of 0.1 to 0.5mm are available in this series.
- Achieves high quality milling with high precision cutting edge.



- Achieves further improved tool life

Mold Finish Master



Low Wear (Cutting Length 400mm)

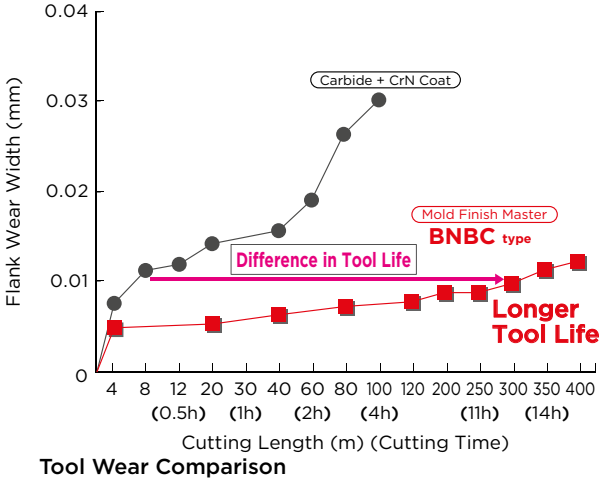
Competitor's Carbide + CrN-Coated Product



High Wear (Cutting Length 100mm)

Work Material: Tough-pitch Copper (Side Milling)
Tool: BNBC 2R030-0304 (Ballnose R0.3mm)
Cutting Conditions: n = 30,000min^{-1}, vf = 700mm/min
ap = 0.035mm, ae = 0.03mm Oil Mist

- Utilisation of high CBN content grade promotes excellent edge sharpness and wear resistance



Tool Wear Comparison

Mold Finish Master

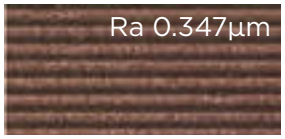


Microwear, can still be used

Competitor's Carbide + CrN-Coated Product



Large amount of wear





Good cutter marked surface with BNBC type

Work Material: Tough-pitch Copper
Tool: BNBC 2R030-0304 (Ballnose R0.3mm)
Cutting Conditions: vc = 57m/min, n = 30,000min^{-1}
fz = 0.007mm/t, vf = 400mm/min
ap = 0.005mm, ae = 0.05mm Oil Mist

AVIC type

New



■ Features

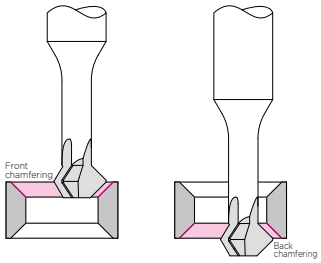
- **High-raked cutting edge design significantly reduces cutting force**
  Realises burr-free machining and suppresses damage to laminated workpieces during machining
- **Dedicated grades for machining titanium alloys (KH26) and nickel-based heat-resistant alloys (ACF07C) to achieve long and stable tool life**
- **3-flute design enables high-efficiency machining**
- **Front and back chamfering is possible with a single tool**

■ Tool Shape



3-flute high-raked design;
large rake angle

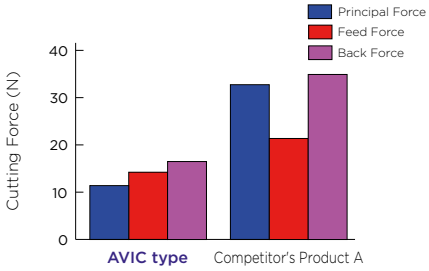
→ · Secondary burr control
· Improved machined surface quality



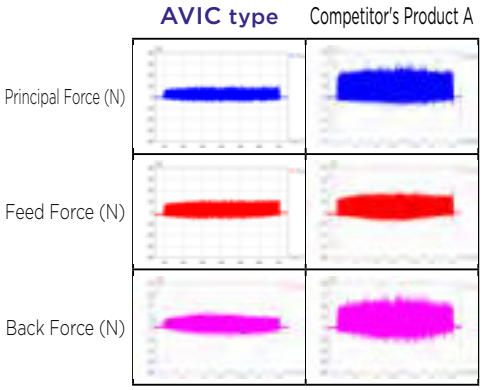
Front and back chamfering is possible with a single tool

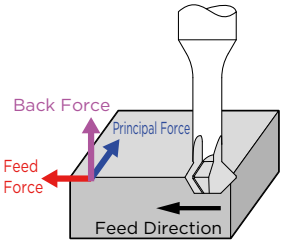
■ Cutting Performance

● Cutting Force



Work Material	:	Ti-6Al-4V
Tool	:	AVIC 306000-45-1.4 (ø6.0, KH26)
Cutting Conditions	:	vc = 27m/min, n = 1,070min^{-1}, vf = 107mm/min
Chamfering	:	C0.3mm





AVIC type effectively suppresses cutting force in chamfering

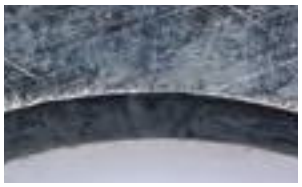
● Machined Surface Quality

AVIC type



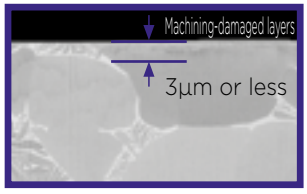
No secondary burrs

Competitor's Product B



Secondary burrs

AVIC type



Good, within specifications

Competitor's Product B

Workpiece laminate damage from machining
- Not acceptable

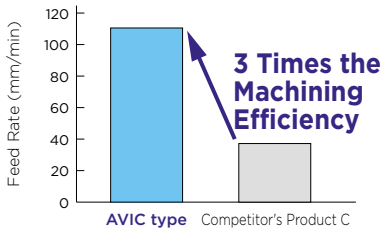
Work Material	:	Ti-6Al-4V
Tool	:	AVIC 306000-45-1.4 (3-flute, KH26 Solid Carbide) Competitor's Product B (1-flute, indexable cutter: Standard Product)
Cutting Conditions	:	vc = 27m/min, n = 1,070min^{-1}, vf = 107mm/min
Chamfering	:	C0.3mm

AVIC type suppresses secondary burr* generation

*Burrs generated during chamfering (deburring)

AVIC type suppresses the generation of the machining-damaged layers which cause problems on the finished surface of machined aerospace components

● Machining Efficiency



AVIC type has 3 flutes for higher-efficiency machining

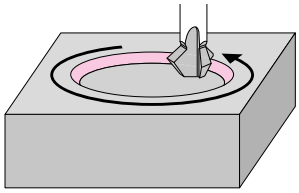


Image of Machining

MEMO

GSX 20000C-1.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

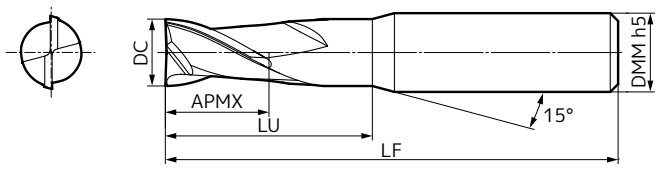
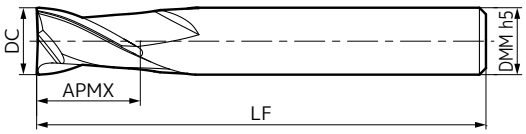


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO. Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20050C-1.5D	★	**0.5**	1.0	1.4	40	4	1
20100C-1.5D	★	**1.0**	1.5	2.5	40	4	1
20150C-1.5D	★	**1.5**	2.3	3.3	40	4	1
20200C-1.5D	★	**2.0**	3.0	4.0	40	4	1
20250C-1.5D	★	**2.5**	3.8	4.8	40	4	1
GSX 20300C-1.5D	★	**3.0**	4.5	6.0	45	6	1
20350C-1.5D	★	**3.5**	5.3	6.8	45	6	1
20400C-1.5D	★	**4.0**	6.0	7.5	45	6	1
20450C-1.5D	★	**4.5**	6.8	8.3	50	6	1
20500C-1.5D	★	**5.0**	7.5	9.5	50	6	1
GSX 20550C-1.5D	★	**5.5**	8.3	10.3	50	6	1
20600C-1.5D	★	**6.0**	9.0	—	50	6	2
20650C-1.5D	★	**6.5**	10.0	12.0	60	8	1
20700C-1.5D	★	**7.0**	11.0	13.0	60	8	1
20750C-1.5D	★	**7.5**	12.0	14.0	60	8	1
GSX 20800C-1.5D	★	**8.0**	12.0	—	60	8	2
20850C-1.5D	★	**8.5**	13.0	15.0	70	10	1
20900C-1.5D	★	**9.0**	14.0	16.0	70	10	1
20950C-1.5D	★	**9.5**	15.0	17.0	70	10	1
21000C-1.5D	★	**10.0**	15.0	—	70	10	2
GSX 21050C-1.5D	★	**10.5**	16.0	18.5	75	12	1
21100C-1.5D	★	**11.0**	17.0	19.5	75	12	1
21150C-1.5D	★	**11.5**	18.0	20.5	75	12	1
21200C-1.5D	★	**12.0**	18.0	—	75	12	2
21300C-1.5D	★	**13.0**	20.0	23.5	90	16	1
GSX 21400C-1.5D	★	**14.0**	21.0	24.5	90	16	1
21500C-1.5D	★	**15.0**	23.0	26.5	90	16	1
21600C-1.5D	★	**16.0**	24.0	—	90	16	2
21700C-1.5D	★	**17.0**	26.0	30.5	100	20	1
21800C-1.5D	★	**18.0**	27.0	31.5	100	20	1
GSX 21900C-1.5D	★	**19.0**	29.0	33.5	100	20	1
22000C-1.5D	★	**20.0**	30.0	—	100	20	2
22500C-1.5D	★	**25.0**	38.0	—	120	25	2

Grade: ACF20

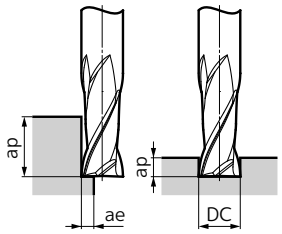
Identification Code

GSX 2 1000 C - 1.5D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000C-1.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0		11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0		6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0		4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0		3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0		2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0		2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0		1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0		1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0		1,080	300	1,080	300	1,080	300	1,040	220	720	130	520	70	640	80	520	60
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0		11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0		6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0		4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0		3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0		2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0		2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0		1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0		1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0		1,080	240	1,080	304	1,080	304	1,040	224	720	128	520	72	640	56	256	24
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 20000S-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

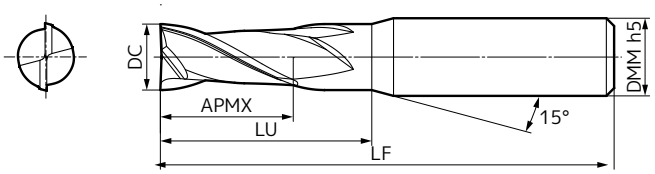
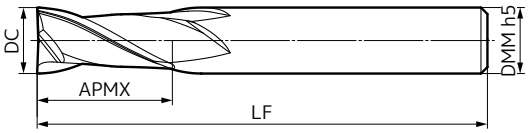


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body (Diameter ø0.3 to 4.3mm)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20030S-2D	★	**0.3**	0.6	1.0	40	4	1
20040S-2D	★	**0.4**	0.8	1.2	40	4	1
20050S-2D	★	**0.5**	1.3	1.7	40	4	1
20060S-2D	★	**0.6**	1.3	1.8	40	4	1
20070S-2D	★	**0.7**	1.4	1.9	40	4	1
GSX 20080S-2D	★	**0.8**	1.6	2.1	40	4	1
20090S-2D	★	**0.9**	1.8	2.3	40	4	1
20100S-2D	★	**1.0**	2.5	3.5	40	4	1
20110S-2D	★	**1.1**	2.5	3.5	40	4	1
20120S-2D	★	**1.2**	2.5	3.5	40	4	1
GSX 20130S-2D	★	**1.3**	2.6	3.6	40	4	1
20140S-2D	★	**1.4**	2.8	3.8	40	4	1
20150S-2D	★	**1.5**	3.8	4.8	40	4	1
20150S-2D-S3	★	**1.5**	3.8	4.8	38	3	1
20160S-2D	★	**1.6**	3.8	4.8	40	4	1
GSX 20170S-2D	★	**1.7**	3.8	4.8	40	4	1
20180S-2D	★	**1.8**	3.8	4.8	40	4	1
20190S-2D	★	**1.9**	3.8	4.8	40	4	1
20200S-2D	★	**2.0**	5.0	6.0	40	4	1
20200S-2D-S3	★	**2.0**	5.0	6.0	38	3	1
GSX 20210S-2D	★	**2.1**	6.0	7.0	40	4	1
20220S-2D	★	**2.2**	6.0	7.0	40	4	1
20230S-2D	★	**2.3**	6.0	7.0	40	4	1
20240S-2D	★	**2.4**	6.0	7.0	40	4	1
20250S-2D	★	**2.5**	6.3	7.3	40	4	1
GSX 20260S-2D	★	**2.6**	7.0	8.0	40	4	1
20270S-2D	★	**2.7**	7.0	8.0	40	4	1
20280S-2D	★	**2.8**	7.0	8.0	40	4	1
20290S-2D	★	**2.9**	7.0	8.0	40	4	1
20300S-2D	★	**3.0**	7.5	9.0	45	6	1
GSX 20300S-2D-S3	★	**3.0**	7.5	—	38	3	2
20310S-2D	★	**3.1**	7.5	9.0	45	6	1
20320S-2D	★	**3.2**	7.5	9.0	45	6	1
20330S-2D	★	**3.3**	7.5	9.0	45	6	1
20340S-2D	★	**3.4**	7.5	9.0	45	6	1
GSX 20350S-2D	★	**3.5**	8.8	10.3	45	6	1
20360S-2D	★	**3.6**	8.8	10.3	45	6	1
20370S-2D	★	**3.7**	8.8	10.3	45	6	1
20380S-2D	★	**3.8**	8.8	10.3	45	6	1
20390S-2D	★	**3.9**	8.8	10.3	45	6	1
GSX 20400S-2D	★	**4.0**	11.0	14.0	45	6	1
20400S-2D-S4	★	**4.0**	11.0	—	45	4	2
20410S-2D	★	**4.1**	11.0	14.0	45	6	1
20420S-2D	★	**4.2**	11.0	14.0	45	6	1
20430S-2D	★	**4.3**	11.0	14.0	45	6	1

Grade: ACF20

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000S-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

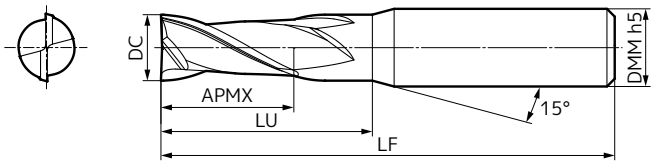
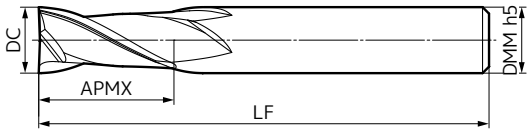


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body (Diameter ø4.4 to 8.8mm)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20440S-2D	★	**4.4**	11.0	14.0	45	6	1
20450S-2D	★	**4.5**	11.3	12.8	50	6	1
20460S-2D	★	**4.6**	11.3	12.8	50	6	1
20470S-2D	★	**4.7**	11.3	12.8	50	6	1
20480S-2D	★	**4.8**	11.3	12.8	50	6	1
GSX 20490S-2D	★	**4.9**	11.3	12.8	50	6	1
20500S-2D	★	**5.0**	13.0	19.6	50	6	1
20510S-2D	★	**5.1**	13.0	19.6	50	6	1
20520S-2D	★	**5.2**	13.0	19.6	50	6	1
20530S-2D	★	**5.3**	13.0	19.6	50	6	1
GSX 20540S-2D	★	**5.4**	13.0	19.6	50	6	1
20550S-2D	★	**5.5**	13.0	19.6	50	6	1
20560S-2D	★	**5.6**	13.0	19.6	50	6	1
20570S-2D	★	**5.7**	13.0	19.6	50	6	1
20580S-2D	★	**5.8**	13.0	19.6	50	6	1
GSX 20590S-2D	★	**5.9**	13.0	19.6	50	6	1
20600S-2D	★	**6.0**	13.0	—	50	6	2
20610S-2D	★	**6.1**	13.0	19.6	50	8	1
20620S-2D	★	**6.2**	13.0	19.6	50	8	1
20630S-2D	★	**6.3**	13.0	19.6	50	8	1
GSX 20640S-2D	★	**6.4**	13.0	19.6	50	8	1
20650S-2D	★	**6.5**	13.0	19.6	60	8	1
20660S-2D	★	**6.6**	13.2	19.8	60	8	1
20670S-2D	★	**6.7**	13.4	20.0	60	8	1
20680S-2D	★	**6.8**	13.6	20.2	60	8	1
GSX 20690S-2D	★	**6.9**	13.8	20.4	60	8	1
20700S-2D	★	**7.0**	16.0	21.1	60	8	1
20710S-2D	★	**7.1**	16.0	21.1	60	8	1
20720S-2D	★	**7.2**	16.0	21.1	60	8	1
20730S-2D	★	**7.3**	16.0	21.1	60	8	1
GSX 20740S-2D	★	**7.4**	16.0	21.1	60	8	1
20750S-2D	★	**7.5**	16.0	21.1	60	8	1
20760S-2D	★	**7.6**	16.0	21.1	60	8	1
20770S-2D	★	**7.7**	16.0	21.1	60	8	1
20780S-2D	★	**7.8**	16.0	21.1	60	8	1
GSX 20790S-2D	★	**7.9**	16.0	21.1	60	8	1
20800S-2D	★	**8.0**	19.0	—	60	8	2
20810S-2D	★	**8.1**	19.0	24.1	60	10	1
20820S-2D	★	**8.2**	19.0	24.1	60	10	1
20830S-2D	★	**8.3**	19.0	24.1	60	10	1
GSX 20840S-2D	★	**8.4**	19.0	24.1	60	10	1
20850S-2D	★	**8.5**	19.0	24.1	70	10	1
20860S-2D	★	**8.6**	19.0	24.1	70	10	1
20870S-2D	★	**8.7**	19.0	24.1	70	10	1
20880S-2D	★	**8.8**	19.0	24.1	70	10	1

Grade: ACF20

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

GSX 20000S-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

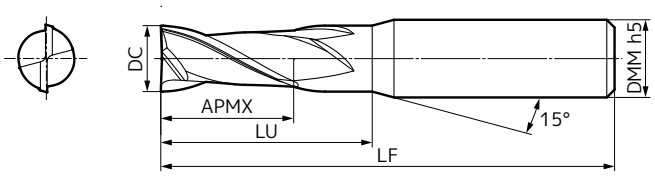
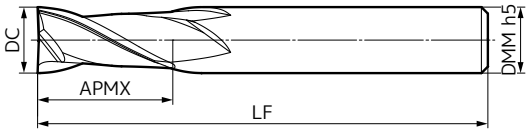


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body (Diameter ø8.9 to 25.0mm)

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20890S-2D	★	**8.9**	19.0	24.1	70	10	1
20900S-2D	★	**9.0**	19.0	24.1	70	10	1
20910S-2D	★	**9.1**	19.0	24.1	70	10	1
20920S-2D	★	**9.2**	19.0	24.1	70	10	1
20930S-2D	★	**9.3**	19.0	24.1	70	10	1
GSX 20940S-2D	★	**9.4**	19.0	24.1	70	10	1
20950S-2D	★	**9.5**	20.0	25.1	70	10	1
20960S-2D	★	**9.6**	20.0	25.1	70	10	1
20970S-2D	★	**9.7**	20.0	25.1	70	10	1
20980S-2D	★	**9.8**	20.0	25.1	70	10	1
GSX 20990S-2D	★	**9.9**	20.0	25.1	70	10	1
21000S-2D	★	**10.0**	22.0	—	70	10	2
21050S-2D	★	**10.5**	22.0	24.5	75	12	1
21100S-2D	★	**11.0**	22.0	24.5	75	12	1
21150S-2D	★	**11.5**	23.0	25.5	75	12	1
GSX 21200S-2D	★	**12.0**	26.0	—	75	12	2
21250S-2D	★	**12.5**	26.0	29.5	75	16	1
21300S-2D	★	**13.0**	26.0	29.5	90	16	1
21400S-2D	★	**14.0**	28.0	31.5	90	16	1
21500S-2D	★	**15.0**	30.0	33.5	90	16	1
GSX 21600S-2D	★	**16.0**	32.0	—	90	16	2
21700S-2D	★	**17.0**	35.0	39.5	100	20	1
21800S-2D	★	**18.0**	40.0	44.5	100	20	1
21900S-2D	★	**19.0**	40.0	44.5	100	20	1
22000S-2D	★	**20.0**	40.0	—	100	20	2
GSX 22100S-2D	★	**21.0**	42.0	47.0	110	25	1
22200S-2D	★	**22.0**	44.0	49.0	110	25	1
22300S-2D	★	**23.0**	46.0	51.0	120	25	1
22400S-2D	★	**24.0**	48.0	53.0	120	25	1
22500S-2D	★	**25.0**	50.0	—	120	25	2

Grade: ACF20

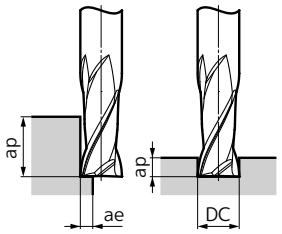
Identification Code

GSX 2 0150 S - 2D - S3

Series Code	Number of Flutes	Dia.	Corner Style S: Sharp Edge	Cutting Edge Length	Shank Dia.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000S-2D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
2.0		9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
4.0		5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
6.0		4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
8.0		3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
10.0		2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
12.0		2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
16.0		1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
20.0		1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
25.0		960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45
Standard Depth of Cut	ap	2.0DC															
	ae	0.02DC										0.01DC					

Groove Finishing

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
2.0		9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
4.0		5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
6.0		4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
8.0		3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
10.0		2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
12.0		2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
16.0		1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
20.0		1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
25.0		960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45
Standard Depth of Cut	ap	1.5DC															
	ae	Below 0.02DC															

GSX 20000C-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

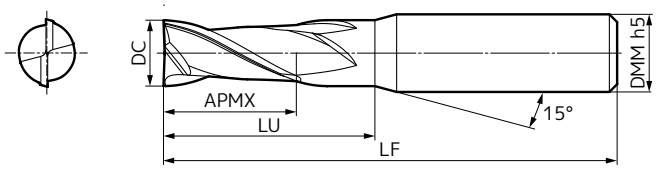
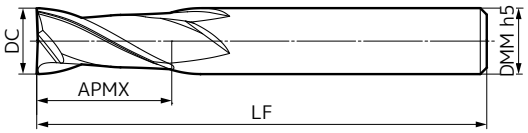


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20050C-2D	★	**0.5**	1.0	1.4	40	4	1
20100C-2D	★	**1.0**	2.0	3.0	40	4	1
20150C-2D	★	**1.5**	3.0	4.0	40	4	1
20200C-2D	★	**2.0**	4.0	5.0	40	4	1
20250C-2D	★	**2.5**	5.0	6.0	40	4	1
GSX 20300C-2D	★	**3.0**	6.0	7.5	45	6	1
20350C-2D	★	**3.5**	7.0	8.5	45	6	1
20400C-2D	★	**4.0**	8.0	9.5	45	6	1
20450C-2D	★	**4.5**	9.0	10.5	50	6	1
20500C-2D	★	**5.0**	10.0	12.0	50	6	1
GSX 20550C-2D	★	**5.5**	11.0	13.0	50	6	1
20600C-2D	★	**6.0**	12.0	—	50	6	2
20650C-2D	★	**6.5**	13.0	15.0	60	8	1
20700C-2D	★	**7.0**	14.0	16.0	60	8	1
20750C-2D	★	**7.5**	15.0	17.0	60	8	1
GSX 20800C-2D	★	**8.0**	16.0	—	60	8	2
20850C-2D	★	**8.5**	17.0	19.0	70	10	1
20900C-2D	★	**9.0**	18.0	20.0	70	10	1
20950C-2D	★	**9.5**	19.0	21.0	70	10	1
21000C-2D	★	**10.0**	20.0	—	70	10	2
GSX 21050C-2D	★	**10.5**	21.0	23.5	75	12	1
21100C-2D	★	**11.0**	22.0	24.5	75	12	1
21150C-2D	★	**11.5**	23.0	25.5	75	12	1
21200C-2D	★	**12.0**	24.0	—	75	12	2
21300C-2D	★	**13.0**	26.0	29.5	90	16	1
GSX 21400C-2D	★	**14.0**	28.0	31.5	90	16	1
21500C-2D	★	**15.0**	30.0	33.5	90	16	1
21600C-2D	★	**16.0**	32.0	—	90	16	2
21700C-2D	★	**17.0**	34.0	38.5	100	20	1
21800C-2D	★	**18.0**	36.0	40.5	100	20	1
GSX 21900C-2D	★	**19.0**	38.0	42.5	100	20	1
22000C-2D	★	**20.0**	40.0	—	100	20	2
22500C-2D	★	**25.0**	50.0	—	120	25	2

Grade: ACF20

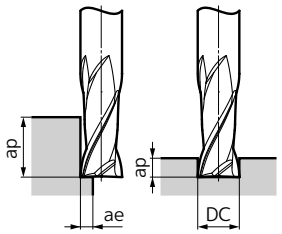
Identification Code

GSX 2 0050 C - 2D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000C-2D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
Dc(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0		11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0		6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0		4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0		3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0		2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0		2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0		1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0		1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0		1,000	300	1,000	300	1,000	300	1,000	220	700	120	500	70	640	80	500	60
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0		11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0		6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0		4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0		3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0		2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0		2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0		1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0		1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0		1,000	240	1,000	300	1,000	300	1,000	220	700	120	500	70	640	55	250	25
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 20000S-3D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

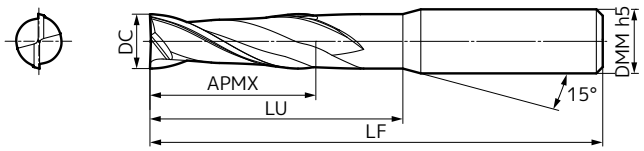
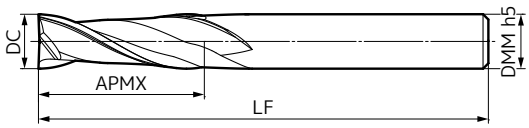


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20050S-3D	★	**0.5**	1.5	1.9	40	4	1
20100S-3D	★	**1.0**	3.0	4.0	40	4	1
20150S-3D	★	**1.5**	4.5	5.5	40	4	1
20200S-3D	★	**2.0**	6.0	7.0	40	4	1
20250S-3D	★	**2.5**	7.5	8.5	40	4	1
GSX 20260S-3D	★	**2.6**	8.0	9.5	50	4	1
20270S-3D	★	**2.7**	8.5	10.0	50	4	1
20280S-3D	★	**2.8**	9.0	10.5	50	4	1
20290S-3D	★	**2.9**	9.0	10.5	50	4	1
20300S-3D	★	**3.0**	9.0	10.5	50	6	1
GSX 20350S-3D	★	**3.5**	12.0	13.5	50	6	1
20400S-3D	★	**4.0**	12.0	13.5	50	6	1
20450S-3D	★	**4.5**	15.0	16.5	50	6	1
20500S-3D	★	**5.0**	15.0	17.0	50	6	1
20550S-3D	★	**5.5**	18.0	20.0	50	6	1
GSX 20600S-3D	★	**6.0**	18.0	—	50	6	2
20650S-3D	★	**6.5**	20.0	22.0	70	8	1
20700S-3D	★	**7.0**	21.0	23.0	70	8	1
20750S-3D	★	**7.5**	23.0	25.0	70	8	1
20800S-3D	★	**8.0**	24.0	—	70	8	2
GSX 20850S-3D	★	**8.5**	26.0	28.0	75	10	1
20900S-3D	★	**9.0**	27.0	29.0	75	10	1
20950S-3D	★	**9.5**	29.0	31.0	75	10	1
21000S-3D	★	**10.0**	30.0	—	90	10	2
21050S-3D	★	**10.5**	32.0	34.5	90	12	1
GSX 21100S-3D	★	**11.0**	33.0	35.5	90	12	1
21150S-3D	★	**11.5**	35.0	37.5	90	12	1
21200S-3D	★	**12.0**	36.0	—	90	12	2
21300S-3D	★	**13.0**	39.0	42.5	100	16	1
21400S-3D	★	**14.0**	42.0	45.5	110	16	1
GSX 21500S-3D	★	**15.0**	45.0	48.5	110	16	1
21600S-3D	★	**16.0**	48.0	—	110	16	2
21700S-3D	★	**17.0**	51.0	55.5	110	20	1
21800S-3D	★	**18.0**	54.0	58.5	120	20	1
21900S-3D	★	**19.0**	57.0	61.5	120	20	1
GSX 22000S-3D	★	**20.0**	60.0	—	120	20	2
22400S-3D	★	**24.0**	72.0	77.0	130	25	1
22500S-3D	★	**25.0**	75.0	—	130	25	2

Grade: ACF20

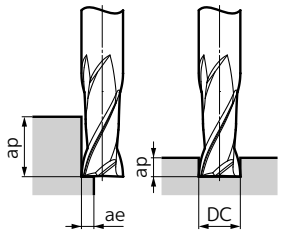
Identification Code

GSX 2 0050 S - 3D

Series Code	Number of Flutes	Dia.	Corner Style S: Sharp Edge	Cutting Edge Length
GSX	2	0050	S	3D

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000S-3D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0		8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0		4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0		2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
8.0		2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0		1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0		1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0		1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0		850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
25.0		680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35
Standard Depth of Cut	ap	2.5DC								2.0DC							
	ae	Below ø3: 0.02DC Above ø3: 0.05DC								0.01DC							

Groove Finishing

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0		8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0		4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0		2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
8.0		2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0		1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0		1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0		1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0		850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
25.0		680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35
Standard Depth of Cut	ap	1.5DC															
	ae	Below 0.02DC															

GSX 20000C-3D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing

Fig 1

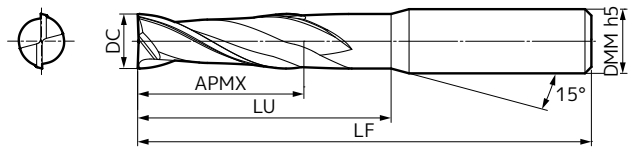
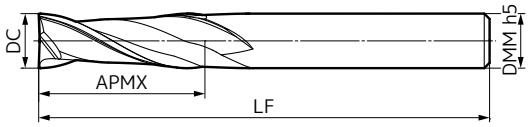


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20050C-3D	★	**0.5**	1.5	1.9	40	4	1
20100C-3D	★	**1.0**	3.0	4.0	40	4	1
20150C-3D	★	**1.5**	4.5	5.5	40	4	1
20200C-3D	★	**2.0**	6.0	7.0	40	4	1
20250C-3D	★	**2.5**	7.5	8.5	40	4	1
GSX 20300C-3D	★	**3.0**	9.0	10.5	50	6	1
20350C-3D	★	**3.5**	11.0	12.5	50	6	1
20400C-3D	★	**4.0**	12.0	13.5	50	6	1
20450C-3D	★	**4.5**	14.0	15.5	50	6	1
20500C-3D	★	**5.0**	15.0	17.0	50	6	1
GSX 20550C-3D	★	**5.5**	17.0	19.0	50	6	1
20600C-3D	★	**6.0**	18.0	—	50	6	2
20650C-3D	★	**6.5**	20.0	22.0	70	8	1
20700C-3D	★	**7.0**	21.0	23.0	70	8	1
20750C-3D	★	**7.5**	23.0	25.0	70	8	1
GSX 20800C-3D	★	**8.0**	24.0	—	70	8	2
20850C-3D	★	**8.5**	26.0	28.0	75	10	1
20900C-3D	★	**9.0**	27.0	29.0	75	10	1
20950C-3D	★	**9.5**	29.0	31.0	75	10	1
21000C-3D	★	**10.0**	30.0	—	90	10	2
GSX 21050C-3D	★	**10.5**	32.0	34.5	90	12	1
21100C-3D	★	**11.0**	33.0	35.5	90	12	1
21150C-3D	★	**11.5**	35.0	37.5	90	12	1
21200C-3D	★	**12.0**	36.0	—	90	12	2
21300C-3D	★	**13.0**	39.0	42.5	100	16	1
GSX 21400C-3D	★	**14.0**	42.0	45.5	110	16	1
21500C-3D	★	**15.0**	45.0	48.5	110	16	1
21600C-3D	★	**16.0**	48.0	—	110	16	2
21700C-3D	★	**17.0**	51.0	55.5	110	20	1
21800C-3D	★	**18.0**	54.0	58.5	120	20	1
GSX 21900C-3D	★	**19.0**	57.0	61.5	120	20	1
22000C-3D	★	**20.0**	60.0	—	120	20	2
22500C-3D	★	**25.0**	75.0	—	130	25	2

Grade: ACF20

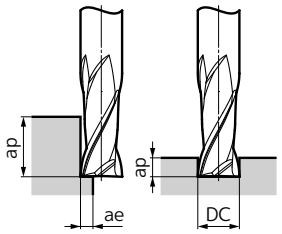
Identification Code

GSX 2 0100 C - 3D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000C-3D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		16,600	190	16,600	190	16,600	190	15,500	140	10,500	70	7,500	45	9,400	50	7,500	35
2.0		9,500	250	9,500	250	9,500	250	9,000	200	6,200	120	4,500	60	5,200	70	4,500	50
4.0		5,200	330	5,200	330	5,200	330	4,800	200	3,400	150	2,250	75	2,600	90	2,250	65
6.0		3,500	360	3,500	360	3,500	360	3,200	250	2,550	170	1,500	90	1,700	100	1,500	80
8.0		2,600	320	2,600	320	2,600	320	2,400	240	1,900	170	1,100	90	1,300	100	1,100	80
10.0		2,100	300	2,100	300	2,100	300	1,900	230	1,500	170	900	90	1,000	100	900	80
12.0		1,750	280	1,750	280	1,750	280	1,600	230	1,250	170	750	90	850	100	750	80
16.0		1,300	240	1,300	240	1,300	240	1,200	200	950	150	550	75	650	85	550	65
20.0		1,050	220	1,050	220	1,050	220	950	180	750	140	450	70	500	75	450	60
25.0		840	180	840	180	840	180	760	140	600	110	360	55	400	60	360	45
Standard Depth of Cut	ap	2.5DC								2.0DC							
	ae	Below ø3: 0.05DC Above ø3: 0.1DC								0.02DC							

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		16,600	70	16,600	80	16,600	80	15,500	50	10,500	50	7,500	35	9,400	30	3,750	10
2.0		9,500	80	9,500	100	9,500	100	9,000	90	6,200	60	4,500	45	5,200	40	2,250	15
4.0		5,200	120	5,200	150	5,200	150	4,800	120	3,400	80	2,200	50	2,600	50	1,250	20
6.0		3,500	140	3,500	170	3,500	170	3,200	130	2,550	100	1,500	50	1,700	60	950	25
8.0		2,600	140	2,600	160	2,600	160	2,400	130	1,900	100	1,100	50	1,300	60	700	25
10.0		2,100	130	2,100	150	2,100	150	1,900	120	1,500	90	900	50	1,000	60	550	25
12.0		1,750	130	1,750	150	1,750	150	1,600	120	1,250	90	750	50	850	60	450	25
16.0		1,300	110	1,300	130	1,300	130	1,200	110	950	80	550	45	650	50	350	20
20.0		1,050	100	1,050	120	1,050	120	950	100	750	70	450	40	500	40	280	15
25.0		840	80	840	96	840	96	760	80	600	56	360	32	400	32	224	12
Standard Depth of Cut	ap	0.1DC		0.2DC								0.05DC		0.1DC			

GSX 20000S-4D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

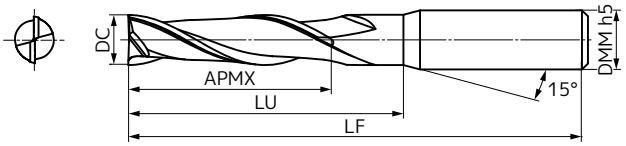
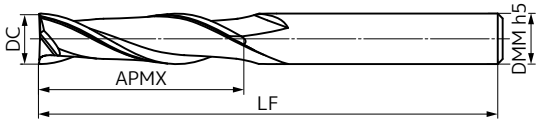


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20050S-4D	★	**0.5**	2.0	2.4	40	4	1
20100S-4D	★	**1.0**	5.0	6.0	40	4	1
20150S-4D	★	**1.5**	7.0	8.0	40	4	1
20200S-4D	★	**2.0**	9.0	10.0	40	4	1
20250S-4D	★	**2.5**	12.0	13.0	50	4	1
GSX 20300S-4D	★	**3.0**	12.0	13.5	50	6	1
20350S-4D	★	**3.5**	14.0	15.5	50	6	1
20400S-4D	★	**4.0**	16.0	17.5	50	6	1
20450S-4D	★	**4.5**	18.0	19.5	60	6	1
20500S-4D	★	**5.0**	20.0	22.0	60	6	1
GSX 20550S-4D	★	**5.5**	22.0	24.0	60	6	1
20600S-4D	★	**6.0**	24.0	—	60	6	2
20650S-4D	★	**6.5**	26.0	28.0	70	8	1
20700S-4D	★	**7.0**	28.0	30.0	80	8	1
20750S-4D	★	**7.5**	30.0	32.0	80	8	1
GSX 20800S-4D	★	**8.0**	32.0	—	80	8	2
20850S-4D	★	**8.5**	34.0	36.0	90	10	1
20900S-4D	★	**9.0**	36.0	38.0	90	10	1
20950S-4D	★	**9.5**	38.0	40.0	90	10	1
21000S-4D	★	**10.0**	40.0	—	90	10	2
GSX 21050S-4D	★	**10.5**	42.0	44.5	100	12	1
21100S-4D	★	**11.0**	44.0	46.5	100	12	1
21150S-4D	★	**11.5**	46.0	48.5	100	12	1
21200S-4D	★	**12.0**	48.0	—	100	12	2
21300S-4D	★	**13.0**	52.0	55.5	110	16	1
GSX 21400S-4D	★	**14.0**	56.0	59.5	110	16	1
21500S-4D	★	**15.0**	60.0	63.5	120	16	1
21600S-4D	★	**16.0**	64.0	—	120	16	2
21700S-4D	★	**17.0**	68.0	72.5	130	20	1
21800S-4D	★	**18.0**	72.0	76.5	130	20	1
GSX 21900S-4D	★	**19.0**	76.0	80.5	140	20	1
22000S-4D	★	**20.0**	80.0	—	140	20	2
22500S-4D	★	**25.0**	100.0	—	160	25	2

Grade: ACF20

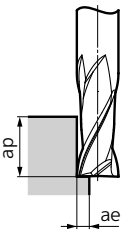
Identification Code

GSX 2 0100 S - 4D

Series Code	Number of Flutes	Dia.	Corner Style S: Sharp Edge	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000S-4D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		7,600	110	7,600	110	7,600	110	6,000	80	5,500	40	3,800	25	4,600	35	3,800	20
2.0		3,850	150	3,850	150	3,850	150	2,950	100	2,750	60	1,900	30	2,300	40	1,950	30
4.0		1,900	200	1,900	200	1,900	200	1,450	130	1,350	80	1,000	50	1,150	55	1,000	35
6.0		1,250	250	1,250	250	1,250	250	970	140	860	90	640	60	740	60	640	40
8.0		930	220	930	220	930	220	700	140	670	90	500	60	560	60	490	40
10.0		770	210	770	210	770	210	190	130	560	95	380	60	460	60	380	40
12.0		650	200	650	200	650	200	470	130	420	85	330	60	370	60	320	40
16.0		450	170	450	170	450	170	370	120	340	80	250	45	280	50	250	35
20.0		360	140	360	140	360	140	300	100	260	70	190	35	220	40	190	30
25.0		190	120	190	120	190	120	230	80	200	55	150	30	170	30	150	25
Standard Depth of Cut	ap	2.5DC								2.0DC							
	ae	Below ø3: 0.02DC Above ø3: 0.05DC								0.01DC							

GSX 20000C-4D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Spot Facing

Fig 1

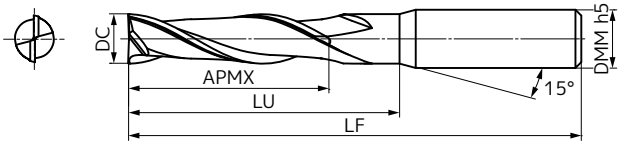
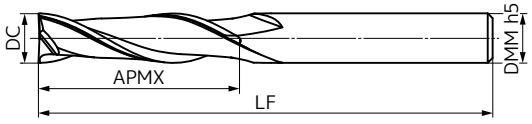


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 20050C-4D	★	**0.5**	2.0	2.4	40	4	1
20100C-4D	★	**1.0**	4.0	5.0	40	4	1
20150C-4D	★	**1.5**	6.0	7.0	40	4	1
20200C-4D	★	**2.0**	8.0	9.0	40	4	1
20250C-4D	★	**2.5**	10.0	11.0	50	4	1
GSX 20300C-4D	★	**3.0**	12.0	13.5	50	6	1
20350C-4D	★	**3.5**	14.0	15.5	50	6	1
20400C-4D	★	**4.0**	16.0	17.5	50	6	1
20450C-4D	★	**4.5**	18.0	19.5	60	6	1
20500C-4D	★	**5.0**	20.0	22.0	60	6	1
GSX 20550C-4D	★	**5.5**	22.0	24.0	60	6	1
20600C-4D	★	**6.0**	24.0	—	60	6	2
20650C-4D	★	**6.5**	26.0	28.0	70	8	1
20700C-4D	★	**7.0**	28.0	30.0	80	8	1
20750C-4D	★	**7.5**	30.0	32.0	80	8	1
GSX 20800C-4D	★	**8.0**	32.0	—	80	8	2
20850C-4D	★	**8.5**	34.0	36.0	90	10	1
20900C-4D	★	**9.0**	36.0	38.0	90	10	1
20950C-4D	★	**9.5**	38.0	40.0	90	10	1
21000C-4D	★	**10.0**	40.0	—	90	10	2
GSX 21050C-4D	★	**10.5**	42.0	44.5	100	12	1
21100C-4D	★	**11.0**	44.0	46.5	100	12	1
21150C-4D	★	**11.5**	46.0	48.5	100	12	1
21200C-4D	★	**12.0**	48.0	—	100	12	2
21300C-4D	★	**13.0**	52.0	55.5	110	16	1
GSX 21400C-4D	★	**14.0**	56.0	59.5	110	16	1
21500C-4D	★	**15.0**	60.0	63.5	120	16	1
21600C-4D	★	**16.0**	64.0	—	120	16	2
21700C-4D	★	**17.0**	68.0	72.5	130	20	1
21800C-4D	★	**18.0**	72.0	76.5	130	20	1
GSX 21900C-4D	★	**19.0**	76.0	80.5	140	20	1
22000C-4D	★	**20.0**	80.0	—	140	20	2
22500C-4D	★	**25.0**	100.0	—	160	25	2

Grade: ACF20

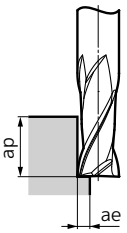
Identification Code

GSX 2 0100 C - 4D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 20000C-4D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for groove milling.
7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304, SUS316		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		9,000	130	9,000	130	9,000	130	7,000	95	6,500	50	4,500	30	5,400	40	4,500	25
2.0		4,500	180	4,500	180	4,500	180	3,500	120	3,200	70	2,300	40	2,700	50	2,300	35
4.0		2,250	240	2,250	240	2,250	240	1,750	160	1,600	95	1,200	60	1,350	65	1,200	40
6.0		1,500	300	1,500	300	1,500	300	1,150	170	1,050	110	800	70	900	70	800	50
8.0		1,100	260	1,100	260	1,100	260	850	170	800	110	600	70	660	70	600	50
10.0		900	250	900	250	900	250	700	160	650	110	460	70	540	70	460	50
12.0		750	240	750	240	750	240	580	160	520	110	400	70	450	70	400	50
16.0		550	200	550	200	550	200	440	140	400	95	300	55	330	60	300	45
20.0		450	180	450	180	450	180	350	120	320	85	240	45	270	50	240	40
25.0		360	140	360	140	360	140	280	95	250	65	190	35	210	40	192	30
Standard Depth of Cut	ap	3.5DC										3.0DC					
	ae	0.08DC						0.04DC									

GSX 30000C-1.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

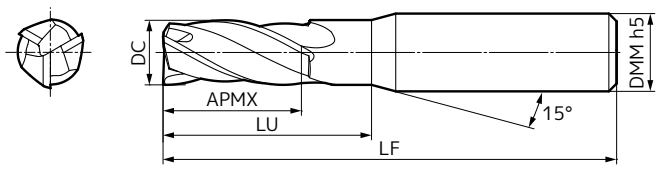
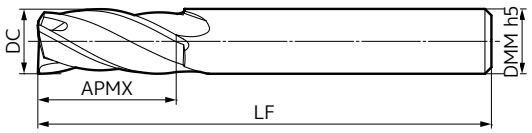


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 30100C-1.5D	★	**1.0**	1.5	2.5	40	4	1
30150C-1.5D	★	**1.5**	2.3	3.3	40	4	1
30200C-1.5D	★	**2.0**	3.0	4.0	40	4	1
30250C-1.5D	★	**2.5**	3.8	4.8	40	4	1
30300C-1.5D	★	**3.0**	4.5	6.0	45	6	1
GSX 30400C-1.5D	★	**4.0**	6.0	7.5	45	6	1
30500C-1.5D	★	**5.0**	7.5	9.5	50	6	1
30600C-1.5D	★	**6.0**	9.0	—	50	6	2
30700C-1.5D	★	**7.0**	11.0	13.0	60	8	1
30800C-1.5D	★	**8.0**	12.0	—	60	8	2
GSX 30900C-1.5D	★	**9.0**	14.0	16.0	70	10	1
31000C-1.5D	★	**10.0**	15.0	—	70	10	2
31200C-1.5D	★	**12.0**	18.0	—	75	12	2

Grade: ACF20

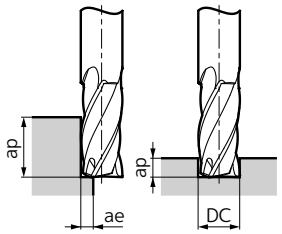
Identification Code

GSX 3 0100 C - 1.5D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length
GSX	3	0100	C	1.5D

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 30000C-1.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0		11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0		6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0		4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0		3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0		2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0		2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0		11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0		6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0		4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0		3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0		2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0		2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 30000C-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

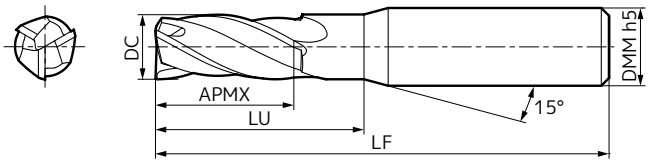
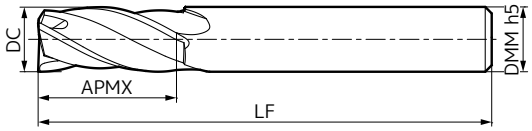


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 30100C-2D	★	**1.0**	2.5	3.5	40	4	1
30150C-2D	★	**1.5**	3.8	4.8	40	4	1
30200C-2D	★	**2.0**	5.0	6.0	40	4	1
30250C-2D	★	**2.5**	6.3	7.3	40	4	1
30300C-2D	★	**3.0**	7.5	9.0	45	6	1
GSX 30400C-2D	★	**4.0**	11.0	12.5	45	6	1
30500C-2D	★	**5.0**	13.0	15.0	50	6	1
30600C-2D	★	**6.0**	13.0	—	50	6	2
30700C-2D	★	**7.0**	16.0	18.0	60	8	1
30800C-2D	★	**8.0**	19.0	—	60	8	2
GSX 30900C-2D	★	**9.0**	19.0	21.0	70	10	1
31000C-2D	★	**10.0**	22.0	—	70	10	2
31200C-2D	★	**12.0**	26.0	—	75	12	2

Grade: ACF20

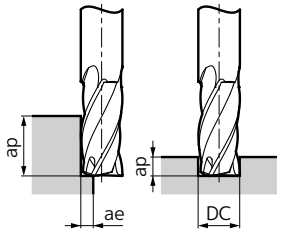
Identification Code

GSX 3 0100 C - 2D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 30000C-2D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0		11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0		6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0		4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0		3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0		2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0		2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0		11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0		6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0		4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0		3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0		2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0		2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 40000C-1.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

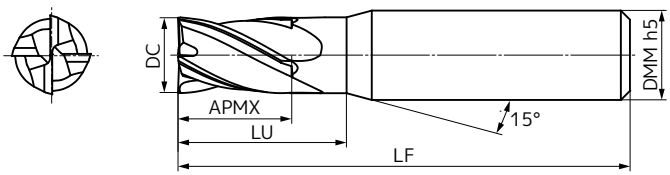
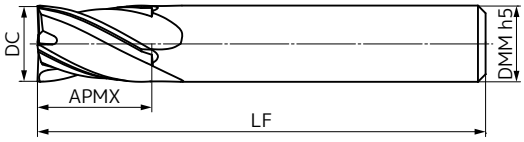


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100C-1.5D	★	**1.0**	1.5	2.5	40	4	1
40150C-1.5D	★	**1.5**	2.3	3.3	40	4	1
40200C-1.5D	★	**2.0**	3.0	4.0	40	4	1
40250C-1.5D	★	**2.5**	3.8	4.8	40	4	1
40300C-1.5D	★	**3.0**	4.5	6.0	45	6	1
GSX 40350C-1.5D	★	**3.5**	5.3	6.8	45	6	1
40400C-1.5D	★	**4.0**	6.0	7.5	45	6	1
40450C-1.5D	★	**4.5**	6.8	8.3	50	6	1
40500C-1.5D	★	**5.0**	7.5	9.5	50	6	1
40550C-1.5D	★	**5.5**	8.3	10.3	50	6	1
GSX 40600C-1.5D	★	**6.0**	9.0	—	50	6	2
40650C-1.5D	★	**6.5**	10.0	12.0	60	8	1
40700C-1.5D	★	**7.0**	11.0	13.0	60	8	1
40750C-1.5D	★	**7.5**	12.0	14.0	60	8	1
40800C-1.5D	★	**8.0**	12.0	—	60	8	2
GSX 40850C-1.5D	★	**8.5**	13.0	15.0	70	10	1
40900C-1.5D	★	**9.0**	14.0	16.0	70	10	1
40950C-1.5D	★	**9.5**	15.0	17.0	70	10	1
41000C-1.5D	★	**10.0**	15.0	—	70	10	2
41050C-1.5D	★	**10.5**	16.0	18.5	75	12	1
GSX 41100C-1.5D	★	**11.0**	17.0	19.5	75	12	1
41150C-1.5D	★	**11.5**	18.0	20.5	75	12	1
41200C-1.5D	★	**12.0**	18.0	—	75	12	2
41300C-1.5D	★	**13.0**	20.0	23.5	90	16	1
41400C-1.5D	★	**14.0**	21.0	24.5	90	16	1
GSX 41500C-1.5D	★	**15.0**	23.0	26.5	90	16	1
41600C-1.5D	★	**16.0**	24.0	—	90	16	2
41700C-1.5D	★	**17.0**	26.0	30.5	100	20	1
41800C-1.5D	★	**18.0**	27.0	31.5	100	20	1
41900C-1.5D	★	**19.0**	29.0	33.5	100	20	1
GSX 42000C-1.5D	★	**20.0**	30.0	—	100	20	2
42500C-1.5D	★	**25.0**	38.0	—	120	25	2

Grade: ACF20

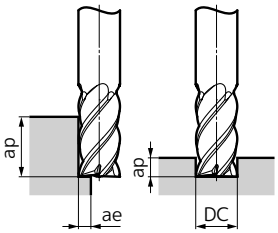
Identification Code

GSX 4 0100 C - 1.5D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000C-1.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0		12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0		6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0		4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0		3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0		2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0		2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0		1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0		1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
25.0		1,050	470	1,050	470	1,050	470	1,050	300	720	210	520	120	640	130	520	80
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300	—	—
2.0		47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	—	—
4.0		23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	—	—
6.0		16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	—	—
8.0		12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	—	—
10.0		9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	—	—
12.0		8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	—	—
16.0		6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	—	—
20.0		4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	—	—
25.0		3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,150	3,200	850	2,600	600	1,300	300	—	—
Standard Depth of Cut	ap	1.5DC										1.0DC				—	
	ae	0.05DC										0.02DC				—	

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0		12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0		6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0		4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0		3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0		2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0		2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0		1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0		1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0		1,080	384	1,080	480	1,080	480	1,040	304	720	208	520	120	640	88	256	40
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 40000S-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

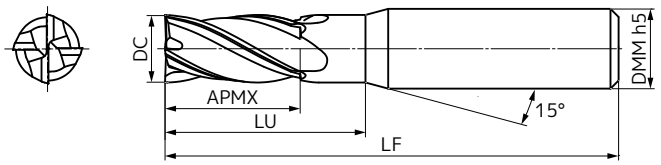
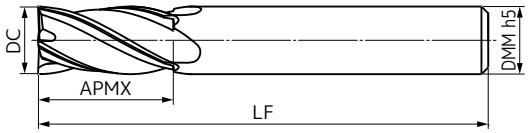


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100S-2D	★	**1.0**	2.5	3.5	40	4	1
40100S-2D-S3	★	**1.0**	2.5	3.5	38	3	1
40150S-2D	★	**1.5**	3.8	4.8	40	4	1
40200S-2D	★	**2.0**	5.0	6.0	40	4	1
40200S-2D-S3	★	**2.0**	5.0	6.0	38	3	1
GSX 40250S-2D	★	**2.5**	6.3	7.3	40	4	1
40300S-2D	★	**3.0**	7.5	9.0	45	6	1
40300S-2D-S3	★	**3.0**	7.5	—	38	3	2
40350S-2D	★	**3.5**	8.8	10.0	45	6	1
40400S-2D	★	**4.0**	11.0	14.0	45	6	1
GSX 40400S-2D-S4	★	**4.0**	11.0	—	45	4	2
40450S-2D	★	**4.5**	11.3	12.8	50	6	1
40500S-2D	★	**5.0**	13.0	19.6	50	6	1
40550S-2D	★	**5.5**	13.0	19.6	50	6	1
40600S-2D	★	**6.0**	13.0	—	50	6	2
GSX 40650S-2D	★	**6.5**	13.0	19.6	60	8	1
40700S-2D	★	**7.0**	16.0	21.1	60	8	1
40750S-2D	★	**7.5**	16.0	21.1	60	8	1
40800S-2D	★	**8.0**	19.0	—	60	8	2
40850S-2D	★	**8.5**	19.0	24.1	70	10	1
GSX 40900S-2D	★	**9.0**	19.0	24.1	70	10	1
40950S-2D	★	**9.5**	19.0	24.1	70	10	1
41000S-2D	★	**10.0**	22.0	—	70	10	2
41050S-2D	★	**10.5**	22.0	24.5	75	12	1
41100S-2D	★	**11.0**	22.0	24.5	75	12	1
GSX 41150S-2D	★	**11.5**	23.0	25.5	75	12	1
41200S-2D	★	**12.0**	26.0	—	75	12	2
41300S-2D	★	**13.0**	26.0	29.5	90	16	1
41350S-2D	★	**13.5**	27.0	30.5	90	16	1
41400S-2D	★	**14.0**	28.0	31.5	90	16	1
GSX 41500S-2D	★	**15.0**	30.0	33.5	90	16	1
41600S-2D	★	**16.0**	32.0	—	90	16	2
41700S-2D	★	**17.0**	35.0	39.5	100	20	1
41800S-2D	★	**18.0**	40.0	44.5	100	20	1
41900S-2D	★	**19.0**	40.0	44.5	100	20	1
GSX 42000S-2D	★	**20.0**	40.0	—	100	20	2
42200S-2D	★	**22.0**	44.0	49.0	110	25	1
42400S-2D	★	**24.0**	48.0	53.0	120	25	1
42500S-2D	★	**25.0**	50.0	—	120	25	2

Grade: ACF20

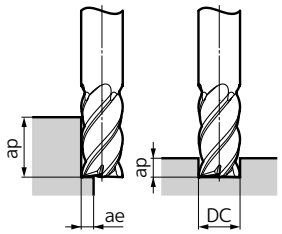
Identification Code

GSX 4 0100 S - 2D - S3

Series Code	Number of Flutes	Dia.	Corner Style S: Sharp Edge	Cutting Edge Length	Shank Dia.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000S-2D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0		11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0		6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0		4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0		3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0		2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0		2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0		1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0		1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
25.0		960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard Depth of Cut	ap	2.0DC															
	ae	0.03DC										0.01DC					

Groove Finishing

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0		11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0		6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0		4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0		3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0		2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0		2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0		1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0		1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
25.0		960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard Depth of Cut	ap	1.5DC															
	ae	Below 0.02DC															

GSX 40000C-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

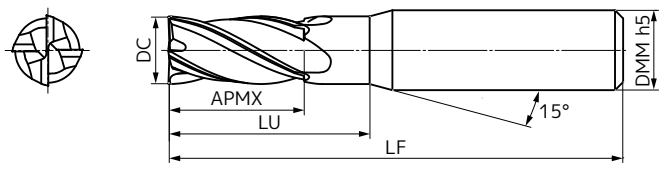
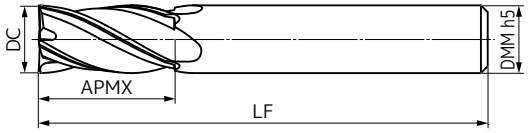


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100C-2D	★	**1.0**	2.0	3.0	40	4	1
40150C-2D	★	**1.5**	3.0	4.0	40	4	1
40200C-2D	★	**2.0**	4.0	5.0	40	4	1
40250C-2D	★	**2.5**	5.0	6.0	40	4	1
40300C-2D	★	**3.0**	6.0	7.5	45	6	1
GSX 40350C-2D	★	**3.5**	7.0	8.5	45	6	1
40400C-2D	★	**4.0**	8.0	9.5	45	6	1
40450C-2D	★	**4.5**	9.0	10.5	50	6	1
40500C-2D	★	**5.0**	10.0	12.0	50	6	1
40550C-2D	★	**5.5**	11.0	13.0	50	6	1
GSX 40600C-2D	★	**6.0**	12.0	—	50	6	2
40650C-2D	★	**6.5**	13.0	15.0	60	8	1
40700C-2D	★	**7.0**	14.0	16.0	60	8	1
40750C-2D	★	**7.5**	15.0	17.0	60	8	1
40800C-2D	★	**8.0**	16.0	—	60	8	2
GSX 40850C-2D	★	**8.5**	17.0	19.0	70	10	1
40900C-2D	★	**9.0**	18.0	20.0	70	10	1
40950C-2D	★	**9.5**	19.0	21.0	70	10	1
41000C-2D	★	**10.0**	20.0	—	70	10	2
41050C-2D	★	**10.5**	21.0	23.5	75	12	1
GSX 41100C-2D	★	**11.0**	22.0	24.5	75	12	1
41150C-2D	★	**11.5**	23.0	25.5	75	12	1
41200C-2D	★	**12.0**	24.0	—	75	12	2
41300C-2D	★	**13.0**	26.0	29.5	90	16	1
41400C-2D	★	**14.0**	28.0	31.5	90	16	1
GSX 41500C-2D	★	**15.0**	30.0	33.5	90	16	1
41600C-2D	★	**16.0**	32.0	—	90	16	2
41700C-2D	★	**17.0**	34.0	39.5	100	20	1
41800C-2D	★	**18.0**	36.0	40.5	100	20	1
41900C-2D	★	**19.0**	38.0	42.5	100	20	1
GSX 42000C-2D	★	**20.0**	40.0	—	100	20	2
42500C-2D	★	**25.0**	50.0	—	120	25	2

Grade: ACF20

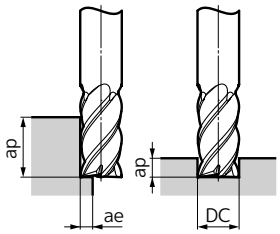
Identification Code

GSX 4 0100 C - 2D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000C-2D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0		12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0		6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0		4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0		3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0		2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0		2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0		1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0		1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
25.0		1,000	480	1,000	480	1,000	480	1,000	300	700	200	500	120	640	120	500	80
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300	—	—
2.0		47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	—	—
4.0		23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	—	—
6.0		16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	—	—
8.0		12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	—	—
10.0		9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	—	—
12.0		8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	—	—
16.0		6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	—	—
20.0		4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	—	—
25.0		3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,100	3,200	900	2,500	600	1,300	300	—	—
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0		12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0		6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0		4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0		3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0		2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0		2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0		1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0		1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0		1,000	380	1,000	450	1,000	450	1,000	300	700	200	500	120	640	80	250	40
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 40000S-3D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

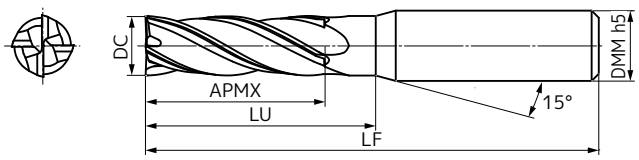
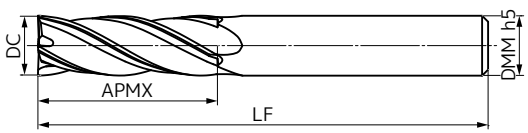


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100S-3D	★	**1.0**	3.0	4.0	40	4	1
40150S-3D	★	**1.5**	4.5	5.5	40	4	1
40200S-3D	★	**2.0**	6.0	7.0	40	4	1
40250S-3D	★	**2.5**	8.0	9.0	40	4	1
40300S-3D	★	**3.0**	9.0	10.5	50	6	1
GSX 40350S-3D	★	**3.5**	11.0	12.5	50	6	1
40400S-3D	★	**4.0**	12.0	13.5	50	6	1
40450S-3D	★	**4.5**	15.0	16.5	50	6	1
40500S-3D	★	**5.0**	15.0	17.0	50	6	1
40550S-3D	★	**5.5**	18.0	20.0	50	6	1
GSX 40600S-3D	★	**6.0**	18.0	—	50	6	2
40650S-3D	★	**6.5**	20.0	22.0	70	8	1
40700S-3D	★	**7.0**	21.0	23.0	70	8	1
40750S-3D	★	**7.5**	23.0	25.0	70	8	1
40800S-3D	★	**8.0**	24.0	—	70	8	2
GSX 40850S-3D	★	**8.5**	26.0	28.0	75	10	1
40900S-3D	★	**9.0**	27.0	29.0	75	10	1
40950S-3D	★	**9.5**	29.0	31.0	75	10	1
41000S-3D	★	**10.0**	30.0	—	90	10	2
41050S-3D	★	**10.5**	32.0	34.5	90	12	1
GSX 41100S-3D	★	**11.0**	33.0	35.5	90	12	1
41150S-3D	★	**11.5**	35.0	37.5	90	12	1
41200S-3D	★	**12.0**	36.0	—	90	12	2
41300S-3D	★	**13.0**	39.0	42.5	100	16	1
41400S-3D	★	**14.0**	42.0	45.5	110	16	1
GSX 41500S-3D	★	**15.0**	45.0	48.5	110	16	1
41600S-3D	★	**16.0**	48.0	—	110	16	2
41700S-3D	★	**17.0**	51.0	55.5	110	20	1
41800S-3D	★	**18.0**	54.0	58.5	120	20	1
41900S-3D	★	**19.0**	57.0	61.5	120	20	1
GSX 42000S-3D	★	**20.0**	60.0	—	120	20	2
42200S-3D	★	**22.0**	66.0	71.0	130	25	1
42500S-3D	★	**25.0**	75.0	—	130	25	2

Grade: ACF20

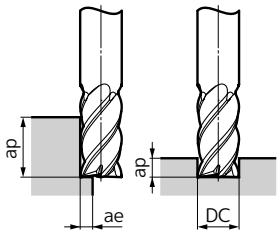
Identification Code

GSX 4 0100 S - 3D

Series Code	Number of Flutes	Dia.	Corner Style S: Sharp Edge	Cutting Edge Length

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000S-3D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0		9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0		4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0		3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0		2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0		1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0		1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0		1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0		900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
25.0		720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard Depth of Cut	ap	2.5DC								2.0DC							
	ae	Below ø3: 0.02DC, Above ø3 to Below ø8: 0.05DC, Above ø8: 0.07DC								0.01DC							

Groove Finishing

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0		9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0		4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0		3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0		2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0		1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0		1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0		1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0		900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
25.0		720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard Depth of Cut	ap	1.5DC															
	ae	Below 0.02DC															

GSX 40000C-3D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling

Fig 1

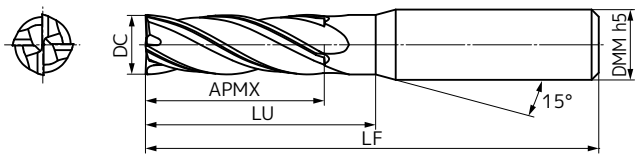
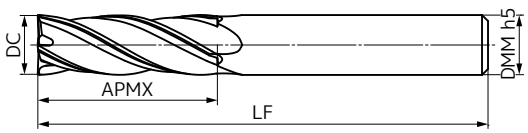


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100C-3D	★	**1.0**	3.0	4.0	40	4	1
40150C-3D	★	**1.5**	4.5	5.5	40	4	1
40200C-3D	★	**2.0**	6.0	7.0	40	4	1
40250C-3D	★	**2.5**	7.5	8.5	40	4	1
40300C-3D	★	**3.0**	9.0	10.5	50	6	1
GSX 40350C-3D	★	**3.5**	11.0	12.5	50	6	1
40400C-3D	★	**4.0**	12.0	13.5	50	6	1
40450C-3D	★	**4.5**	14.0	15.5	50	6	1
40500C-3D	★	**5.0**	15.0	17.0	50	6	1
40550C-3D	★	**5.5**	17.0	19.0	50	6	1
GSX 40600C-3D	★	**6.0**	18.0	—	50	6	2
40650C-3D	★	**6.5**	20.0	22.0	70	8	1
40700C-3D	★	**7.0**	21.0	23.0	70	8	1
40750C-3D	★	**7.5**	23.0	25.0	70	8	1
40800C-3D	★	**8.0**	24.0	—	70	8	2
GSX 40850C-3D	★	**8.5**	26.0	28.0	75	10	1
40900C-3D	★	**9.0**	27.0	29.0	75	10	1
40950C-3D	★	**9.5**	29.0	31.0	75	10	1
41000C-3D	★	**10.0**	30.0	—	90	10	2
41050C-3D	★	**10.5**	32.0	34.5	90	12	1
GSX 41100C-3D	★	**11.0**	33.0	35.5	90	12	1
41150C-3D	★	**11.5**	35.0	37.5	90	12	1
41200C-3D	★	**12.0**	36.0	—	90	12	2
41300C-3D	★	**13.0**	39.0	42.5	100	16	1
41400C-3D	★	**14.0**	42.0	45.5	110	16	1
GSX 41500C-3D	★	**15.0**	45.0	48.5	110	16	1
41600C-3D	★	**16.0**	48.0	—	110	16	2
41700C-3D	★	**17.0**	51.0	55.5	110	20	1
41800C-3D	★	**18.0**	54.0	58.5	120	20	1
41900C-3D	★	**19.0**	57.0	61.5	120	20	1
GSX 42000C-3D	★	**20.0**	60.0	—	120	20	2
42500C-3D	★	**25.0**	75.0	—	130	25	2

Grade: ACF20

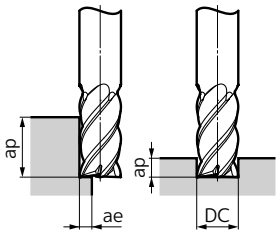
Identification Code

GSX 4 0100 C - 3D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000C-3D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		21,000	360	21,000	360	21,000	360	19,000	220	13,000	140	9,000	90	10,500	90	9,000	65
2.0		10,500	360	10,500	360	10,500	360	9,600	290	7,500	180	4,500	110	5,200	120	4,500	85
4.0		5,200	500	5,200	500	5,200	500	4,800	370	4,000	280	2,250	150	2,600	160	2,250	100
6.0		3,500	560	3,500	560	3,500	560	3,200	400	2,700	300	1,500	160	1,700	170	1,500	120
8.0		2,600	520	2,600	520	2,600	520	2,400	400	2,000	300	1,100	160	1,300	170	1,100	120
10.0		2,100	500	2,100	500	2,100	500	1,900	400	1,600	300	900	160	1,000	160	900	120
12.0		1,750	500	1,750	500	1,750	500	1,600	400	1,350	300	750	150	850	160	750	120
16.0		1,300	420	1,300	420	1,300	420	1,200	330	1,000	260	550	120	650	140	550	100
20.0		1,050	380	1,050	380	1,050	380	950	290	800	230	450	110	500	120	450	90
25.0		840	300	840	300	840	300	760	230	640	180	360	85	400	95	360	70
Standard Depth of Cut	ap	2.5DC										2.0DC					
	ae	Below ø3: 0.05DC, Above ø3 to Below ø8: 0.1DC, Above ø8: 0.15DC								0.02DC							

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		16,600	140	16,600	140	16,600	140	15,500	100	10,500	100	7,500	70	9,400	60	3,750	20
2.0		9,500	160	9,500	160	9,500	160	9,000	180	6,200	120	4,500	90	5,200	80	2,250	30
4.0		5,200	160	5,200	180	5,200	180	4,800	160	3,400	110	2,200	65	2,600	70	1,250	25
6.0		3,500	160	3,500	200	3,500	200	3,200	160	2,550	120	1,500	65	1,700	70	950	25
8.0		2,600	160	2,600	200	2,600	200	2,400	160	1,900	120	1,100	65	1,300	70	700	25
10.0		2,100	160	2,100	200	2,100	200	1,900	160	1,500	120	900	65	1,000	70	550	25
12.0		1,750	160	1,750	200	1,750	200	1,600	160	1,250	120	750	65	850	70	450	25
16.0		1,300	160	1,300	200	1,300	200	1,200	160	950	120	550	65	650	70	350	25
20.0		1,050	160	1,050	200	1,050	200	950	160	750	120	450	65	500	70	280	55
25.0		840	128	840	160	840	160	760	128	600	96	360	52	400	56	224	44
Standard Depth of Cut	ap	0.1DC		0.2DC								0.05DC		0.1DC			

GSX 40000S-4D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing

Fig 1

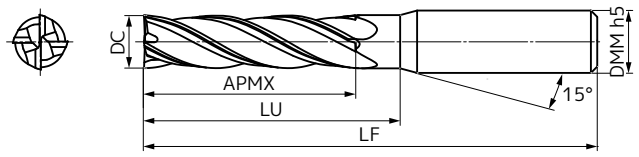
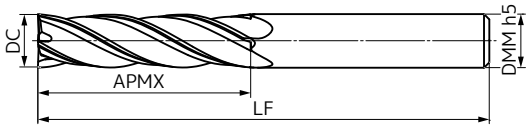


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100S-4D	★	**1.0**	4.0	5.0	40	4	1
40150S-4D	★	**1.5**	6.0	7.0	40	4	1
40200S-4D	★	**2.0**	8.0	9.0	40	4	1
40250S-4D	★	**2.5**	10.0	11.0	50	4	1
40300S-4D	★	**3.0**	12.0	13.5	50	6	1
GSX 40350S-4D	★	**3.5**	14.0	15.5	50	6	1
40400S-4D	★	**4.0**	16.0	17.5	50	6	1
40450S-4D	★	**4.5**	18.0	19.5	60	6	1
40500S-4D	★	**5.0**	20.0	22.0	60	6	1
40550S-4D	★	**5.5**	22.0	24.0	60	6	1
GSX 40600S-4D	★	**6.0**	24.0	—	60	6	2
40650S-4D	★	**6.5**	26.0	28.0	70	8	1
40700S-4D	★	**7.0**	28.0	30.0	80	8	1
40750S-4D	★	**7.5**	30.0	32.0	80	8	1
40800S-4D	★	**8.0**	32.0	—	80	8	2
GSX 40850S-4D	★	**8.5**	34.0	36.0	90	10	1
40900S-4D	★	**9.0**	36.0	38.0	90	10	1
40950S-4D	★	**9.5**	39.0	41.0	90	10	1
41000S-4D	★	**10.0**	40.0	—	90	10	2
41050S-4D	★	**10.5**	42.0	44.5	100	12	1
GSX 41100S-4D	★	**11.0**	44.0	46.5	100	12	1
41150S-4D	★	**11.5**	46.0	48.5	100	12	1
41200S-4D	★	**12.0**	48.0	—	100	12	2
41300S-4D	★	**13.0**	52.0	55.5	110	16	1
41400S-4D	★	**14.0**	56.0	59.5	110	16	1
GSX 41500S-4D	★	**15.0**	60.0	63.5	120	16	1
41600S-4D	★	**16.0**	64.0	—	120	16	2
41700S-4D	★	**17.0**	68.0	72.5	130	20	1
41800S-4D	★	**18.0**	72.0	76.5	130	20	1
41900S-4D	★	**19.0**	76.0	80.5	140	20	1
GSX 42000S-4D	★	**20.0**	80.0	—	140	20	2
42500S-4D	★	**25.0**	100.0	—	160	25	2

Grade: ACF20

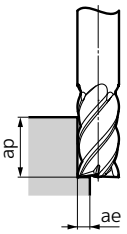
Identification Code

GSX 4 0100 S - 4D

Series Code	Number of Flutes	Dia.	Corner Style S: Sharp Edge	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000S-4D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		7,950	120	7,950	120	7,950	120	6,250	70	5,750	50	4,000	35	4,850	35	4,000	35
2.0		4,050	120	4,050	120	4,050	120	3,100	90	2,850	70	2,050	50	2,400	50	2,050	35
4.0		1,950	170	1,950	170	1,950	170	1,650	100	1,400	90	710	35	1,200	45	1,050	30
6.0		1,350	130	1,350	130	1,350	130	1,000	140	930	120	700	55	800	40	700	30
8.0		970	190	970	190	970	190	740	140	720	120	520	55	560	40	490	30
10.0		770	180	770	180	770	180	630	120	570	100	360	50	490	40	410	30
12.0		640	170	640	170	640	170	500	120	460	100	350	55	400	40	350	30
16.0		460	140	460	140	460	140	370	100	360	90	260	50	280	40	270	30
20.0		390	130	390	130	390	130	310	90	280	70	210	45	240	40	210	30
25.0		310	100	310	100	310	100	250	70	220	55	170	35	190	30	170	25
Standard Depth of Cut	ap	2.5DC								2.0DC							
	ae	Below ø3: 0.02DC, Above ø3 to Below ø8: 0.05DC, Above ø8: 0.07DC								0.01DC							

GSX 40000C-4D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Gash Land | 30° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling

Fig 1

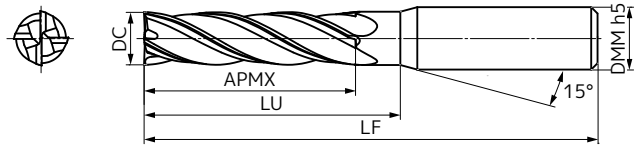
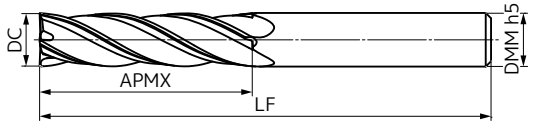


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40100C-4D	★	**1.0**	4.0	5.0	40	4	1
40150C-4D	★	**1.5**	6.0	7.0	40	4	1
40200C-4D	★	**2.0**	8.0	9.0	40	4	1
40250C-4D	★	**2.5**	10.0	11.0	50	4	1
40300C-4D	★	**3.0**	12.0	13.5	50	6	1
GSX 40350C-4D	★	**3.5**	14.0	15.5	50	6	1
40400C-4D	★	**4.0**	16.0	17.5	50	6	1
40450C-4D	★	**4.5**	18.0	19.5	60	6	1
40500C-4D	★	**5.0**	20.0	22.0	60	6	1
40550C-4D	★	**5.5**	22.0	24.0	60	6	1
GSX 40600C-4D	★	**6.0**	24.0	—	60	6	2
40650C-4D	★	**6.5**	26.0	28.0	70	8	1
40700C-4D	★	**7.0**	28.0	30.0	80	8	1
40750C-4D	★	**7.5**	30.0	32.0	80	8	1
40800C-4D	★	**8.0**	32.0	—	80	8	2
GSX 40850C-4D	★	**8.5**	34.0	36.0	90	10	1
40900C-4D	★	**9.0**	36.0	28.0	90	10	1
40950C-4D	★	**9.5**	39.0	41.0	90	10	1
41000C-4D	★	**10.0**	40.0	—	90	10	2
41050C-4D	★	**10.5**	42.0	44.5	100	12	1
GSX 41100C-4D	★	**11.0**	44.0	46.5	100	12	1
41150C-4D	★	**11.5**	46.0	48.5	100	12	1
41200C-4D	★	**12.0**	48.0	—	100	12	2
41300C-4D	★	**13.0**	52.0	55.5	110	16	1
41400C-4D	★	**14.0**	56.0	59.5	110	16	1
GSX 41500C-4D	★	**15.0**	60.0	63.5	120	16	1
41600C-4D	★	**16.0**	64.0	—	120	16	2
41700C-4D	★	**17.0**	68.0	72.5	130	20	1
41800C-4D	★	**18.0**	72.0	76.5	130	20	1
41900C-4D	★	**19.0**	76.0	80.5	140	20	1
GSX 42000C-4D	★	**20.0**	80.0	—	140	20	2
42500C-4D	★	**25.0**	100.0	—	160	25	2

Grade: ACF20

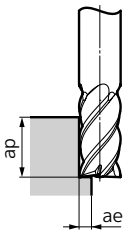
Identification Code

GSX 4 0100 C - 4D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000C-4D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for groove milling.
7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

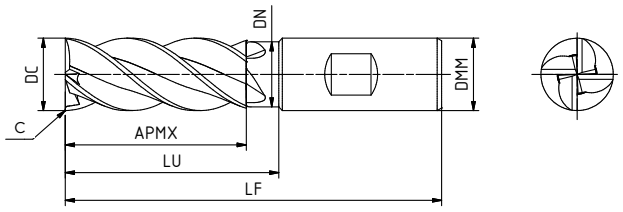
Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		9,000	140	9,000	140	9,000	140	7,000	80	6,500	60	4,500	40	5,400	40	4,500	40
2.0		4,500	140	4,500	140	4,500	140	3,500	100	3,200	80	2,300	55	2,700	55	2,300	40
4.0		2,250	200	2,250	200	2,250	200	1,750	120	1,600	100	1,200	60	1,350	50	1,200	35
6.0		1,500	250	1,500	250	1,500	250	1,150	160	1,050	140	800	65	900	45	800	35
8.0		1,100	220	1,100	220	1,100	220	850	160	800	130	600	65	660	45	600	35
10.0		900	210	900	210	900	210	700	140	650	120	460	65	540	45	460	35
12.0		750	200	750	200	750	200	580	140	520	110	400	65	450	45	400	35
16.0		550	170	550	170	550	170	440	120	400	95	300	55	330	45	300	35
20.0		450	150	450	150	450	150	350	100	320	80	240	50	270	45	240	35
25.0		360	120	360	120	360	120	280	80	250	60	190	40	210	35	190	30
Standard Depth of Cut	ap	3.5DC										3.0DC					
	ae	Below ø3: 0.04DC, Above ø3 to Below ø8: 0.08DC, Above ø8: 0.1DC										0.02DC					

EPMP 4000 2.5D

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Cast Iron



EPMP 4120U2.5CECP300 (Shank DIN6535HA)
EPMP 4120U2.5WCECP300 (Shank DIN6535HB)
Cutting edge diameter tolerance (0/-0.04)

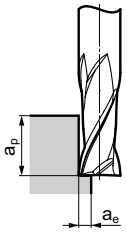


Cat. No.	DC	APMX	LU	DN	LF	DMM	Flute	Weldon	Chipbreaker
EPMP 4030U2.5CECP300	3	7.5	9	2.87	50	6	4		
EPMP 4040U2.5CECP300	4	10	12	3.69	50	6	4		
EPMP 4050U2.5CECP300	5	12.5	15	4.59	57	6	4		
EPMP 4060U2.5CECP300	6	15	18	5.5	57	6	4		
EPMP 4080U2.5CECP300	8	20	24	7.3	63	8	4		
EPMP 4100U2.5CECP300	10	25	30	9.1	72	10	4		
EPMP 4120U2.5CECP300	12	30	36	11	83	12	4		
4120U2.5WCECP300	12	30	36	11	83	12	4	x	
EPMP 4160U2.5CECP300	16	40	48	14.5	92	16	4		
4160U2.5WCECP300	16	40	48	14.5	92	16	4	x	
EPMP 4200U2.5CECP300	20	50	60	18	104	20	4		
4200U2.5WCECP300	20	50	60	18	104	20	4	x	

■ Recommended Cutting Conditions
EPMP Z4 - Side Milling

Work Material	Parameter		Diameter (mm)								
			3	**4**	**5**	**6**	**8**	**10**	**12**	**16**	**20**
Carbon Steel Cast Iron (-250HB)	v_c Range	(m/min)	150 - **200** - 280								
	v_c	(m/min)	200	200	200	200	200	200	200	200	200
	n	(min^{-1})	21.200	15.900	12.700	10.600	8.000	6.400	5.300	4.000	3.200
	f_z	(mm/t)	0.039	0.055	0.072	0.088	0.116	0.132	0.143	0.165	0.198
	v_f	(mm/min)	3260	3500	3630	3730	3700	3380	3030	2640	2530
	a_p	(mm)	6	8	10	12	16	20	24	32	40
	a_e	(mm)	0.36	0.48	0.6	0.72	0.96	1.2	1.44	1.92	2.4
Alloy Steel (25-35HRC)	v_c Range	(m/min)	100 - **170** - 250								
	v_c	(m/min)	170	170	170	170	170	170	170	170	170
	n	(min^{-1})	18.000	13.500	10.800	9.000	6.800	5.400	4.500	3.400	2.700
	f_z	(mm/t)	0.035	0.050	0.064	0.079	0.104	0.119	0.129	0.149	0.178
	v_f	(mm/min)	2490	2670	2780	2850	2830	2570	2320	2020	1920
	a_p	(mm)	6	8	10	12	16	20	24	32	40
	a_e	(mm)	0.3	0.4	0.5	0.6	0.8	1	1.2	1.6	2
Prehardened Steel Alloy Steel (35-45HRC)	v_c Range	(m/min)	85 - **130** - 180								
	v_c	(m/min)	130	130	130	130	130	130	130	130	130
	n	(min^{-1})	13.800	10.400	8.300	6.900	5.200	4.100	3.500	2.600	2.100
	f_z	(mm/t)	0.027	0.039	0.050	0.062	0.081	0.092	0.100	0.116	0.139
	v_f	(mm/min)	1490	1600	1660	1700	1680	1520	1400	1200	1160
	a_p	(mm)	4.5	6	7.5	9	12	15	18	24	30
	a_e	(mm)	0.3	0.4	0.5	0.6	0.8	1	1.2	1.6	2
Stainless Steel	v_c Range	(m/min)	55 - **75** - 120								
	v_c	(m/min)	75	75	75	75	75	75	75	75	75
	n	(min^{-1})	8.000	6.000	4.800	4.000	3.000	2.400	2.000	1.500	1.200
	f_z	(mm/t)	0.027	0.031	0.040	0.049	0.065	0.074	0.080	0.092	0.111
	v_f	(mm/min)	860	740	770	790	780	710	640	550	530
	a_p	(mm)	6	8	10	12	16	20	24	32	40
	ae	(mm)	0.27	0.36	0.45	0.54	0.72	0.9	1.08	1.44	1.8

(Min - **Optimum** - Max)



Side Milling

EPMP 4000 2.5D

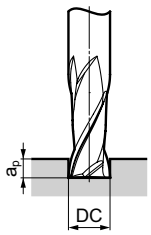
General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Cast Iron

■ Recommended Cutting Conditions

EPMP Z4 - Slot Milling

Work Material	Parameter		Diameter (mm)								
			3	**4**	**5**	**6**	**8**	**10**	**12**	**16**	**20**
Carbon Steel Cast Iron (-250HB)	v_c Range	(m/min)	70 - **100** - 130								
	v_c	(m/min)	100	100	100	100	100	100	100	100	100
	n	(min^{-1})	10.600	8.000	6.400	5.300	4.000	3.200	2.700	2.000	1.600
	f_z	(mm/t)	0.022	0.030	0.038	0.041	0.059	0.073	0.083	0.104	0.115
	v_f	(mm/min)	920	960	980	860	940	940	890	840	740
	a_p	(mm)	3	4	5	6	8	10	12	16	20
	a_e	(mm)	3	4	5	6	8	10	12	16	20
Alloy Steel (25-35HRC)	v_c Range	(m/min)	60 - **80** - 115								
	v_c	(m/min)	80	80	80	80	80	80	80	80	80
	n	(min^{-1})	8.500	6.400	5.100	4.200	3.200	2.500	2.100	1.600	1.300
	f_z	(mm/t)	0.018	0.025	0.032	0.034	0.049	0.061	0.069	0.087	0.096
	v_f	(mm/min)	610	640	650	570	630	610	580	560	500
	a_p	(mm)	3	4	5	6	8	10	12	16	20
	a_e	(mm)	3	4	5	6	8	10	12	16	20
Prehardened Steel Alloy Steel (35-45HRC)	v_c Range	(m/min)	65 - **70** - 85								
	v_c	(m/min)	70	70	70	70	70	70	70	70	70
	n	(min^{-1})	7.400	5.600	4.500	3.700	2.800	2.200	1.900	1.400	1.100
	f_z	(mm/t)	0.014	0.020	0.026	0.027	0.039	0.049	0.055	0.070	0.077
	v_f	(mm/min)	430	450	460	400	440	430	420	390	340
	a_p	(mm)	2.4	3.2	4	4.8	6.4	8	9.6	12.8	16
	a_e	(mm)	3	4	5	6	8	10	12	16	20
Stainless Steel	v_c Range	(m/min)	50 - **70** - 120								
	v_c	(m/min)	70	70	70	70	70	70	70	70	70
	n	(min^{-1})	5800	4400	3500	2900	2200	1800	1500	1100	900
	f_z	(mm/t)	0.014	0.020	0.026	0.027	0.039	0.049	0.055	0.070	0.077
	v_f	(mm/min)	230	250	260	260	260	270	240	220	220
	a_p	(mm)	3	4	5	6	8	10	12	16	20
	a_e	(mm)	3	4	5	6	8	10	12	16	20

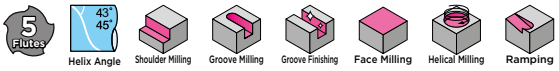
(Min - **Optimum** - Max)



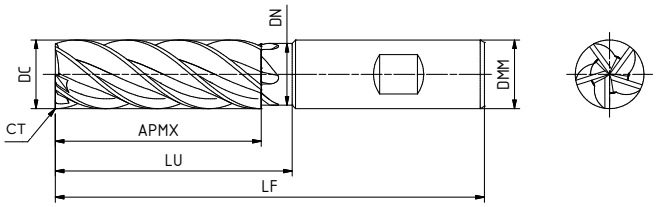
Slot Milling

EPMP 5000 3D

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Cast Iron



EPMP5120U3BCTECP300
(Shank: DIN6535HA
Chamfer CT = 0.2 x 45°)
EPMP5120U3WBCTECP300
(Shank: DIN6535HB
Chamfer CT = 0.2 x 45°)
Cutting edge diameter tolerance (0/-0.04)

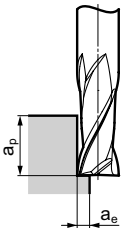


Cat. No.	DC	APMX	LU	DN	LF	DMM	Flute	Weldon	Chipbreaker
EPMP 5060U3BCTECP300	6	18	21	5.5	60	6	5		x
5060U3BWCTECP300	6	18	21	5.5	60	6	5	x	x
EPMP 5080U3BCTECP300	8	24	28	7.3	67	8	5		x
5080U3BWCTECP300	8	24	28	7.3	67	8	5	x	x
EPMP 5100U3BCTECP300	10	30	35	9.1	78	10	5		x
5100U3BWCTECP300	10	30	35	9.1	78	10	5	x	x
EPMP 5120U3BCTECP300	12	36	42	11	90	12	5		x
5120U3BWCTECP300	12	36	42	11	90	12	5	x	x
EPMP 5160U3BCTECP300	16	48	56	14.5	110	16	5		x
5160U3BWCTECP300	16	48	56	14.5	110	16	5	x	x
EPMP 5200U3BCTECP300	20	60	70	18	125	20	5		x
5200U3BWCTECP300	20	60	70	18	125	20	5	x	x

■ Recommended Cutting Conditions
EPMP Z5 - Side Milling

Work Material	Parameter		Diameter (mm)					
			6	**8**	**10**	**12**	**16**	**20**
Carbon Steel Cast Iron (-250HB)	v_c Range	(m/min)	150 - **200** - 280					
	v_c	(m/min)	200	200	200	200	200	200
	n	(min^{-1})	10.600	8.000	6.400	5.300	4.000	3.200
	f_z	(mm/t)	0.084	0.110	0.126	0.137	0.158	0.189
	v_f	(mm/min)	4450	4410	4030	3620	3150	3020
	a_p	(mm)	12	16	20	24	32	40
	a_e	(mm)	0.72	0.96	1.2	1.44	1.92	2.4
Alloy Steel (25-35HRC)	v_c Range	(m/min)	100 - **170** - 250					
	v_c	(m/min)	170	170	170	170	170	170
	n	(min^{-1})	9.000	6.800	5.400	4.500	3.400	2.700
	f_z	(mm/t)	0.076	0.099	0.113	0.123	0.142	0.170
	v_f	(mm/min)	3400	3370	3060	2760	2410	2300
	a_p	(mm)	12	16	20	24	32	40
	a_e	(mm)	0.6	0.8	1	1.2	1.6	2
Prehardened Steel Alloy Steel (35-45HRC)	v_c Range	(m/min)	85 - **130** - 180					
	v_c	(m/min)	130	130	130	130	130	130
	n	(min^{-1})	6.900	5.200	4.100	3.500	2.600	2.100
	f_z	(mm/t)	0.059	0.077	0.088	0.096	0.110	0.132
	v_f	(mm/min)	2030	2010	1810	1670	1430	1390
	a_p	(mm)	9	12	15	18	24	30
	a_e	(mm)	0.6	0.8	1	1.2	1.6	2
Stainless Steel	v_c Range	(m/min)	55 - **75** - 120					
	v_c	(m/min)	75	75	75	75	75	75
	n	(min^{-1})	4.000	3.000	2.400	2.000	1.500	1.200
	f_z	(mm/t)	0.050	0.066	0.075	0.081	0.094	0.112
	v_f	(mm/min)	1000	980	900	810	700	670
	a_p	(mm)	12	16	20	24	32	40
	a_e	(mm)	0.54	0.72	0.9	1.08	1.44	1.8

(Min - **Optimum** - Max)



Side Milling

EPMP - Identification Details / Application Examples

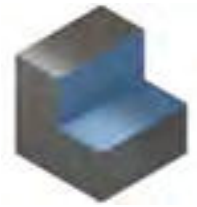
■ Identification Details

EPMP	4	100	U2.5	(W)C	ECP300
Endmill series	Flute	Diameter	U: Underneck type 2.5: Length of cutting edge. 2.5 x DC	W: Weldon C: Cutting edge. sharp	Grade

EPMP	5	100	U3	B(W)CT	ECP300
Endmill series	Flute	Diameter	U: Underneck type 3: Length of cutting edge. 3.0 x DC	B: Chip breaker W: Weldon shank CT: Corner with K-land	Grade

■ Application Examples

Coolant



	Competitor	Sumitomo
Endmill	Competitor (4 teeth)	EPMP4
Cutting Edges	4	4
Diameter (mm)	8	6
v_c (m/min)	110	130
n (rpm)	4379	6900.2
f_z (mm/t)	0.02	0.04
v_f (mm/min)	350	1104
a_p (mm)	10	10
a_e (mm)	0.2	0.2
Q (cm^3/min)	0.7	**2.2**
Machining time (min/part)	0.25	**0.1**
Tool life (pcs)	300	**300**
Result	Efficiency increased up to 300%. No vibrations.	



EPMP (4 teeth)

Coolant

	Competitor	Sumitomo
Endmill	Competitor (3 teeth)	EPMP4060
Cutting Edges	3	4
Diameter (mm)	6	6
v_c (m/min)	151	170
n (rpm)	8000	9000
f_z (mm/t)	0.029	0.025
v_f (mm/min)	700	900
a_p (mm)	8	8
a_e (mm)	6	6
Q (cm^3/min)	33.6	**43.2**
Machining time (min/part)	2	**1.6**
Tool life (pcs)	80	**130**
Result	20% increase in efficiency. 60% longer tool life.	



EPMP (4 teeth)

GSV 4000-2.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Gash Land | 40° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

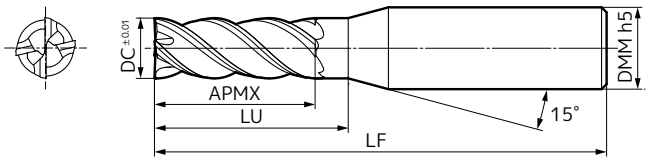
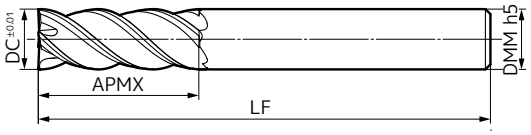


Fig 2



Body

Dimensions (mm)

ISO ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSV 4020-2.5D	★	**2.0**	5	6.5	50	4	1
4030-2.5D	★	**3.0**	8	9.5	50	6	1
4040-2.5D	★	**4.0**	10	11.5	50	6	1
4050-2.5D	★	**5.0**	13	14.5	60	6	1
4060-2.5D	★	**6.0**	15	—	60	6	2
GSV 4070-2.5D	★	**7.0**	18	20.0	70	8	1
4080-2.5D	★	**8.0**	20	—	80	8	2
4090-2.5D	★	**9.0**	23	25.0	90	10	1
4100-2.5D	★	**10.0**	25	—	90	10	2
4110-2.5D	★	**11.0**	28	30.5	90	12	1
GSV 4120-2.5D	★	**12.0**	30	—	90	12	2
4140-2.5D	★	**14.0**	35	37.5	110	16	1
4150-2.5D	★	**15.0**	38	41.0	110	16	1
4160-2.5D	★	**16.0**	40	—	115	16	2
4180-2.5D	★	**18.0**	45	48.0	120	20	1
GSV 4200-2.5D	★	**20.0**	50	—	125	20	2
4250-2.5D	★	**25.0**	63	—	140	25	2

Grade: ACF20

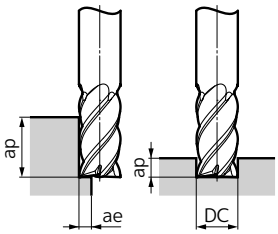
Identification Code

GSV 4 120 - 2.5D

Series Code	Number of Flutes	Dia.	Cutting Edge Length
GSV	4	120	2.5D

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSV 4000-2.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	ap	1.5DC									
	ae	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	ap	0.8DC				0.16DC		0.4DC		0.16DC	

GSXVL 4000-2.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Gash Land | 40° 43° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

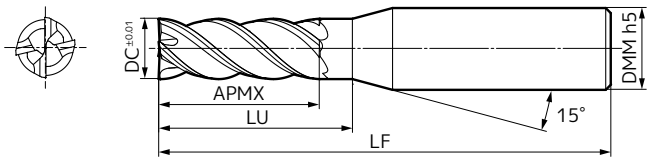
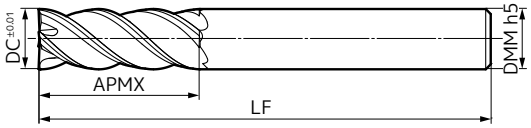


Fig 2



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXVL 4020-2.5D	★	**2.0**	5	6.5	50	4	1
4030-2.5D	★	**3.0**	8	9.5	50	6	1
4040-2.5D	★	**4.0**	10	11.5	50	6	1
4050-2.5D	★	**5.0**	13	14.5	60	6	1
4060-2.5D	★	**6.0**	15	—	60	6	2
GSXVL 4070-2.5D	★	**7.0**	18	20.0	70	8	1
4080-2.5D	★	**8.0**	20	—	80	8	2
4090-2.5D	★	**9.0**	23	25.0	90	10	1
4100-2.5D	★	**10.0**	25	—	90	10	2
4110-2.5D	★	**11.0**	28	30.5	90	12	1
GSXVL 4120-2.5D	★	**12.0**	30	—	90	12	2
4140-2.5D	★	**14.0**	35	37.5	110	16	1
4150-2.5D	★	**15.0**	38	41.0	110	16	1
4160-2.5D	★	**16.0**	40	—	115	16	2
4180-2.5D	★	**18.0**	45	48.0	120	20	1
GSXVL 4200-2.5D	★	**20.0**	50	—	125	20	2
4250-2.5D		**25.0**	63	—	140	25	2

Grade: ACF20

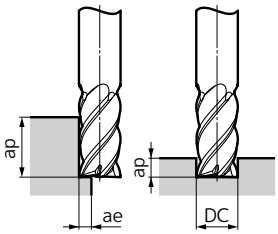
Identification Code

GSXVL 4 020 - 2.5D

- GSXVL: Series Code
- 4: Number of Flutes
- 020: Dia.
- 2.5D: Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSXVL 4000-2.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	ap	1.5DC									
	ae	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	ap	1.0DC				0.2DC		0.5DC		0.2DC	

SSUP 4000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | ZX Coat | Gash Land | 40° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

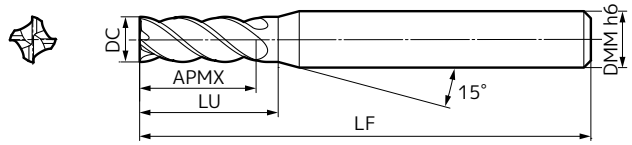
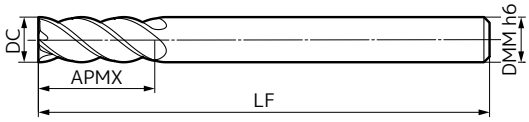


Fig 2



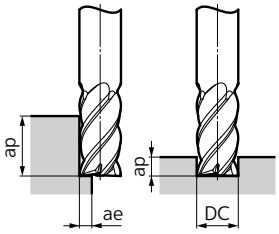
DC	Tolerance
D ≤ 3.0	-0.014 -0.028
3.0 < D ≤ 6.0	-0.020 -0.038
6.0 < D	-0.025 -0.047

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSUP 4020ZX	★	**2.0**	6.0	7.0	50	4	1
4030ZX	★	**3.0**	8.0	9.5	50	6	1
4040ZX	★	**4.0**	11.0	12.5	50	6	1
4050ZX	★	**5.0**	13.0	14.5	60	6	1
4060ZX	★	**6.0**	13.0	—	60	6	2
SSUP 4070ZX	★	**7.0**	16.0	18.0	70	8	1
4080ZX	★	**8.0**	19.0	—	80	8	2
4090ZX	★	**9.0**	19.0	21.5	90	10	1
4100ZX	★	**10.0**	22.0	—	90	10	2
4110ZX	★	**11.0**	22.0	24.5	90	12	1
SSUP 4120ZX	★	**12.0**	26.0	—	90	12	2
4140ZX	★	**14.0**	26.0	28.5	110	16	1
4150ZX	★	**15.0**	26.0	28.5	110	16	1
4160ZX	★	**16.0**	32.0	—	115	16	2
4180ZX	★	**18.0**	32.0	34.5	120	20	1
SSUP 4200ZX	★	**20.0**	38.0	—	125	20	2

Grade: ACZ50M



Recommended Cutting Conditions

1. For groove milling of stainless steel, use 60% of the recommended spindle speed and 40% of the recommended feed rate. (*)
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Side Milling and Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel (*)		Heat-Resistant Alloy Titanium Alloy (20 to 45HRC)	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
2.0		9,000	720	6,000	430	4,000	320	5,500	320	2,600	120
4.0		6,600	800	4,500	450	3,000	380	4,000	320	2,000	120
6.0		4,800	960	3,000	480	2,500	380	3,000	480	1,200	120
8.0		3,600	1,000	2,200	610	2,000	400	2,000	520	1,000	140
10.0		2,800	1,000	1,800	610	1,500	400	1,700	550	800	160
12.0		2,400	950	1,500	550	1,200	380	1,500	500	700	140
14.0		2,200	880	1,300	490	1,000	360	1,200	430	600	130
16.0		1,800	650	1,100	420	800	300	1,000	360	500	120
18.0		1,600	580	1,000	360	750	270	900	340	450	110
20.0		1,400	500	900	330	700	250	820	300	400	100
Side Milling	ap	1.5DC									
	ae	0.1DC				0.05DC		0.1DC		0.05DC	
Groove Milling	ap	1.0DC				0.2DC		0.3DC		0.2DC	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSUPR 4000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling

Fig 1

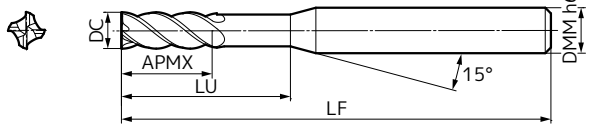


Fig 2

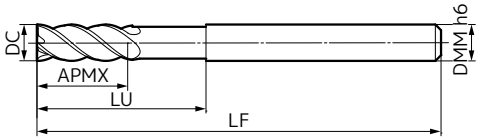
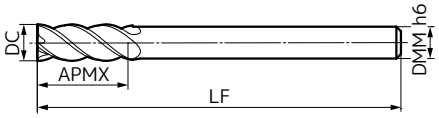


Fig 3



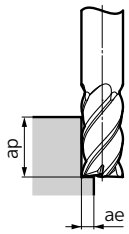
DC	Tolerance
D ≤ 3.0	-0.014 -0.028
3.0 < D ≤ 6.0	-0.020 -0.038
6.0 < D	-0.025 -0.047

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSUPR 4030ZX	★	**3.0**	4.5	12	60	6	1
4040ZX	★	**4.0**	6.0	16	60	6	1
4050ZX	★	**5.0**	7.5	20	60	6	1
4060ZX	★	**6.0**	9.0	24	60	6	2
4070ZX	★	**7.0**	10.5	—	80	6	3
SSUPR 4080ZX	★	**8.0**	12.0	34	80	8	2
4090ZX	★	**9.0**	13.5	—	90	8	3
4100ZX	★	**10.0**	15.0	42	100	10	2
4110ZX	★	**11.0**	16.5	—	120	10	3
4120ZX	★	**12.0**	18.0	50	120	12	2
SSUPR 4130ZX	★	**13.0**	19.5	—	130	12	3
4160ZX	★	**16.0**	24.0	66	160	16	2
4170ZX	★	**17.0**	25.5	—	170	16	3
4200ZX	★	**20.0**	30.0	82	200	20	2

Grade: ACZ50M



Recommended Cutting Conditions

1. The conditions recommended are for endmills with standard overhang lengths of 4xD. For overhangs of 5xD or more, please use 70% (max) of recommended conditions.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel		Heat-Resistant Alloy Titanium Alloy (20 to 45HRC)	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
3.0		9,000	600	5,300	400	3,100	200	4,200	350	2,600	160
4.0		6,600	600	4,000	400	2,400	200	3,200	350	2,000	160
6.0		4,200	600	2,600	400	1,600	200	2,100	350	1,300	160
8.0		3,200	650	2,000	450	1,200	200	1,600	350	1,000	160
10.0		2,500	650	1,600	450	950	200	1,200	400	800	180
12.0		2,100	650	1,300	450	800	200	1,000	400	650	180
13.0		1,900	650	1,200	450	700	200	950	400	600	180
16.0		1,600	650	1,000	400	600	200	800	350	500	160
17.0		1,500	600	900	400	550	200	750	350	450	160
20.0		1,200	600	800	400	500	200	650	350	400	160
Standard Depth of Cut	ap	1.2DC									
	ae	0.1DC				0.05DC		0.1DC		0.05DC	

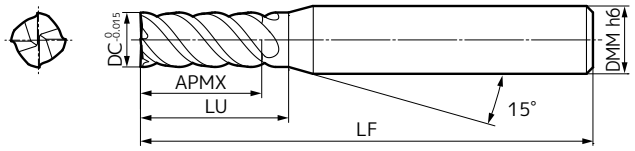
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSH 4000SF type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

4 Flutes | GS HARD Coat | Gash Land | 50° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling

Fig 1



Body (4 Flutes)

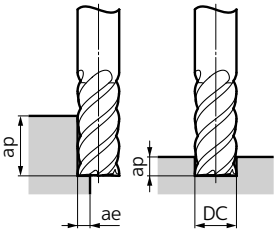
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSH 4010SF	★	**1.0**	3.0	4.0	50	6	1
4015SF	★	**1.5**	4.0	5.0	50	6	1
4020SF	★	**2.0**	6.0	7.0	50	6	1

Grade: ACF07C

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling and Groove Milling

Work Material / Cutting Conditions / DC(mm)		Low Hardened Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)		Hardened Steel S 6-5-2-5 (65HRC up)	
		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		20,000	540	20,000	390	15,600	260	12,300	160	11,100	140	7,800	95
2.0		19,000	1,100	17,200	770	13,400	530	10,500	320	9,500	270	6,700	190
Side Milling	ap	1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC	
	ae	0.1DC		0.1DC		0.05DC		0.05DC		0.02DC		0.02DC	
Groove Milling	ap	0.1DC		0.1DC		0.05DC		0.05DC		Up to 0.05DC Max. 0.5mm		Up to 0.05DC Max. 0.5mm	

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions / DC(mm)		Low Hardened Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)	
		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
1.0		48,000	1,250	48,000	1,250	48,000	1,250	48,000	930	38,000	700
2.0		48,000	2,850	48,000	2,850	48,000	2,850	36,000	1,600	24,000	1,000
Standard Depth of Cut	ap	1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC	
	ae	0.1DC		0.05DC		0.05DC		0.02DC		0.01DC	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSH 6000SF type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

6 Flutes | GS HARD Coat | Gash Land | 50° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling

Fig 1

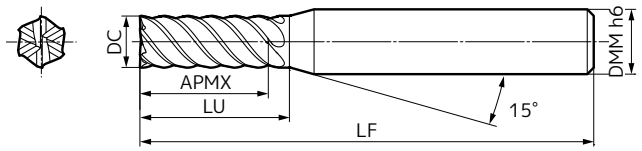
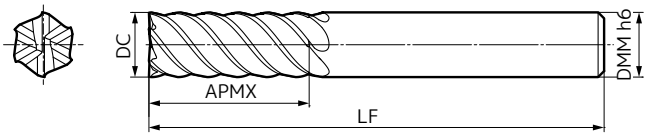


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D	0 -0.030

Body (6 Flutes)

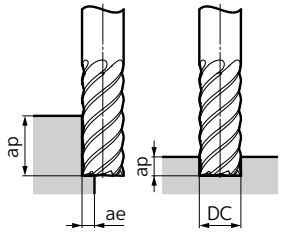
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSH 6030SF	★	**3.0**	8.0	9.0	50	6	1
6040SF	★	**4.0**	11.0	12.0	50	6	1
6050SF	★	**5.0**	13.0	14.0	50	6	1
6060SF	★	**6.0**	13.0	—	50	6	2
6080SF	★	**8.0**	19.0	—	60	8	2
GSH 6100SF	★	**10.0**	22.0	—	70	10	2
6120SF	★	**12.0**	26.0	—	75	12	2

Grade: ACF07C

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling and Groove Milling

Work Material / Cutting Conditions		Low Hardened Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)		Hardened Steel S 6-5-2-5 (65HRC up)	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
3.0		15,000	2,150	13,400	1,540	10,400	1,050	8,200	650	7,400	540	5,200	380
4.0		11,200	2,400	10,000	1,740	7,800	1,180	6,100	730	5,600	600	3,900	420
5.0		9,000	2,700	8,000	1,930	6,200	1,300	4,900	810	4,400	670	3,100	470
6.0		7,500	2,700	6,700	1,930	5,200	1,300	4,100	810	3,700	670	2,600	470
8.0		5,600	2,700	5,000	1,930	3,900	1,300	3,050	810	2,800	670	1,950	470
10.0		4,500	2,700	4,000	1,930	3,100	1,300	2,450	810	2,200	670	1,550	470
12.0		3,750	2,700	3,350	1,930	2,600	1,300	2,050	810	1,850	670	1,300	470
Side Milling	ap	1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC	
	ae	0.1DC		0.1DC		0.05DC		0.05DC		0.02DC		0.02DC	
Groove Milling	ap	0.1DC		0.1DC		0.05DC		0.05DC		Up to 0.05DC Max. 0.5mm		Up to 0.05DC Max. 0.5mm	

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions		Low Hardened Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
3.0		32,000	4,900	32,000	4,900	32,000	4,900	24,000	2,740	16,000	1,700
4.0		24,000	5,200	24,000	5,200	24,000	5,200	18,000	2,900	12,000	1,800
5.0		19,200	5,800	19,200	5,800	19,200	5,800	14,300	3,200	9,600	2,000
6.0		16,000	5,800	16,000	5,800	16,000	5,800	12,000	3,200	8,000	2,000
8.0		12,000	5,800	12,000	5,800	12,000	5,800	9,000	3,200	6,000	2,000
10.0		9,600	5,800	9,600	5,800	9,600	5,800	7,200	3,200	4,800	2,000
12.0		8,000	5,800	8,000	5,800	8,000	5,800	6,000	3,200	4,000	2,000
Standard Depth of Cut	ap	1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC	
	ae	0.1DC		0.05DC		0.05DC		0.02DC		0.01DC	

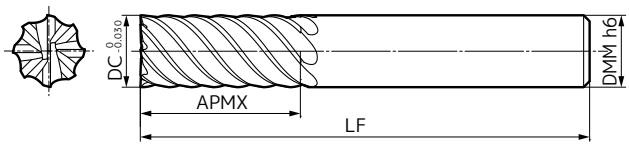
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▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSH 8000SF type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

8 Flutes | GS HARD Coat | Gash Land | 50° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling

Fig 1



Body (8 Flutes)

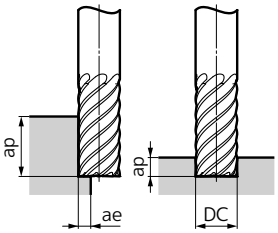
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
GSH 8160SF	★	**16.0**	32.0	90	16	1
8200SF	★	**20.0**	38.0	100	20	1

Grade: ACF07C

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling and Groove Milling

Work Material / Cutting Conditions / DC(mm)		Low Hardened Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)		Hardened Steel S 6-5-2-5 (65HRC up)	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
16.0		2,800	2,500	2,500	1,800	1,950	1,220	1,530	760	1,400	630	980	440
20.0		2,250	2,100	2,000	1,540	1,550	1,050	1,230	650	1,100	540	780	380
Side Milling	ap	1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC	
	ae	0.1DC		0.1DC		0.05DC		0.05DC		0.02DC		0.02DC	
Groove Milling	ap	0.1DC		0.1DC		0.05DC		0.05DC		Up to 0.05DC Max. 0.5mm		Up to 0.05DC Max. 0.5mm	

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions / DC(mm)		Low Hardened Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
16.0		6,000	5,400	6,000	5,400	6,000	5,400	4,500	3,000	3,000	1,900
20.0		4,800	4,600	4,800	4,600	4,800	4,600	3,600	2,580	2,400	1,600
Standard Depth of Cut	ap	1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC		1 to 1.5DC	
	ae	0.1DC		0.05DC		0.05DC		0.02DC		0.01DC	

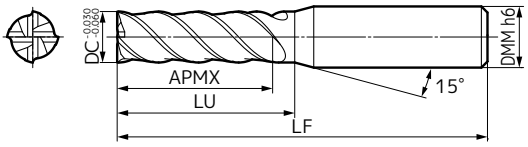
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▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HHM 4000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

4 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (4 Flutes)

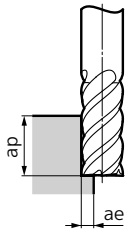
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
HHM 4030ZX	★	**3.0**	8.0	11.0	50	6	1
4040ZX	★	**4.0**	10.0	13.0	50	6	1
4050ZX	★	**5.0**	12.0	15.0	50	6	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
3.0		16,500	2,000	14,700	1,750	8,200	600	16,500	2,000
4.0		12,300	2,000	11,000	1,750	6,100	600	12,300	2,000
5.0		9,800	2,000	8,800	1,750	4,900	600	9,800	2,000
Standard Depth of Cut	ap	1.5DC		1.5DC		1.0DC		1.5DC	
	ae	0.1DC		0.1DC		0.02DC		0.1DC	

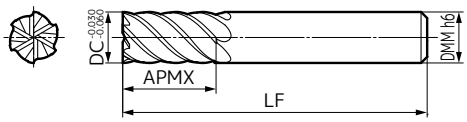
★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HHM 6000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

6 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (6 Flutes)

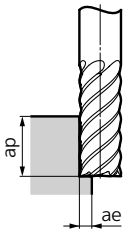
Dimensions (mm)

ISO ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
HHM 6060ZX	★	**6.0**	12.0	50	6	1
6080ZX	★	**8.0**	16.0	60	8	1
6100ZX	★	**10.0**	20.0	71	10	1
6120ZX	★	**12.0**	24.0	75	12	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
6.0		8,200	2,900	7,300	2,600	4,100	900	8,200	2,900
8.0		6,100	2,900	5,500	2,600	3,100	900	6,100	2,900
10.0		4,900	2,900	4,400	2,600	2,500	900	4,900	2,900
12.0		4,100	2,900	3,650	2,600	2,100	900	4,100	2,900
Standard Depth of Cut	ap	1.5DC		1.5DC		1.0DC		1.5DC	
	ae	0.1DC		0.1DC		0.02DC		0.1DC	

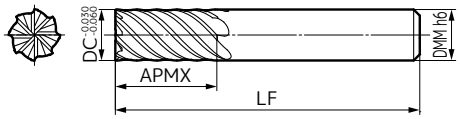
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▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HHM 8000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

8 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (8 Flutes)

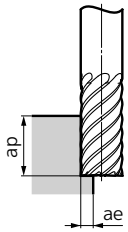
Dimensions (mm)

ISO ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
HHM 8160ZX	★	**16.0**	32	90	16	1
8200ZX	★	**20.0**	40	106	20	1
8320ZX	★	**32.0**	64	130	32	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions / DC(mm)		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
16.0		3,100	3,500	2,750	3,200	1,550	1,100	3,100	3,500
20.0		2,500	3,150	2,200	2,800	1,250	950	2,500	3,150
32.0		1,550	2,400	1,350	1,950	780	700	1,550	2,400
Standard Depth of Cut	ap	1.5DC		1.5DC		1.0DC		1.5DC	
	ae	0.1DC		0.1DC		0.02DC		0.1DC	

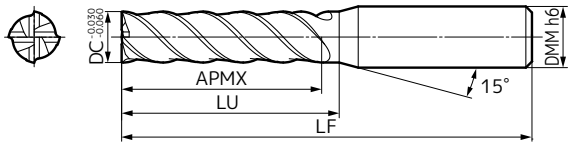
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Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

LHHM 4000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

4 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (4 Flutes)

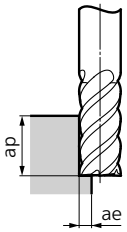
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
LHHM 4030ZX	★	**3.0**	12.0	15.0	55	6	1
4040ZX	★	**4.0**	15.0	17.9	60	6	1
4050ZX	★	**5.0**	18.0	21.0	60	6	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
3.0		16,500	1,500	14,700	1,300	8,200	450	16,500	1,500
4.0		12,300	1,500	11,000	1,300	6,100	450	12,300	1,500
5.0		9,800	1,500	8,800	1,300	4,900	450	9,800	1,500
Standard Depth of Cut	ap	2.0DC		2.0DC		1.5DC		2.0DC	
	ae	0.1DC		0.1DC		0.02DC		0.1DC	

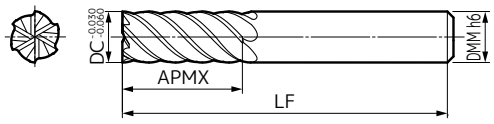
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Blank: Made-to-order item
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N·m Recommended Tightening Torque (N·m)

LHHM 6000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

6 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (6 Flutes)

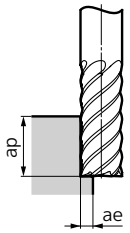
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
LHHM 6060ZX	★	**6.0**	18.0	60	6	1
6080ZX	★	**8.0**	25.0	75	8	1
6100ZX	★	**10.0**	30.0	80	10	1
6120ZX	★	**12.0**	30.0	100	12	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
6.0		8,200	2,200	7,300	2,000	4,150	700	8,200	2,200
8.0		6,100	2,200	5,500	2,000	3,100	700	6,100	2,200
10.0		4,900	2,200	4,400	2,000	2,500	700	4,900	2,200
12.0		4,100	2,200	3,700	2,000	2,100	700	4,100	2,200
Standard Depth of Cut	ap	2.0DC		2.0DC		1.5DC		2.0DC	
	ae	0.1DC		0.1DC		0.02DC		0.1DC	

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

LHHM 8000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

8 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1

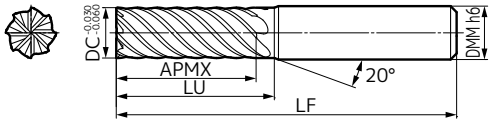
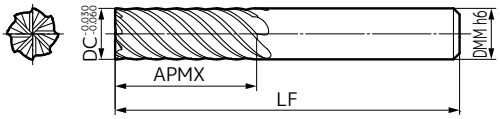


Fig 2



Body (8 Flutes)

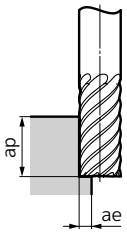
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
LHHM 8160ZX	★	**16.0**	50.0	—	105	16	2
8200ZX	★	**20.0**	55.0	—	120	20	2
8250ZX	★	**25.0**	65.0	—	140	25	2
8300ZX	★	**30.0**	75.0	86.5	160	32	1
8320ZX	★	**32.0**	85.0	—	170	32	2

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
16.0		3,100	2,700	2,750	2,400	1,550	800	3,100	2,700
20.0		2,500	2,400	2,200	2,100	1,250	700	2,500	2,400
25.0		2,000	2,100	1,750	1,700	1,000	600	2,000	2,000
32.0		1,550	1,800	1,350	1,500	780	550	1,550	1,800
Standard Depth of Cut	ap	2.0DC		2.0DC		1.5DC		2.0DC	
	ae	0.1DC		0.1DC		0.02DC		0.1DC	

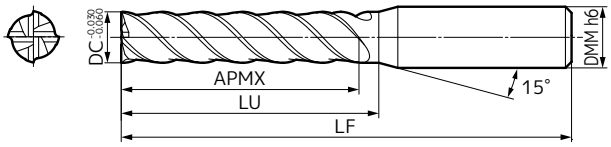
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

EHHM 4000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

4 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (4 Flutes)

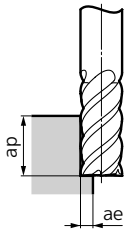
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
EHHM 4030ZX	★	**3.0**	20.0	23.0	60	6	1
4040ZX	★	**4.0**	25.0	27.9	65	6	1
4050ZX	★	**5.0**	30.0	33.0	70	6	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions / DC(mm)		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
3.0		5,800	700	4,600	400	1,800	90	5,800	700
4.0		4,400	650	3,500	400	1,350	100	4,400	650
5.0		3,500	600	2,800	400	1,100	110	3,500	600
Standard Depth of Cut	ap	2.0DC		2.0DC		2.0DC		2.0DC	
	ae	0.05DC		0.02DC		0.01DC		0.05DC	

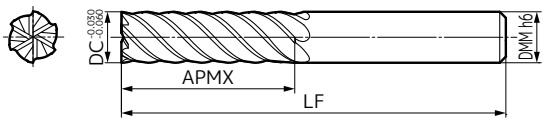
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

EHHM 6000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

6 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1



Body (6 Flutes)

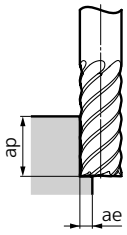
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
EHHM 6060ZX	★	**6.0**	30.0	70	6	1
6080ZX	★	**8.0**	40.0	90	8	1
6100ZX	★	**10.0**	50.0	100	10	1
6120ZX	★	**12.0**	50.0	120	12	1

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
6.0		2,900	810	2,300	590	900	160	2,900	810
8.0		2,400	860	2,000	620	800	170	2,400	860
10.0		2,100	920	1,800	650	700	170	2,100	920
12.0		1,750	880	1,500	580	600	170	1,750	880
Standard Depth of Cut	ap	2.0DC		2.0DC		2.0DC		2.0DC	
	ae	0.05DC		0.02DC		0.01DC		0.05DC	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

EHHM 8000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC

8 Flutes | ZX Coat | Gash Land | 45° Helix Angle | Shoulder Milling | Face Milling

Fig 1

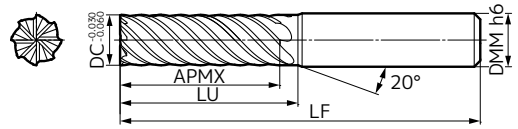
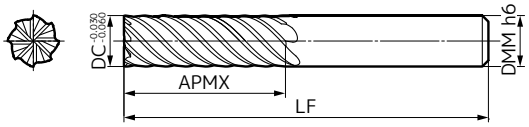


Fig 2



Body (8 Flutes)

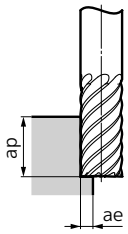
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
EHHM 8160ZX	★	**16.0**	70.0	—	140	16	2
8200ZX	★	**20.0**	85.0	—	165	20	2
8250ZX	★	**25.0**	100.0	—	185	25	2
8300ZX	★	**30.0**	110.0	121.5	205	32	1
8320ZX	★	**32.0**	110.0	—	205	32	2

Grade: ACZ10M

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 45HRC)		Hardened Steel (Below 65HRC)		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
16.0		1,350	1,000	1,100	600	450	190	1,350	1,000
20.0		1,100	850	900	520	350	160	1,100	850
25.0		850	700	700	420	300	150	850	700
32.0		680	580	550	350	220	120	680	580
Standard Depth of Cut	ap	2.0DC		2.0DC		2.0DC		2.0DC	
	ae	0.05DC		0.02DC		0.01DC		0.05DC	

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

GSRE 4000SF type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GS Coat | Gash Land | 40° Helix Angle | Shoulder Milling | Groove Milling | Face Milling | Helical Milling | Ramping

Fig 1

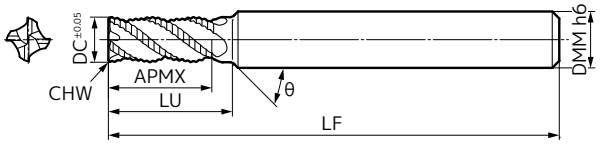
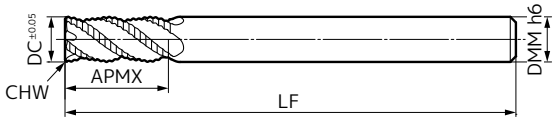


Fig 2



DC	θ
ø11 or less	45°
> ø12	20°

Body

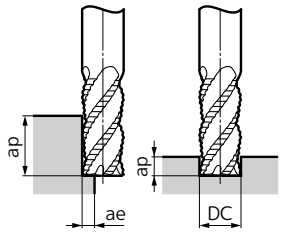
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Chamfer CHW	Shank Dia. DMM	Fig
GSRE 4060SF	★	**6.0**	13.0	—	50	0.3	6	2
4070SF	★	**7.0**	16.0	19.0	60	0.3	8	1
4080SF	★	**8.0**	19.0	—	60	0.4	8	2
4090SF	★	**9.0**	19.0	22.0	70	0.4	10	1
4100SF	★	**10.0**	22.0	—	70	0.5	10	2
GSRE 4110SF	★	**11.0**	22.0	25.0	75	0.5	12	1
4120SF	★	**12.0**	26.0	—	75	0.6	12	2
4140SF	★	**14.0**	26.0	30.0	90	0.6	16	1
4160SF	★	**16.0**	32.0	—	90	0.8	16	2
4180SF	★	**18.0**	32.0	40.0	100	0.8	20	1
GSRE 4200SF	★	**20.0**	38.0	—	100	1.0	20	2

Grade: ACZ20W

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSRE 4000SF type



Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions		Structural Steel, Carbon Steel (150 to 250HB)		Cast Iron FC, FCD		Alloy Steel (25 to 35HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
6.0		4,800	1,200	5,800	1,500	3,200	380	2,600	400	5,300	250	1,600	90
7.0		4,100	1,200	5,000	1,500	2,700	380	2,200	400	4,500	250	1,350	90
8.0		3,600	1,200	4,500	1,500	2,400	380	2,000	400	4,000	250	1,250	90
9.0		3,200	1,200	4,000	1,500	2,100	380	1,800	400	3,500	250	1,050	90
10.0		2,800	1,200	3,500	1,500	1,900	380	1,600	400	3,200	250	1,000	100
11.0		2,600	1,200	3,000	1,400	1,700	380	1,500	400	2,900	250	900	100
12.0		2,400	1,200	2,900	1,400	1,600	400	1,300	400	2,600	250	800	100
14.0		2,200	1,100	2,600	1,300	1,300	380	1,100	350	2,200	200	700	100
16.0		1,800	900	2,200	1,100	1,200	380	1,000	350	2,000	180	600	100
18.0		1,400	700	1,800	900	1,000	380	900	300	1,800	150	550	100
20.0		1,400	700	1,700	850	850	380	800	300	1,600	150	500	100
Standard Depth of Cut	ap	1.5DC											
	ae	0.5DC						0.3DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel, Carbon Steel (150 to 250HB)		Cast Iron FC, FCD		Alloy Steel (25 to 35HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
6.0		3,600	900	4,300	1,100	2,400	300	1,700	260	4,200	250	1,100	60
7.0		3,000	900	3,700	1,100	2,000	280	1,500	260	3,600	250	900	60
8.0		2,700	900	3,400	1,100	1,800	280	1,350	260	3,200	250	800	60
9.0		2,400	900	3,000	1,100	1,600	280	1,200	260	2,800	250	700	60
10.0		2,100	900	2,600	1,100	1,400	280	1,100	270	2,500	250	650	65
11.0		2,000	900	2,300	1,100	1,300	280	1,000	270	2,300	250	600	70
12.0		1,800	900	2,200	1,100	1,200	300	900	270	2,100	250	550	70
14.0		1,600	800	2,000	1,000	1,000	290	750	240	1,800	180	450	65
16.0		1,350	650	1,650	850	900	280	700	240	1,600	160	400	65
18.0		1,200	550	1,500	750	800	280	600	230	1,400	140	350	60
20.0		1,050	500	1,350	700	700	280	550	210	1,250	125	300	60
Standard Depth of Cut	ap	1.0DC						0.5DC					

ASM 2000DL type

Aluminum Alloy | Copper Alloy

2 Flutes | AURORA Coat DLC | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

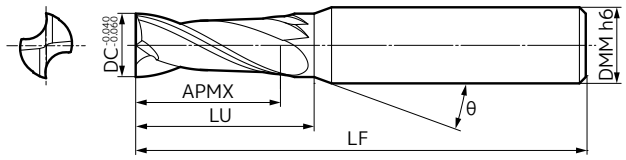
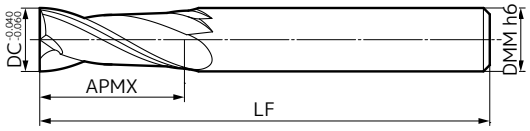


Fig 2



DC	θ
< ø3	10°
≥ ø3	15°

Body

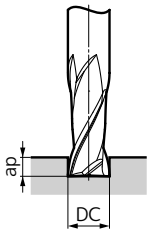
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
ASM 2020DL	★	**2.0**	6.0	6.8	40	4	1
2030DL	★	**3.0**	10.0	12.9	45	6	1
2040DL	★	**4.0**	12.0	14.7	45	6	1
2050DL	★	**5.0**	15.0	18.6	50	6	1
2060DL	★	**6.0**	15.0	—	50	6	2
ASM 2080DL	★	**8.0**	18.0	—	60	8	2
2100DL	★	**10.0**	22.0	—	71	10	2
2120DL	★	**12.0**	25.0	—	75	12	2
2160DL	★	**16.0**	32.0	—	90	16	2

Grade: DL1000

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Groove Milling

Work Material / Cutting Conditions		Aluminum Alloy			
		Wet		Dry	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
2.0		28,000	280	28,000	200
3.0		22,000	400	22,000	280
4.0		18,000	520	18,000	360
5.0		14,000	520	14,000	360
6.0		12,000	540	12,000	370
8.0		9,000	540	9,000	370
10.0		7,200	560	7,200	390
12.0		6,000	560	6,000	390
16.0		4,500	560	4,500	390
Standard Depth of Cut	ap	1.0DC		0.5DC	
	ae	1.0DC		1.0DC	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ASM 4000DL type

Aluminum Alloy | Copper Alloy

4 Flutes | AURORA Coat DLC | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

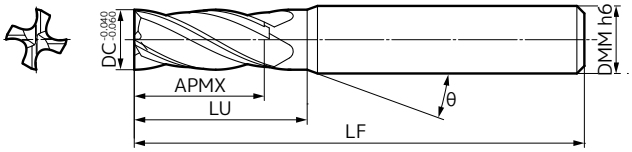
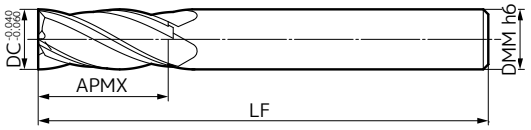


Fig 2



DC	θ
< ø3	10°
≥ ø3	15°

Body

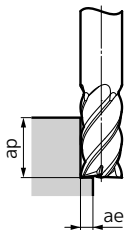
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
ASM 4020DL	★	**2.0**	6.0	6.8	40	4	1
4030DL	★	**3.0**	10.0	12.9	45	6	1
4040DL	★	**4.0**	12.0	14.7	45	6	1
4050DL	★	**5.0**	15.0	18.6	50	6	1
4060DL	★	**6.0**	15.0	—	50	6	2
ASM 4080DL	★	**8.0**	18.0	—	60	8	2
4100DL	★	**10.0**	22.0	—	71	10	2
4120DL	★	**12.0**	25.0	—	75	12	2
4160DL	★	**16.0**	32.0	—	90	16	2

Grade: DL1000

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Aluminum Alloy			
		Wet		Dry	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
2.0		40,000	1,400	40,000	980
3.0		32,000	2,000	32,000	1,400
4.0		26,000	2,600	26,000	1,800
5.0		20,000	2,600	20,000	1,800
6.0		17,000	2,700	17,000	1,900
8.0		13,000	2,700	13,000	1,900
10.0		11,000	2,800	11,000	2,000
12.0		8,500	2,800	8,500	2,000
16.0		6,400	2,800	6,400	2,000
Standard Depth of Cut	ap	1.5DC		1.5DC	
	ae	0.2DC		0.2DC	

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

ASM 2000 type

Aluminum Alloy | Copper Alloy

2 Flutes | Uncoated Carbide | Sharp Corner | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

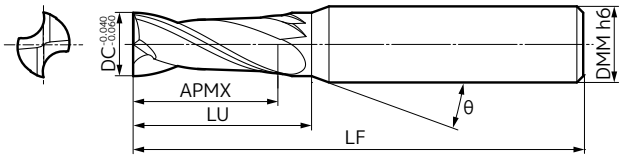


Fig 2



DC	θ
< ø3	10°
≥ ø3 < ø6	15°
> ø6	20°

Body

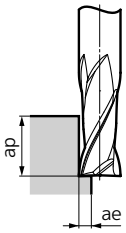
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
ASM 2020	★	**2.0**	6	6.8	40	4	1
2030	★	**3.0**	10	12.9	45	6	1
2040	★	**4.0**	12	14.7	45	6	1
2050	★	**5.0**	15	18.6	50	6	1
2060	★	**6.0**	15	—	50	6	2
ASM 2080	★	**8.0**	18	—	60	8	2
2100	★	**10.0**	22	—	71	10	2
2120	★	**12.0**	25	—	75	12	2
2140	★	**14.0**	32	44.2	90	16	1
2150	★	**15.0**	32	44.1	90	16	1
ASM 2160	★	**16.0**	32	—	90	16	2

Grade: H1

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions		Aluminum Alloy		Cast Iron Special Cast Iron	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
2.0		35,000	460	13,000	240
3.0		23,400	770	8,750	275
4.0		17,500	800	6,550	310
6.0		11,700	910	4,370	340
8.0		8,750	980	3,280	390
10.0		7,000	1,100	2,620	400
12.0		5,850	1,150	2,185	430
16.0		4,380	1,150	1,640	430
Standard Depth of Cut	ap	1.5DC		1.5DC	
	ae	0.1DC		0.1DC	

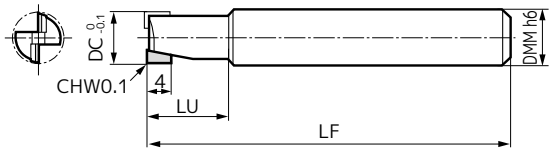
★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DFE series

Aluminum Alloy | Copper Alloy | Graphite

2 Flutes | PCD | Shoulder Milling | Face Milling

Fig 1

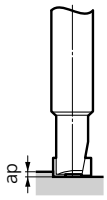


Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
DFE 2040S	★	**4.0**	15	50	6	1
2050S	★	**5.0**	15	50	6	1
2080S	★	**8.0**	15	60	10	1
2090S	★	**9.0**	15	70	10	1
2100S	★	**10.0**	15	70	10	1

Grade: DA2200



Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Face Milling (2 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.0		40,000	4,000
5.0		32,000	3,200
8.0		20,000	2,000
9.0		17,800	1,780
10.0		16,000	1,600
Standard Depth of Cut	ap	0.4DC	

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DFE series

Aluminum Alloy | Copper Alloy | Graphite

4 Flutes | PCD | Shoulder Milling | Face Milling

Fig 1

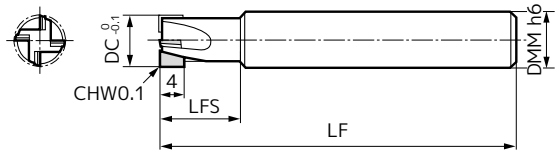
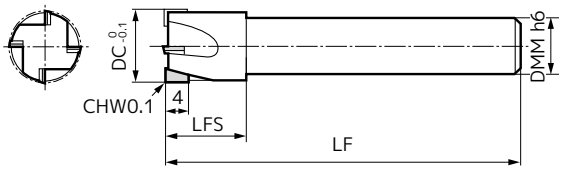


Fig 2



Body

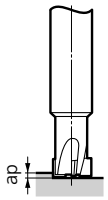
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DFE 4090S	★	**9.0**	15	70	10	1
4100S	★	**10.0**	15	70	10	1
4130GS	★	**13.0**	15	70	10	2

Grade: DA2200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Face Milling (4 Flutes)

Work Material / Cutting Conditions / DC(mm)		Aluminum Alloy Copper Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)
9.0		17,800	3,560
10.0		16,000	3,200
13.0		12,300	2,460
Standard Depth of Cut	ap	0.4DC	

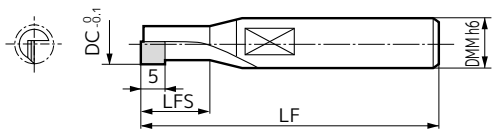
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DAE series

Aluminum Alloy | Copper Alloy | Graphite

1 Flute | PCD | Shoulder Milling | Face Milling

Fig 1



Body

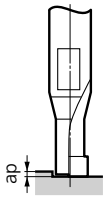
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DAE 1040	★	**4.0**	10	45	6	1
1050	★	**5.0**	12	50	6	1

Grade: DA200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Face Milling (1 Flute)

Work Material / Cutting Conditions / DC(mm)		Aluminum Alloy Copper Alloy	
		Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.0		6,000	210
5.0		5,000	175
Standard Depth of Cut	ap	0.4DC	

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

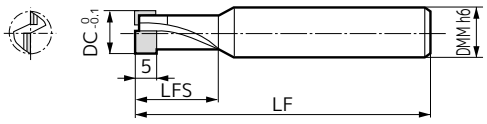
N·m Recommended Tightening Torque (N·m)

DAE series

Aluminum Alloy | Copper Alloy | Graphite

2 Flutes | PCD | Shoulder Milling | Face Milling

Fig 1



Body (2 Flutes)

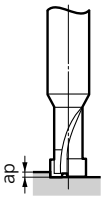
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DAE 2060	★	**6.0**	20	50	6	1
2070	★	**7.0**	20	60	8	1
2080	★	**8.0**	20	60	8	1
2090	★	**9.0**	25	71	10	1
2100	★	**10.0**	25	71	10	1
DAE 2110	★	**11.0**	25	75	12	1
2120	★	**12.0**	25	75	12	1

Grade: DA200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Face Milling (2 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)
6.0		6,400	580
7.0		5,500	500
8.0		5,400	500
9.0		5,300	480
10.0		4,800	440
11.0		4,400	400
12.0		4,000	360
Standard Depth of Cut	ap	0.4DC	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
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— mark: Not available
N·m Recommended Tightening Torque (N·m)

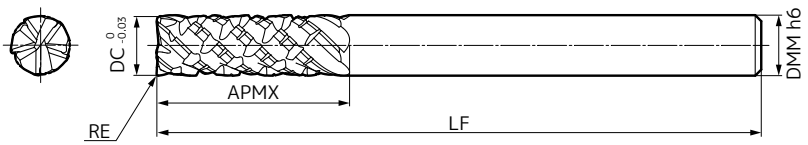
AVIX type

Graphite CFRP

New SUMIDIA Coat Sharp Corner 45° Helix Angle Shoulder Groove Milling Groove Finishing Cut Through Flat Spot Facing Helical Milling Ramping

*Refer to N44 for the tolerance of h6

Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Number of Flutes	Bottom Cutting Edges	Fig
Metric	**AVIX 404000-R03**	★	**4.0**	0.3	12	60	4	4	4	1
	506000-R03	★	**6.0**	0.3	18	70	6	5	5	1
	508000-R03	★	**8.0**	0.3	24	80	8	5	5	1
	510000-R03	★	**10.0**	0.3	30	80	10	5	5	1
	612000-R03	★	**12.0**	0.3	36	90	12	6	6	1
Inch	**AVIX 403175-R03**	★	**3.175**	0.3	10	60	3.175	4	4	1
	506350-R03	★	**6.35**	0.3	19	70	6.35	5	5	1
	509525-R03	★	**9.525**	0.3	28	80	9.525	5	5	1
	612700-R03	★	**12.7**	0.3	38	90	12.7	6	6	1

Grade: DCT30X

Identification Code

AVIX 6 12700 - R03

AVIX: Series Code; 6: Number of Flutes; 12700: Dia.; R03: Corner Radius

Recommended Cutting Conditions

Work Material	CFRP		
Cutting Conditions	Dry		
DC(mm)	Spindle Speed (min⁻¹)	Cutting Speed vc (m/min)	Feed Rate fz (mm/rev)
4.0	12,000	150	0.08 to 0.17
6.0	10,600	200	0.09 to 0.19
8.0	8,000	200	0.13 to 0.25
10.0	6,400	200	0.16 to 0.31
12.0	5,300	200	0.19 to 0.38
3.175	12,000	120	0.08 to 0.17
6.35	10,000	200	0.10 to 0.20
9.525	6,700	200	0.15 to 0.30
12.7	5,000	200	0.20 to 0.40

1. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
2. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

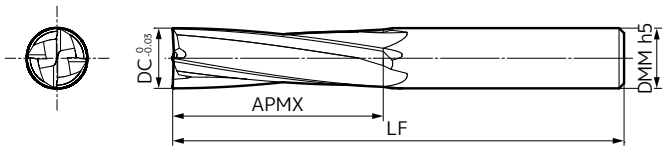
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSDC 4000(RL) type

Graphite CFRP GFRP

4 Flutes | SUMIDIA Coat | Sharp Corner | 10° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Cut Through

Fig 1



Body (Right-hand Helix type)

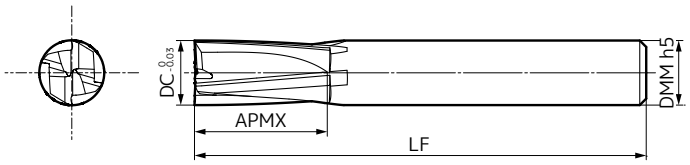
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
SSDC 4060	▲	**6.0**	20	70	6	1
4080	▲	**8.0**	30	80	8	1
4100	▲	**10.0**	30	90	10	1
4120	▲	**12.0**	30	100	12	1

Grade: DCX20

4 Flutes | SUMIDIA Coat | Sharp Corner | 5° 5° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Cut Through

Fig 2



Body (Right-Left-hand Helix type)

Dimensions (mm)

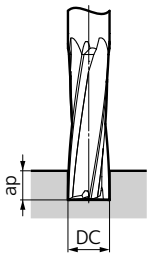
ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
SSDC 4060RL	▲	**6.0**	20	70	6	2
4080RL	▲	**8.0**	30	80	8	2
4100RL	▲	**10.0**	30	90	10	2
4120RL	▲	**12.0**	30	100	12	2

Grade: DCX20

Identification Code

SSDC 4 060 RL

Series Code	Number of Flutes	Dia.	Helix Shape (RL: Right-Left-hand Helix)



Recommended Cutting Conditions

1. The cutting conditions are guidelines.
   Cutting conditions are greatly influenced by clamping, work material grade, work material thickness and machine rigidity. Adjust the conditions accordingly.
2. Take sufficient dust control measures.
3. When radial depth of cut is 0.7D or more in groove milling and trimming, reduce feed rate accordingly.

Groove Milling (Common)

Work Material / Cutting Conditions	CFRP			
	Dry			
DC(mm)	Cutting Speed (m/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Feed Rate (mm/rev)
6.0	197.8	10,500	940	0.090
8.0	201.0	8,000	800	0.100
10.0	204.1	6,500	720	0.111
12.0	207.2	5,500	670	0.122

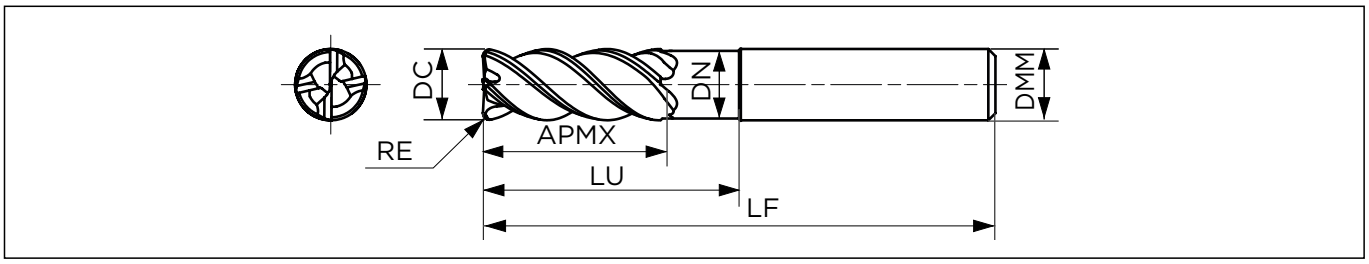
★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

EPMS 4000-R 2.5D / EPMS 5000-R 2.5D

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | 42° 45° Helix Angle | Corner r | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

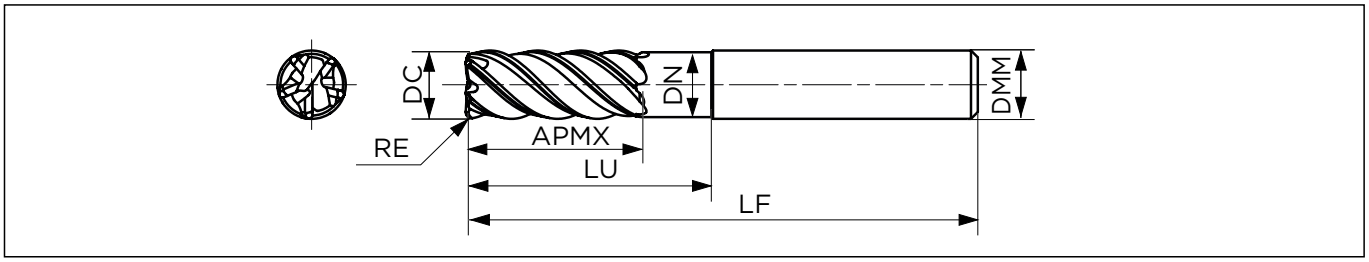


■ EPMS 4000 Type (Shank DIN 6535 HA)

Cat. No.	Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS 4100U2.5R10	★	10	1.0	25	32	9.5	72	10
4100U2.5R30	★	10	3.0	25	32	9.5	72	10
EPMS 4120U2.5R10	★	12	1.0	30	38	11.5	83	12
4120U2.5R30	★	12	3.0	30	38	11.5	83	12
4120U2.5R40	★	12	4.0	30	38	11.5	83	12
EPMS 4160U2.5R30	★	16	3.0	40	50	15.5	100	16
4160U2.5R40	★	16	4.0	40	50	15.5	100	16

Grade: ECS300

5 Flutes | 42° 45° Helix Angle | Corner r | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling



■ EPMS 5000 Type (Shank DIN 6535 HA)

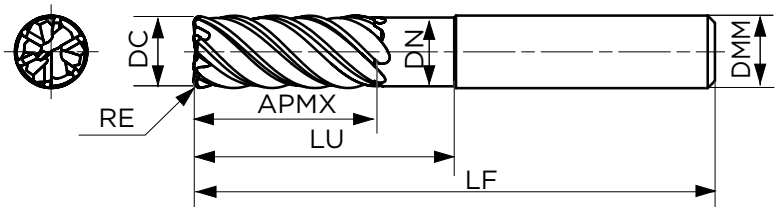
Cat. No.	Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS 5100U2.5R025	★	10	0.25	25	32	9.5	72	10
5100U2.5R15	★	10	1.5	25	32	9.5	72	10
5100U2.5R25	★	10	2.5	25	32	9.5	72	10
EPMS 5120U2.5R025	★	12	0.25	30	38	11.5	83	12
5120U2.5R05	★	12	0.5	30	38	11.5	83	12
5120U2.5R15	★	12	1.5	30	38	11.5	83	12
5120U2.5R20	★	12	2.0	30	38	11.5	83	12
5120U2.5R25	★	12	2.5	30	38	11.5	83	12
EPMS 5160U2.5R30	★	16	3.0	40	50	15.5	100	16
5160U2.5R40	★	16	4.0	40	50	15.5	100	16
EPMS 5200U2.5R30	★	20	3.0	50	62	19.5	125	20
5200U2.5R40	★	20	4.0	50	62	19.5	125	20

Grade: ECS300

EPMS 6000-R 2.5D

Stainless Steel | Ti Alloy / Heat Resistant Alloy

6 Flutes | 42° 45° Helix Angle | Corner r | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling



■ EPMS 6000 Type (Shank DIN 6535 HA)

Cat. No.	Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS 6100U2.5R10	★	10	1.0	25	32	9.5	72	10
6100U2.5R30	★	10	3.0	25	32	9.5	72	10
EPMS 6120U2.5R10	★	12	1.0	30	38	11.5	83	12
6120U2.5R30	★	12	3.0	30	38	11.5	83	12
6120U2.5R40	★	12	4.0	30	38	11.5	83	12
EPMS 6160U2.5R15	★	16	1.5	40	50	15.5	100	16
6160U2.5R30	★	16	3.0	40	50	15.5	100	16
6160U2.5R40	★	16	4.0	40	50	15.5	100	16
EPMS 6200U2.5R30	★	20	3.0	50	62	19.5	125	20
6200U2.5R40	★	20	4.0	50	62	19.5	125	20

Grade: ECS300

■ Identifications Details

EPMS	**4**	**100**	**U2.5**		**R10**	**ECS300**
Series Code	Num-ber of Teeth	Diameter	Neck Type U: Under-neck type S: Straigh +L/D 2.5:Length of cutting edge. 2.5 x DC	Other Options* W: Weldon B: Chip Breaker	Corner Radius R10: = 1 mm	Grade

* On request

Shank diameter tolerance h5 / Radius tolerance RE: ± 0.01 mm

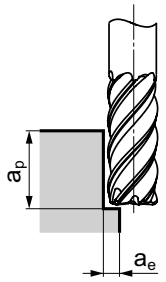
EPMS - Cutting Conditions

■ Cutting Conditions

Side Milling

Work Material	Titanum Alloy. Stainless Steel				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10.0	3.200	1.280	1.920	3.840	4.320
12.0	2.700	1.080	1.620	3.240	3.645
16.0	2.000	800	1.200	2.400	2.700
20.0	1.600	640	960	1.920	2.160
ae (mm). Standard–Max.		**0.2**–0.4 DC	**0.1**–0.3 DC	**0.06**–0.1 DC	**0.05**–0.1 DC
ap (mm). Standard–Max.		**2.0**–2.5 DC			

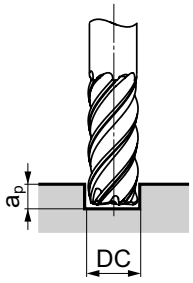
Work Material	Heat-resistant Alloy				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10.0	1.600	384	640	960	1.296
12.0	1.300	312	520	780	1.053
16.0	1.000	240	400	600	810
20.0	800	192	320	480	648
ae (mm). **Standard**–Max.		**0.2**–0.4 DC	**0.1**–0.3 DC	**0.06**–0.1 DC	**0.05**–0.1 DC
ap (mm). **Standard**–Max.		**2.0**–2.5 DC			



Slotting

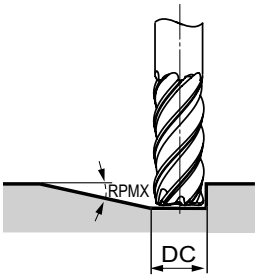
Work Material	Titanum Alloy. Stainless Steel				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10.0	1.900	460	570	Not recommended	Not recommended
12.0	1.600	380	480		
16.0	1.200	290	360		
20.0	960	230	290		
ap (mm). Standard–Max.		**1.0**–1.5 DC	**0.5**–1.0 DC		

Work Material	Heat-resistant Alloy				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10.0	960	230	290	Not recommended	Not recommended
12.0	800	190	240		
16.0	600	140	180		
20.0	480	120	140		
ap (mm). **Standard**–Max.		**0.3**–0.5 DC	**0.2**–0.4 DC		



Ramping / Helical Milling

Body Type	EPMS4000	EPMS5000	EPMS6000	EPMS9000
RPMX. **Standard**–Max.	**2.0°**–3.0°	**2.0°**–3.0°	**0.5°**–2.0°	**0.5°**–2.0°

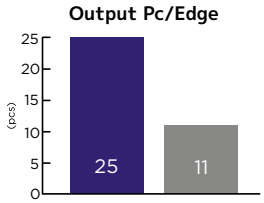


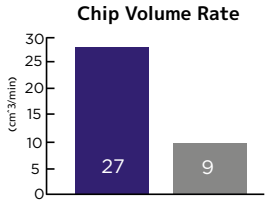
EPMS - Application Examples

■ Application Examples

Work Piece	Recess Plate	Parameter	Sumitomo	Competitor
Material description	125 Titanium	Cutter Description	EPMS5120U2.5R025	(4 Teeth)
Material Group	-	Approach Angle	-	-
Customer Target	-	Tool Diameter	12	12
		Number of Teeth	5	4
		Insert Geometry	-	-
		Insert Size	-	-
		Chip Breaker	-	-
		Substarte	ECS300	CARBIDE
		RPM n = [min⁻¹]	3184	1000
		Cutting Speed Vc = [m/min]	120	38
		Feed Rate (max) fz = [mm/teeth]	0.17	0.05
		Feed (average) vf = [mm/min]	2706	200
		Depth of Cut (max) ap = [mm]	10.00	10.00
		Width of Cut (max) ae = [mm]	1.00	4.50
		Chip Volume Rate Q = [cm^3/min]	27.10	9.00
		Output Pc/Edge [psc]	25.00	11.00
		Tool Life th = [min]	1692.14	2236.30

127% More Tool Life

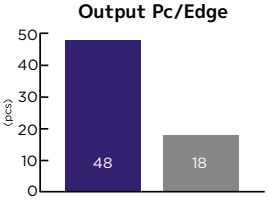


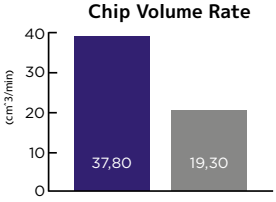


● Sumitomo ● competitor

Work Piece	End Plates	Parameter	Sumitomo	Competitor
Material description	1.4112	Cutter Description	EPMS 4000	(4 Teeth)
Material Group	ISO P / Martensitic Steel	Approach Angle	90	90
Customer Target	Increased tool life	Tool Diameter	10	10
		Number of Teeth	4	4
		Insert Geometry	-	-
		Insert Size	-	-
		Chip Breaker	-	-
		Substarte	ECS300	CARBIDE
		RPM n = [min⁻¹]	2865	2400
		Cutting Speed Vc = [m/min]	90	76
		Feed Rate (max) fz = [mm/teeth]	0.07	0.05
		Feed (average) vf = [mm/min]	688	500
		Depth of Cut (max) ap = [mm]	22.00	22.00
		Width of Cut (max) ae = [mm]	2.50	2.50
		Chip Volume Rate Q = [cm^3/min]	37.80	19.30
		Output Pc/Edge [psc]	48.00	18.00
		Tool Life th = [min]	230.23	237.60

167% More Tool Life





● Sumitomo ● competitor

GSX 40000-R-2D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner R | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

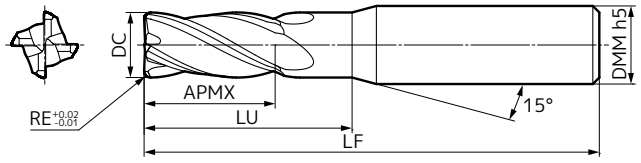
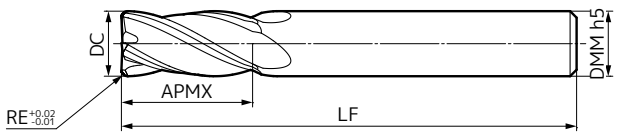


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D	0 -0.03

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX 40300-R02-2D	★	**3.0**	0.2	8.0	9.5	45	6	1
40300-R05-2D	★	**3.0**	0.5	8.0	9.5	45	6	1
40400-R02-2D	★	**4.0**	0.2	11.0	14.0	45	6	1
40400-R05-2D	★	**4.0**	0.5	11.0	14.0	45	6	1
40400-R10-2D	★	**4.0**	1.0	11.0	14.0	45	6	1
GSX 40500-R02-2D	★	**5.0**	0.2	13.0	19.6	50	6	1
40500-R05-2D	★	**5.0**	0.5	13.0	19.6	50	6	1
40500-R10-2D	★	**5.0**	1.0	13.0	19.6	50	6	1
40600-R02-2D	★	**6.0**	0.2	13.0	—	50	6	2
40600-R05-2D	★	**6.0**	0.5	13.0	—	50	6	2
GSX 40600-R10-2D	★	**6.0**	1.0	13.0	—	50	6	2
40600-R15-2D	★	**6.0**	1.5	13.0	—	50	6	2
40800-R02-2D	★	**8.0**	0.2	19.0	—	60	8	2
40800-R05-2D	★	**8.0**	0.5	19.0	—	60	8	2
40800-R10-2D	★	**8.0**	1.0	19.0	—	60	8	2
GSX 40800-R15-2D	★	**8.0**	1.5	19.0	—	60	8	2
41000-R02-2D	★	**10.0**	0.2	22.0	—	70	10	2
41000-R05-2D	★	**10.0**	0.5	22.0	—	70	10	2
41000-R10-2D	★	**10.0**	1.0	22.0	—	70	10	2
41000-R15-2D	★	**10.0**	1.5	22.0	—	70	10	2
GSX 41000-R20-2D	★	**10.0**	2.0	22.0	—	70	10	2
41200-R02-2D	★	**12.0**	0.2	26.0	—	75	12	2
41200-R05-2D	★	**12.0**	0.5	26.0	—	75	12	2
41200-R10-2D	★	**12.0**	1.0	26.0	—	75	12	2
41200-R15-2D	★	**12.0**	1.5	26.0	—	75	12	2
GSX 41200-R20-2D	★	**12.0**	2.0	26.0	—	75	12	2

Grade: ACF20

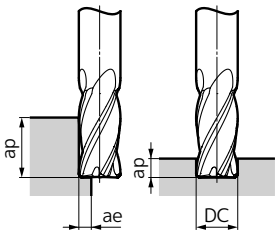
Identification Code

GSX 4 0300 - R 02 - 2D

- GSX: Series Code
- 4: Number of Flutes
- 0300: Dia.
- R: Corner Style R: Radius
- 02: Corner Radius
- 2D: Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSX 40000-R-2D type



Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
3. For groove milling of stainless steel, use 60% of the recommended spindle speed and 40% of the recommended feed rate. (*)

Side Milling

Work Material / Cutting Conditions		Structural Steel, Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		12,800	570	12,000	380	8,300	230	6,000	150	6,000	130	3,700	70
4.0		6,800	730	6,400	490	4,400	300	3,200	200	3,200	170	2,000	90
6.0		4,600	770	4,300	520	3,000	320	2,200	210	2,200	180	1,400	100
8.0		3,400	770	3,200	520	2,200	320	1,600	210	1,600	180	1,000	100
10.0		2,800	780	2,600	520	1,800	320	1,300	210	1,300	180	800	100
12.0		2,300	780	2,200	530	1,500	320	1,100	210	1,100	180	700	100
Standard Depth of Cut	ap	1.5DC		1.5DC		1.5DC		1.0DC		1.5DC		1.0DC	
	ae	0.1DC		0.1DC		0.05DC		0.02DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Structural Steel, Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		12,800	570	12,000	380	8,300	230	6,000	150	6,000	130	3,700	70
4.0		6,800	730	6,400	490	4,400	300	3,200	200	3,200	170	2,000	90
6.0		4,600	770	4,300	520	3,000	320	2,200	210	2,200	180	1,400	100
8.0		3,400	770	3,200	520	2,200	320	1,600	210	1,600	180	1,000	100
10.0		2,800	780	2,600	520	1,800	320	1,300	210	1,300	180	800	100
12.0		2,300	780	2,200	530	1,500	320	1,100	210	1,100	180	700	100
Groove Milling	ap	0.5DC		0.5DC		0.2DC		0.05DC		0.3DC		0.1DC	

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions		Structural Steel, Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400
4.0		23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490
6.0		16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	510
8.0		12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520
10.0		9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520
12.0		8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520
Standard Depth of Cut	ap	1.5DC		1.5DC		1.5DC		1.0DC		1.5DC	
	ae	0.05DC		0.05DC		0.05DC		0.02DC		0.05DC	

GSV 4000-R-2.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner R | 40° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

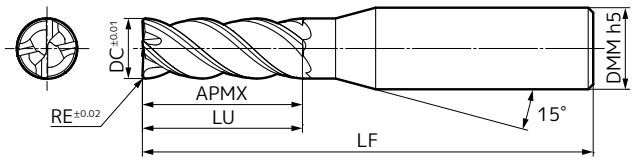
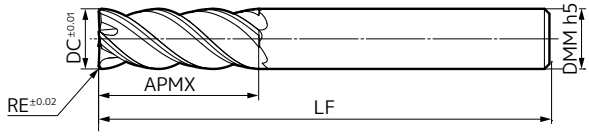


Fig 2



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSV 4030-R02-2.5D	★	**3.0**	0.2	8.0	9.5	50	6	1
4030-R05-2.5D	★	**3.0**	0.5	8.0	9.5	50	6	1
4040-R02-2.5D	★	**4.0**	0.2	10.0	11.5	50	6	1
4040-R05-2.5D	★	**4.0**	0.5	10.0	11.5	50	6	1
4040-R10-2.5D	★	**4.0**	1.0	10.0	11.5	50	6	1
GSV 4050-R02-2.5D	★	**5.0**	0.2	13.0	14.5	60	6	1
4050-R05-2.5D	★	**5.0**	0.5	13.0	14.5	60	6	1
4050-R10-2.5D	★	**5.0**	1.0	13.0	14.5	60	6	1
4060-R03-2.5D	★	**6.0**	0.3	15.0	—	60	6	2
4060-R05-2.5D	★	**6.0**	0.5	15.0	—	60	6	2
GSV 4060-R10-2.5D	★	**6.0**	1.0	15.0	—	60	6	2
4060-R15-2.5D	★	**6.0**	1.5	15.0	—	60	6	2
4080-R03-2.5D	★	**8.0**	0.3	20.0	—	80	8	2
4080-R05-2.5D	★	**8.0**	0.5	20.0	—	80	8	2
4080-R10-2.5D	★	**8.0**	1.0	20.0	—	80	8	2
GSV 4080-R15-2.5D	★	**8.0**	1.5	20.0	—	80	8	2
4080-R20-2.5D	★	**8.0**	2.0	20.0	—	80	8	2
4100-R03-2.5D	★	**10.0**	0.3	25.0	—	90	10	2
4100-R05-2.5D	★	**10.0**	0.5	25.0	—	90	10	2
4100-R10-2.5D	★	**10.0**	1.0	25.0	—	90	10	2
GSV 4100-R15-2.5D	★	**10.0**	1.5	25.0	—	90	10	2
4100-R20-2.5D	★	**10.0**	2.0	25.0	—	90	10	2
4120-R05-2.5D	★	**12.0**	0.5	30.0	—	90	12	2
4120-R10-2.5D	★	**12.0**	1.0	30.0	—	90	12	2
4120-R15-2.5D	★	**12.0**	1.5	30.0	—	90	12	2
GSV 4120-R20-2.5D	★	**12.0**	2.0	30.0	—	90	12	2
4120-R30-2.5D	★	**12.0**	3.0	30.0	—	90	12	2
4160-R10-2.5D	★	**16.0**	1.0	40.0	—	115	16	2
4160-R15-2.5D	★	**16.0**	1.5	40.0	—	115	16	2
4160-R20-2.5D	★	**16.0**	2.0	40.0	—	115	16	2
GSV 4160-R30-2.5D	★	**16.0**	3.0	40.0	—	115	16	2
4200-R10-2.5D	★	**20.0**	1.0	50.0	—	125	20	2
4200-R15-2.5D	★	**20.0**	1.5	50.0	—	125	20	2
4200-R20-2.5D	★	**20.0**	2.0	50.0	—	125	20	2
4200-R30-2.5D	★	**20.0**	3.0	50.0	—	125	20	2
GSV 4250-R10-2.5D	★	**25.0**	1.0	63.0	—	140	25	2
4250-R15-2.5D	★	**25.0**	1.5	63.0	—	140	25	2
4250-R20-2.5D	★	**25.0**	2.0	63.0	—	140	25	2
4250-R30-2.5D	★	**25.0**	3.0	63.0	—	140	25	2

Grade: ACF20

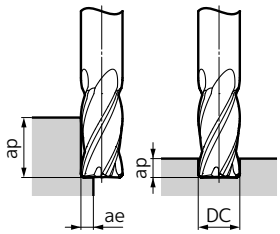
Identification Code

GSV 4 030 - R 02 - 2.5D

- GSV: Series Code
- 4: Number of Flutes
- 030: Dia.
- R: Corner Style (R: Radius)
- 02: Corner Radius
- 2.5D: Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSV 4000-R-2.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	ap	1.5DC									
	ae	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	ap	0.8DC				0.16DC		0.4DC		0.16DC	

GSXVL 4000-R-2.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner R | 40° 43° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

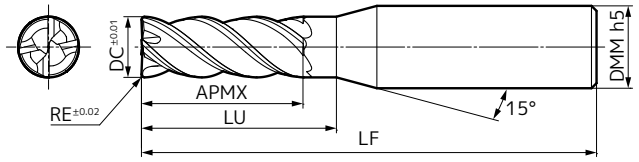
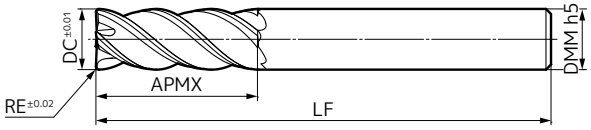


Fig 2



Body

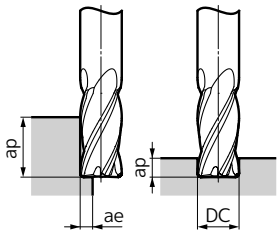
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXVL 4030-R02-2.5D	★	**3.0**	0.2	8.0	9.5	50	6	1
4030-R05-2.5D	★	**3.0**	0.5	8.0	9.5	50	6	1
4040-R02-2.5D	★	**4.0**	0.2	10.0	11.5	50	6	1
4040-R05-2.5D	★	**4.0**	0.5	10.0	11.5	50	6	1
4040-R10-2.5D	★	**4.0**	1.0	10.0	11.5	50	6	1
GSXVL 4050-R02-2.5D	★	**5.0**	0.2	13.0	14.5	60	6	1
4050-R05-2.5D	★	**5.0**	0.5	13.0	14.5	60	6	1
4050-R10-2.5D	★	**5.0**	1.0	13.0	14.5	60	6	1
4060-R03-2.5D	★	**6.0**	0.3	15.0	—	60	6	2
4060-R05-2.5D	★	**6.0**	0.5	15.0	—	60	6	2
GSXVL 4060-R10-2.5D	★	**6.0**	1.0	15.0	—	60	6	2
4060-R15-2.5D	★	**6.0**	1.5	15.0	—	60	6	2
4080-R03-2.5D	★	**8.0**	0.3	20.0	—	80	8	2
4080-R05-2.5D	★	**8.0**	0.5	20.0	—	80	8	2
4080-R10-2.5D	★	**8.0**	1.0	20.0	—	80	8	2
GSXVL 4080-R15-2.5D	★	**8.0**	1.5	20.0	—	80	8	2
4080-R20-2.5D	★	**8.0**	2.0	20.0	—	80	8	2
4100-R03-2.5D	★	**10.0**	0.3	25.0	—	90	10	2
4100-R05-2.5D	★	**10.0**	0.5	25.0	—	90	10	2
4100-R10-2.5D	★	**10.0**	1.0	25.0	—	90	10	2
GSXVL 4100-R15-2.5D	★	**10.0**	1.5	25.0	—	90	10	2
4100-R20-2.5D	★	**10.0**	2.0	25.0	—	90	10	2
4120-R05-2.5D	★	**12.0**	0.5	30.0	—	90	12	2
4120-R10-2.5D	★	**12.0**	1.0	30.0	—	90	12	2
4120-R15-2.5D	★	**12.0**	1.5	30.0	—	90	12	2
GSXVL 4120-R20-2.5D	★	**12.0**	2.0	30.0	—	90	12	2
4120-R30-2.5D	★	**12.0**	3.0	30.0	—	90	12	2
4160-R10-2.5D	★	**16.0**	1.0	40.0	—	115	16	2
4160-R15-2.5D	★	**16.0**	1.5	40.0	—	115	16	2
4160-R20-2.5D	★	**16.0**	2.0	40.0	—	115	16	2
GSXVL 4160-R30-2.5D	★	**16.0**	3.0	40.0	—	115	16	2
4200-R10-2.5D	★	**20.0**	1.0	50.0	—	125	20	2
4200-R15-2.5D	★	**20.0**	1.5	50.0	—	125	20	2
4200-R20-2.5D	★	**20.0**	2.0	50.0	—	125	20	2
4200-R30-2.5D	★	**20.0**	3.0	50.0	—	125	20	2
GSXVL 4250-R10-2.5D		**25.0**	1.0	63.0	—	140	25	2
4250-R15-2.5D		**25.0**	1.5	63.0	—	140	25	2
4250-R20-2.5D		**25.0**	2.0	63.0	—	140	25	2
4250-R30-2.5D		**25.0**	3.0	63.0	—	140	25	2

Grade: ACF20

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSXVL 4000-R-2.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	ap	1.5DC									
	ae	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	ap	1.0DC				0.2DC		0.5DC		0.2DC	

SSEHVL 4000W-R type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | GS HARD Coat | Corner R | 42° 45° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Profiling

Fig 1

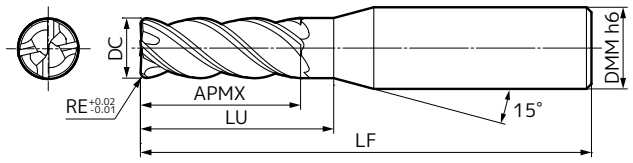
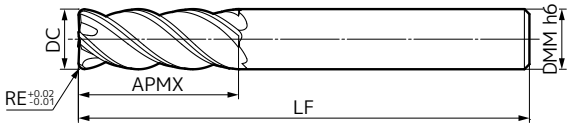


Fig 2



DC	Tolerance
4.0 < D ≤ 6.0	-0.020 to -0.038
6.0 < D	-0.025 to -0.047

Body

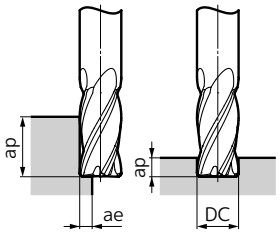
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEHVL 4045W-R05	★	**4.5**	0.5	12.0	14.5	50	6	1
4045W-R10	★	**4.5**	1.0	12.0	14.5	50	6	1
4050W-R05	★	**5.0**	0.5	13.0	15.5	60	6	1
4050W-R10	★	**5.0**	1.0	13.0	15.5	60	6	1
4060W-R10	★	**6.0**	1.0	13.0	—	60	6	2
SSEHVL 4080W-R10	★	**8.0**	1.0	19.0	—	80	8	2
4100W-R10	★	**10.0**	1.0	22.0	—	90	10	2
4100W-R30	★	**10.0**	3.0	22.0	—	90	10	2
4120W-R10	★	**12.0**	1.0	26.0	—	90	12	2
4120W-R30	★	**12.0**	3.0	26.0	—	90	12	2
SSEHVL 4160W-R10	★	**16.0**	1.0	32.0	—	115	16	2
4160W-R30	★	**16.0**	3.0	32.0	—	115	16	2
4200W-R10	★	**20.0**	1.0	40.0	—	125	20	2
4200W-R30	★	**20.0**	3.0	40.0	—	125	20	2
4250W-R10	★	**25.0**	1.0	50.0	—	140	25	2
SSEHVL 4250W-R30	★	**25.0**	3.0	50.0	—	140	25	2

Grade: ACW52

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSEHVL 4000W-R type



Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions DC(mm)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		5,100	480	5,300	600	2,500	200
5.0		4,600	520	4,800	700	2,200	220
6.0		3,800	560	4,000	800	1,800	210
8.0		2,900	520	3,000	780	1,400	200
10.0		2,300	500	2,400	640	1,100	180
12.0		1,900	470	2,000	600	930	160
16.0		1,400	430	1,500	500	700	140
20.0		1,100	330	1,200	260	560	110
25.0		890	270	950	290	450	90
Standard Depth of Cut	ap	1.5DC		1.5DC		1.5DC	
	ae	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions DC(mm)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		4,200	200	3,900	270	1,400	100
5.0		3,800	240	3,500	300	1,300	120
6.0		3,200	260	2,900	300	1,100	140
8.0		2,400	240	2,200	270	800	120
10.0		1,900	220	1,700	250	650	110
12.0		1,600	200	1,400	230	550	100
16.0		1,200	130	1,100	200	400	80
20.0		950	95	890	90	320	60
25.0		760	75	700	70	250	50
Standard Depth of Cut	ap	0.3DC		0.2DC		0.15DC	

SSEH 4000W-R type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | GS HARD Coat | Corner R | 45° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Profiling

Fig 1

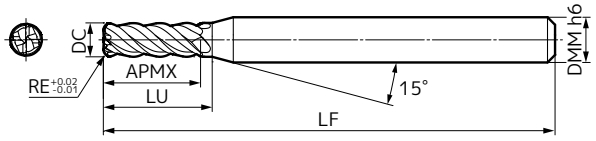
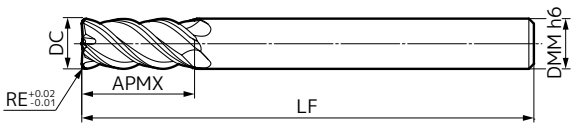


Fig 2



DC	Tolerance
4.0 < D ≤ 6.0	-0.020 to -0.038
6.0 < D	-0.025 to -0.047

Body

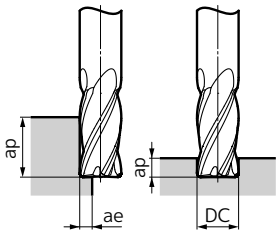
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEH 4045W-R05	★	**4.5**	0.5	12.0	14.5	50	6	1
4050W-R05	★	**5.0**	0.5	13.0	15.5	60	6	1
4060W-R10	★	**6.0**	1.0	13.0	—	60	6	2
4080W-R10	★	**8.0**	1.0	19.0	—	80	8	2
4100W-R10	★	**10.0**	1.0	22.0	—	90	10	2
SSEH 4100W-R30	★	**10.0**	3.0	22.0	—	90	10	2
4120W-R10	★	**12.0**	1.0	26.0	—	90	12	2
4120W-R30	★	**12.0**	3.0	26.0	—	90	12	2
4160W-R10	★	**16.0**	1.0	32.0	—	115	16	2
4160W-R30	★	**16.0**	3.0	32.0	—	115	16	2
SSEH 4200W-R10	★	**20.0**	1.0	40.0	—	125	20	2
4200W-R30	★	**20.0**	3.0	40.0	—	125	20	2
4250W-R10	★	**25.0**	1.0	50.0	—	140	25	2
4250W-R30	★	**25.0**	3.0	50.0	—	140	25	2

Grade: ACW52

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSEH 4000W-R type



Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions DC(mm)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		3,500	350	3,500	280	2,100	170
5.0		3,200	380	3,200	320	1,900	190
6.0		2,700	430	2,700	320	1,600	190
8.0		2,000	400	2,000	280	1,200	170
10.0		1,600	380	1,600	260	1,000	160
12.0		1,300	360	1,300	230	800	140
16.0		1,000	320	1,000	200	600	120
20.0		800	260	800	160	480	100
25.0		640	200	640	130	380	80
Standard Depth of Cut	ap	1.5DC		1.5DC		1.5DC	
	ae	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions DC(mm)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		2,800	140	2,500	200	1,300	100
5.0		2,500	150	2,200	220	1,100	110
6.0		2,100	170	1,900	230	1,000	120
8.0		1,600	160	1,400	200	700	100
10.0		1,300	160	1,100	180	600	100
12.0		1,100	150	900	160	500	90
16.0		800	130	700	140	400	80
20.0		640	100	560	110	320	65
25.0		510	85	450	90	250	50
Standard Depth of Cut	ap	0.3DC		0.2DC		0.15DC	

SSUP 4000ZX-R type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | ZX Coat | Corner R | 40° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

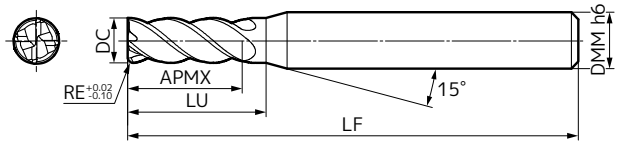
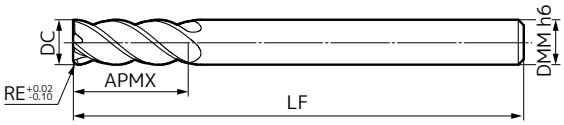


Fig 2



DC	Tolerance
D ≤ 3.0	-0.014 -0.028
3.0 < D ≤ 6.0	-0.020 -0.038
6.0 < D	-0.025 -0.047

Body

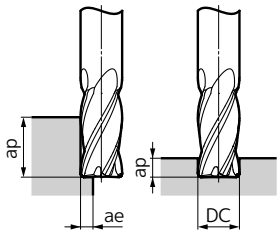
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSUP 4030ZX-R02	★	**3.0**	0.2	8.0	9.5	50	6	1
4030ZX-R05	★	**3.0**	0.5	8.0	9.5	50	6	1
4040ZX-R02	★	**4.0**	0.2	11.0	12.5	50	6	1
4040ZX-R05	★	**4.0**	0.5	11.0	12.5	50	6	1
4040ZX-R10	★	**4.0**	1.0	11.0	12.5	50	6	1
SSUP 4050ZX-R02	★	**5.0**	0.2	13.0	14.5	60	6	1
4050ZX-R05	★	**5.0**	0.5	13.0	14.5	60	6	1
4050ZX-R10	★	**5.0**	1.0	13.0	14.5	60	6	1
4060ZX-R03	★	**6.0**	0.3	13.0	—	60	6	2
4060ZX-R05	★	**6.0**	0.5	13.0	—	60	6	2
SSUP 4060ZX-R10	★	**6.0**	1.0	13.0	—	60	6	2
4060ZX-R15	★	**6.0**	1.5	13.0	—	60	6	2
4080ZX-R03	★	**8.0**	0.3	19.0	—	80	8	2
4080ZX-R05	★	**8.0**	0.5	19.0	—	80	8	2
4080ZX-R10	★	**8.0**	1.0	19.0	—	80	8	2
SSUP 4080ZX-R15	★	**8.0**	1.5	19.0	—	80	8	2
4080ZX-R20	★	**8.0**	2.0	19.0	—	80	8	2
4100ZX-R03	★	**10.0**	0.3	22.0	—	90	10	2
4100ZX-R05	★	**10.0**	0.5	22.0	—	90	10	2
4100ZX-R10	★	**10.0**	1.0	22.0	—	90	10	2
SSUP 4100ZX-R15	★	**10.0**	1.5	22.0	—	90	10	2
4100ZX-R20	★	**10.0**	2.0	22.0	—	90	10	2
4120ZX-R05	★	**12.0**	0.5	26.0	—	90	12	2
4120ZX-R10	★	**12.0**	1.0	26.0	—	90	12	2
4120ZX-R15	★	**12.0**	1.5	26.0	—	90	12	2
SSUP 4120ZX-R20	★	**12.0**	2.0	26.0	—	90	12	2
4120ZX-R30	★	**12.0**	3.0	26.0	—	90	12	2
4160ZX-R10	★	**16.0**	1.0	32.0	—	115	16	2
4160ZX-R15	★	**16.0**	1.5	32.0	—	115	16	2
4160ZX-R20	★	**16.0**	2.0	32.0	—	115	16	2
SSUP 4160ZX-R30	★	**16.0**	3.0	32.0	—	115	16	2
4200ZX-R10	★	**20.0**	1.0	38.0	—	125	20	2
4200ZX-R15	★	**20.0**	1.5	38.0	—	125	20	2
4200ZX-R20	★	**20.0**	2.0	38.0	—	125	20	2
4200ZX-R30	★	**20.0**	3.0	38.0	—	125	20	2

Grade: ACZ50M

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSUP 4000ZX-R type



Recommended Cutting Conditions

1. For groove milling of stainless steel, use 60% of the recommended spindle speed and 40% of the recommended feed rate. (*)
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Side Milling and Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel (*)		Heat-Resistant Alloy Titanium Alloy (20 to 45HRC)	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		9,000	720	6,000	430	4,000	320	5,500	320	2,600	120
4.0		6,600	800	4,500	450	3,000	380	4,000	320	2,000	120
6.0		4,800	960	3,000	480	2,500	380	3,000	480	1,200	120
8.0		3,600	1,000	2,200	610	2,000	400	2,000	520	1,000	140
10.0		2,800	1,000	1,800	610	1,500	400	1,700	550	800	160
12.0		2,400	950	1,500	550	1,200	380	1,500	500	700	140
14.0		2,200	880	1,300	490	1,000	360	1,200	430	600	130
16.0		1,800	650	1,100	420	800	300	1,000	360	500	120
18.0		1,600	580	1,000	360	750	270	900	340	450	110
20.0		1,400	500	900	330	700	250	820	300	400	100
Side Milling	ap	1.5DC									
	ae	0.1DC				0.05DC		0.1DC		0.05DC	
Groove Milling	ap	1.0DC				0.2DC		0.3DC		0.2DC	

SSUPR 4000ZX-R type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Stainless Steel | Cast Iron

4 Flutes | ZX Coat | Corner | 45° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Profiling

Fig 1

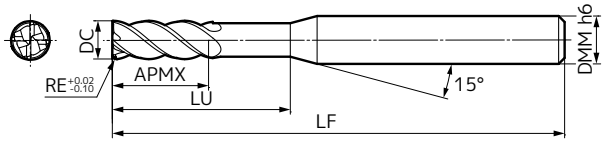


Fig 2

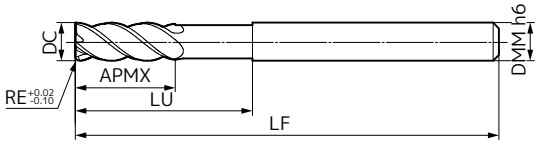
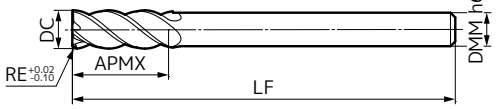


Fig 3



DC	Tolerance
D ≤ 3.0	-0.014 -0.028
3.0 < D ≤ 6.0	-0.020 -0.038
6.0 < D	-0.025 -0.047

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSUPR 4030ZX-R02	★	**3.0**	0.2	4.5	12.0	60	6	1
4030ZX-R05	★	**3.0**	0.5	4.5	12.0	60	6	1
4040ZX-R02	★	**4.0**	0.2	6.0	16.0	60	6	1
4040ZX-R05	★	**4.0**	0.5	6.0	16.0	60	6	1
4050ZX-R02	★	**5.0**	0.2	7.5	20.0	60	6	1
SSUPR 4050ZX-R05	★	**5.0**	0.5	7.5	20.0	60	6	1
4060ZX-R03	★	**6.0**	0.3	9.0	24.0	60	6	2
4060ZX-R05	★	**6.0**	0.5	9.0	24.0	60	6	2
4070ZX-R03	★	**7.0**	0.3	10.5	—	80	6	3
4070ZX-R05	★	**7.0**	0.5	10.5	—	80	6	3
SSUPR 4080ZX-R05	★	**8.0**	0.5	12.0	34.0	80	8	2
4080ZX-R10	★	**8.0**	1.0	12.0	34.0	80	8	2
4090ZX-R05	★	**9.0**	0.5	13.5	—	90	8	3
4090ZX-R10	★	**9.0**	1.0	13.5	—	90	8	3
4100ZX-R05	★	**10.0**	0.5	15.0	42.0	100	10	2
SSUPR 4100ZX-R10	★	**10.0**	1.0	15.0	42.0	100	10	2
4100ZX-R15	★	**10.0**	1.5	15.0	42.0	100	10	2
4110ZX-R05	★	**11.0**	0.5	16.5	—	120	10	3
4110ZX-R10	★	**11.0**	1.0	16.5	—	120	10	3
4110ZX-R15	★	**11.0**	1.5	16.5	—	120	10	3
SSUPR 4120ZX-R05	★	**12.0**	0.5	18.0	50.0	120	12	2
4120ZX-R10	★	**12.0**	1.0	18.0	50.0	120	12	2
4120ZX-R15	★	**12.0**	1.5	18.0	50.0	120	12	2
4130ZX-R05	★	**13.0**	0.5	19.5	—	130	12	3
4130ZX-R10	★	**13.0**	1.0	19.5	—	130	12	3
SSUPR 4130ZX-R15	★	**13.0**	1.5	19.5	—	130	12	3
4160ZX-R10	★	**16.0**	1.0	24.0	66.0	160	16	2
4160ZX-R15	★	**16.0**	1.5	24.0	66.0	160	16	2
4160ZX-R20	★	**16.0**	2.0	24.0	66.0	160	16	2
4170ZX-R10	★	**17.0**	1.0	25.5	—	170	16	3
SSUPR 4170ZX-R15	★	**17.0**	1.5	25.5	—	170	16	3
4170ZX-R20	★	**17.0**	2.0	25.5	—	170	16	3
4200ZX-R10	★	**20.0**	1.0	30.0	82.0	200	20	2
4200ZX-R15	★	**20.0**	1.5	30.0	82.0	200	20	2
4200ZX-R20	★	**20.0**	2.0	30.0	82.0	200	20	2

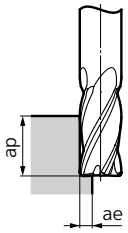
Grade: ACZ50M

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSUPR 4000ZX-R type

Recommended Cutting Conditions

1. The conditions recommended are for endmills with standard overhang lengths of 4xD.
   For overhangs of 5xD or more, please use 70% (max) of recommended conditions.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

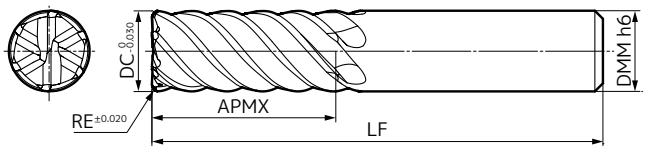
Work Material / Cutting Conditions		Carbon Steel, Cast Iron (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel		Heat-Resistant Alloy Titanium Alloy (20 to 45HRC)	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
3.0		9,000	600	5,300	400	3,100	200	4,200	350	2,600	160
4.0		6,600	600	4,000	400	2,400	200	3,200	350	2,000	160
6.0		4,200	600	2,600	400	1,600	200	2,100	350	1,300	160
8.0		3,200	650	2,000	450	1,200	200	1,600	350	1,000	160
10.0		2,500	650	1,600	450	950	200	1,200	400	800	180
12.0		2,100	650	1,300	450	800	200	1,000	400	650	180
13.0		1,900	650	1,200	450	700	200	950	400	600	180
16.0		1,600	650	1,000	400	600	200	800	350	500	160
17.0		1,500	600	900	400	550	200	750	350	450	160
20.0		1,200	600	800	400	500	200	650	350	400	160
Standard Depth of Cut	ap	1.2DC									
	ae	0.1DC				0.05DC		0.1DC		0.05DC	

GSH 6000SF-R type

Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

6 Flutes | GS HARD Coat | Corner R | 50° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Profiling

Fig 1



Body

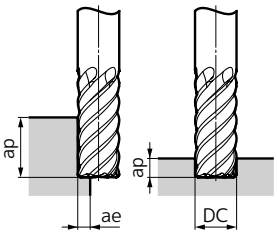
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
GSH 6060SF-R02	★	**6.0**	0.2	13.0	50	6	1
6060SF-R05	★	**6.0**	0.5	13.0	50	6	1
6060SF-R10	★	**6.0**	1.0	13.0	50	6	1
6080SF-R02	★	**8.0**	0.2	19.0	60	8	1
6080SF-R05	★	**8.0**	0.5	19.0	60	8	1
GSH 6080SF-R10	★	**8.0**	1.0	19.0	60	8	1
6100SF-R05	★	**10.0**	0.5	22.0	70	10	1
6100SF-R10	★	**10.0**	1.0	22.0	70	10	1
6100SF-R15	★	**10.0**	1.5	22.0	70	10	1
6100SF-R20	★	**10.0**	2.0	22.0	70	10	1
GSH 6120SF-R05	★	**12.0**	0.5	26.0	75	12	1
6120SF-R10	★	**12.0**	1.0	26.0	75	12	1
6120SF-R15	★	**12.0**	1.5	26.0	75	12	1
6120SF-R20	★	**12.0**	2.0	26.0	75	12	1

Grade: ACF07C

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling and Groove Milling

Work Material / Cutting Conditions		Low Carbon Steel, Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel, Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)		Hardened Steel S 6-5-2-5 (65 to 70HRC)	
DC (mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
6.0		7,500	2,700	6,700	1,930	5,200	1,300	4,100	810	3,700	670	2,600	470
8.0		5,600	2,700	5,000	1,930	3,900	1,300	3,050	810	2,800	670	1,950	470
10.0		4,500	2,700	4,000	1,930	3,100	1,300	2,450	810	2,200	670	1,550	470
12.0		3,750	2,700	3,350	1,930	2,600	1,300	2,050	810	1,850	670	1,300	470
Side Milling	ap	1 to 1.5DC											
	ae	0.1DC				0.05DC				0.02DC			
Groove Milling	ap	0.1DC				0.05DC				Up to 0.05DC Max. 0.5mm			

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions		Low Carbon Steel, Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel, Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)	
DC (mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
6.0		16,000	5,800	16,000	5,800	16,000	5,800	12,000	3,200	8,000	2,000
8.0		12,000	5,800	12,000	5,800	12,000	5,800	9,000	3,200	6,000	2,000
10.0		9,600	5,800	9,600	5,800	9,600	5,800	7,200	3,200	4,800	2,000
12.0		8,000	5,800	8,000	5,800	8,000	5,800	6,000	3,200	4,000	2,000
Standard Depth of Cut	ap	1 to 1.5DC									
	ae	0.1DC		0.05DC		0.05DC		0.02DC		0.01DC	

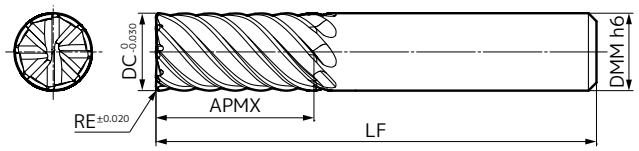
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSH 8000SF-R type

Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

8 Flutes | GS HARD Coat | Corner r | 50° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Profiling

Fig 1



Body

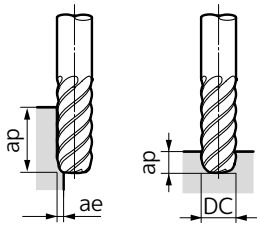
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
GSH 8160SF-R10	★	**16.0**	1.0	32.0	90	16	1
8160SF-R15	★	**16.0**	1.5	32.0	90	16	1
8160SF-R20	★	**16.0**	2.0	32.0	90	16	1
8200SF-R10	★	**20.0**	1.0	38.0	100	20	1
8200SF-R15	★	**20.0**	1.5	38.0	100	20	1
GSH 8200SF-R20	★	**20.0**	2.0	38.0	100	20	1

Grade: ACF07C

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling and Groove Milling

Work Material / Cutting Conditions		Low Carbon Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)		Hardened Steel S 6-5-2-5 (65 to 70HRC)	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
16.0		2,800	2,500	2,500	1,800	1,950	1,220	1,530	760	1,400	630	980	440
20.0		2,250	2,100	2,000	1,540	1,550	1,050	1,230	650	1,100	540	780	380
Side Milling	ap	1 to 1.5DC											
	ae	0.1DC				0.05DC				0.02DC			
Groove Milling	ap	0.1DC				0.05DC				Up to 0.05DC Max. 0.5mm			

Side Milling (Using High Speed Machining Centre)

Work Material / Cutting Conditions		Low Carbon Steel Carbon Steel, Alloy Steel (up to 35HRC)		Medium Hardened Steel Pre-hardened Steel, Die Steel (35 to 45HRC)		Hardened Steel X40CrMoV5-1 (45 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel HS6-5-2 (60 to 65HRC)	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
16.0		6,000	5,400	6,000	5,400	6,000	5,400	4,500	3,000	3,000	1,900
20.0		4,800	4,600	4,800	4,600	4,800	4,600	3,600	2,580	2,400	1,600
Standard Depth of Cut	ap	1 to 1.5DC									
	ae	0.1DC		0.05DC		0.05DC		0.02DC		0.01DC	

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSEHVL 4000-R type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | Uncoated Carbide | Corner R | 42° 45° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Profiling

Fig 1

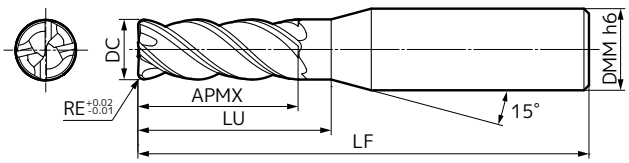
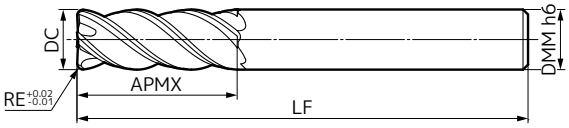


Fig 2



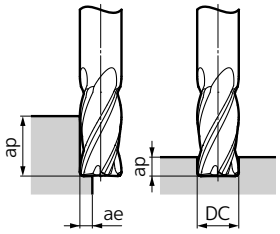
DC	Tolerance
D ≤ 6.0	-0.028 to -0.043
6.0 < D	-0.033 to -0.052

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEHVL 4045-R05	★	**4.5**	0.5	12.0	14.5	50	6	1
4045-R10	★	**4.5**	1.0	12.0	14.5	50	6	1
4050-R05	★	**5.0**	0.5	13.0	15.5	60	6	1
4050-R10	★	**5.0**	1.0	13.0	15.5	60	6	1
4060-R10	★	**6.0**	1.0	13.0	—	60	6	2
SSEHVL 4080-R10	★	**8.0**	1.0	19.0	—	80	8	2
4100-R10	★	**10.0**	1.0	22.0	—	90	10	2
4100-R30	★	**10.0**	3.0	22.0	—	90	10	2
4120-R10	★	**12.0**	1.0	26.0	—	90	12	2
4120-R30	★	**12.0**	3.0	26.0	—	90	12	2
SSEHVL 4160-R10	★	**16.0**	1.0	32.0	—	115	16	2
4160-R30	★	**16.0**	3.0	32.0	—	115	16	2

Grade: EH520



Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.5		2,300	120	4,600	370	1,600	130
5.0		2,000	130	4,100	410	1,500	150
6.0		1,700	130	3,400	400	1,200	140
8.0		1,300	130	2,600	360	900	130
10.0		1,000	130	2,100	340	700	110
12.0		800	110	1,700	300	600	100
16.0		600	90	1,300	260	500	100
Standard Depth of Cut	ap	1.5DC		1.5DC		1.5DC	
	pf	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.5		1,800	50	3,200	250	1,300	110
5.0		1,600	50	2,900	290	1,200	120
6.0		1,400	50	2,400	290	1,000	120
8.0		1,000	50	1,800	250	700	90
10.0		800	50	1,400	230	600	100
12.0		600	50	1,200	210	500	90
16.0		500	40	900	180	400	80
Standard Depth of Cut	ap	0.3DC		0.2DC		0.15DC	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSEH 4000-R type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | Uncoated Carbide | Corner r | 45° Helix Angle | Shoulder Milling | Groove Finishing | Face Milling | Profiling

Fig 1

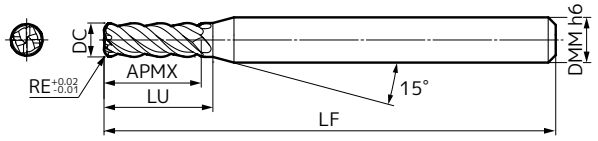
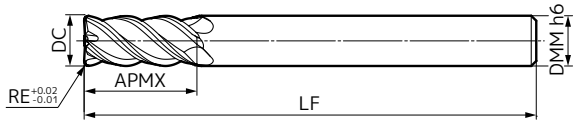


Fig 2



DC	Tolerance
D ≤ 6.0	-0.028 to -0.043
6.0 < D	-0.033 to -0.052

Body

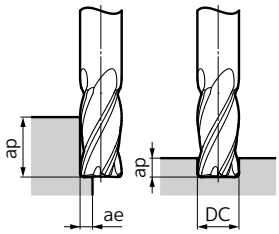
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEH 4045-R05	★	**4.5**	0.5	12.0	14.5	50	6	1
4050-R05	★	**5.0**	0.5	13.0	15.5	60	6	1
4060-R10	★	**6.0**	1.0	13.0	—	60	6	2
4080-R10	★	**8.0**	1.0	19.0	—	80	8	2
4100-R10	★	**10.0**	1.0	22.0	—	90	10	2
SSEH 4100-R30	★	**10.0**	3.0	22.0	—	90	10	2
4120-R10	★	**12.0**	1.0	26.0	—	90	12	2
4120-R30	★	**12.0**	3.0	26.0	—	90	12	2
4160-R10	★	**16.0**	1.0	32.0	—	115	16	2
4160-R30	★	**16.0**	3.0	32.0	—	115	16	2

Grade: EH520

Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions / DC (mm)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.5		1,800	90	3,500	280	1,400	110
5.0		1,600	100	3,200	320	1,300	130
6.0		1,300	100	2,700	320	1,100	130
8.0		1,000	100	2,000	280	800	110
10.0		800	100	1,600	260	600	100
12.0		700	100	1,300	230	500	90
16.0		500	80	1,000	200	400	80
Standard Depth of Cut	ap	1.5DC		1.5DC		1.5DC	
	ae	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions / DC (mm)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.5		1,400	40	2,500	200	1,100	90
5.0		1,300	40	2,200	220	1,000	100
6.0		1,100	40	1,900	230	800	100
8.0		800	40	1,400	200	600	80
10.0		600	40	1,100	180	500	80
12.0		500	40	900	160	400	70
16.0		400	30	700	140	300	60
Standard Depth of Cut	ap	0.3DC		0.2DC		0.15DC	

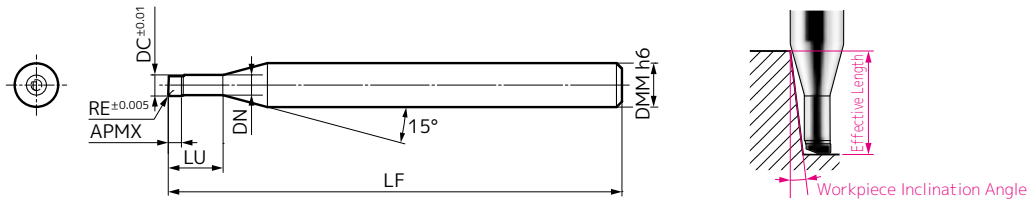
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

NPDRS type

Cemented Carbide | Hard Brittle Materials

1 Flute | Binderless PCD | Corner R | Shoulder Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Effective Length for Workpiece Inclination Angle 0.5°	1°	1.5°	2°	3°	Wiper Edge	Fig
NPDRS 1020R002-006	★	**0.2**	0.02	0.1	0.6	40	0.175	4	0.63	0.65	0.67	0.70	0.75	No	1
1020R005-006	★	**0.2**	0.05	0.1	0.6	40	0.175	4	0.63	0.65	0.67	0.69	0.74	No	1
1030R002-010	★	**0.3**	0.02	0.15	1.0	40	0.27	4	1.04	1.08	1.11	1.15	1.24	No	1
1030R005-010	★	**0.3**	0.05	0.15	1.0	40	0.27	4	1.04	1.08	1.11	1.15	1.23	No	1
1050R005-015	★	**0.5**	0.05	0.25	1.5	40	0.47	4	1.56	1.61	1.66	1.72	1.84	No	1
NPDRS 1050R010-015	★	**0.5**	0.10	0.25	1.5	40	0.47	4	1.56	1.60	1.65	1.71	1.83	No	1
1100R005-030	★	**1.0**	0.05	0.55	3.0	40	0.95	4	3.14	3.24	3.35	3.46	3.72	No	1
1100R010-030	★	**1.0**	0.10	0.55	3.0	40	0.95	4	3.14	3.24	3.34	3.46	3.71	No	1
1100R020-030	★	**1.0**	0.20	0.55	3.0	40	0.95	4	3.14	3.23	3.33	3.44	3.69	No	1
1200R005-040	★	**2.0**	0.05	0.55	4.0	40	1.95	4	4.17	4.31	4.45	4.60	4.94	No	1
NPDRS 1200R010-040	★	**2.0**	0.10	0.55	4.0	40	1.95	4	4.17	4.30	4.44	4.60	4.93	No	1
1200R020-040	★	**2.0**	0.20	0.55	4.0	40	1.95	4	4.17	4.30	4.43	4.58	4.91	No	1

Grade: NPD10

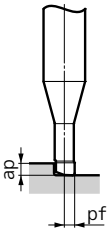
Identification Code

NPDR S 1 020 R002 - 006

Series Code	For Standard Finishing	Number of Flutes	Dia.	Corner Radius	Neck Length

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
DC (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.2	0.6	40,000	100	0.001	0.001
0.3	1.0	40,000	150	0.002	0.001
0.5	1.5	40,000	200	0.003	0.001
1.0	3.0	40,000	400	0.005	0.003
2.0	4.0	40,000	600	0.010	0.005

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

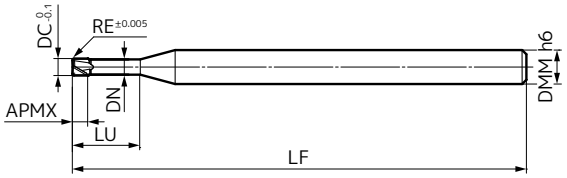
MEMO

BNBR type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Corner R | Shoulder Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Wiper Edge	Fig
BNBR 2D020R005-0054	★	**0.2**	0.05	0.1	0.5	50	0.17	4	No	1
2D030R005-0054	★	**0.3**	0.05	0.15	0.5	50	0.27	4	No	1
2D040R005-0054	★	**0.4**	0.05	0.2	0.5	50	0.37	4	No	1
2D050R005-0054	★	**0.5**	0.05	0.3	0.5	50	0.47	4	No	1
2D050R005-0154	★	**0.5**	0.05	0.3	1.5	50	0.47	4	No	1
BNBR 2D050R005-0254	★	**0.5**	0.05	0.3	2.5	50	0.47	4	No	1
2D050R010-0154	★	**0.5**	0.10	0.3	1.5	50	0.47	4	No	1
2D050R010-0254	★	**0.5**	0.10	0.3	2.5	50	0.47	4	No	1
2D100R005-0304	★	**1.0**	0.05	0.7	3.0	50	0.97	4	Yes	1
2D100R005-0504	★	**1.0**	0.05	0.7	5.0	50	0.97	4	Yes	1
BNBR 2D100R010-0304	★	**1.0**	0.10	0.7	3.0	50	0.97	4	Yes	1
2D100R010-0504	★	**1.0**	0.10	0.7	5.0	50	0.97	4	Yes	1
2D100R020-0304	★	**1.0**	0.20	0.7	3.0	50	0.97	4	Yes	1
2D100R020-0504	★	**1.0**	0.20	0.7	5.0	50	0.97	4	Yes	1
2D100R030-0304	★	**1.0**	0.30	0.7	3.0	50	0.97	4	Yes	1
BNBR 2D100R030-0504	★	**1.0**	0.30	0.7	5.0	50	0.97	4	Yes	1
2D150R010-0454	★	**1.5**	0.10	1.2	4.5	50	1.47	4	Yes	1
2D150R010-0754	★	**1.5**	0.10	1.2	7.5	50	1.47	4	Yes	1
2D150R020-0454	★	**1.5**	0.20	1.2	4.5	50	1.47	4	Yes	1
2D150R020-0754	★	**1.5**	0.20	1.2	7.5	50	1.47	4	Yes	1
BNBR 2D150R030-0454	★	**1.5**	0.30	1.2	4.5	50	1.47	4	Yes	1
2D150R030-0754	★	**1.5**	0.30	1.2	7.5	50	1.47	4	Yes	1
2D200R010-0604	★	**2.0**	0.10	1.5	6.0	50	1.97	4	Yes	1
2D200R020-0604	★	**2.0**	0.20	1.5	6.0	50	1.97	4	Yes	1
2D200R030-0604	★	**2.0**	0.30	1.5	6.0	50	1.97	4	Yes	1
BNBR 2D200R050-0604	★	**2.0**	0.50	1.5	6.0	50	1.97	4	Yes	1

Grade: BNX20

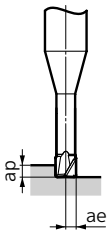
Identification Code

BNBR 2 D050 R010 - 015 4

Series Code	Number of Flutes	Dia.	Corner Radius	Neck Length	Shank Dia.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BNBR type



Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

Work Material			X42Cr13, NAK80, X40CrMoV5-1 (Up to 52HRC)				X170CrVMo18-3-1, X153CrMoV12, X153CrMoV12 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
DC (mm)	RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)
0.2	0.05	0.5	40,000	400	0.005	0.03	40,000	400	0.005	0.03	40,000	250	0.005	0.02
0.3	0.05	0.5	40,000	500	0.010	0.05	40,000	500	0.010	0.05	40,000	300	0.005	0.03
0.4	0.05	0.5	40,000	600	0.015	0.1	40,000	600	0.015	0.1	40,000	400	0.01	0.05
0.5	0.05	0.5	40,000	600	0.02	0.15	40,000	600	0.02	0.15	40,000	400	0.01	0.1
	0.05	1.5	40,000		0.02	0.1	40,000		0.02	0.1	35,000			0.05
	0.1		40,000				40,000				35,000			
	0.05	2.5	40,000		0.01	0.05	40,000		0.01	0.05	35,000			
	0.1		40,000				40,000				35,000			
1.0	0.05	3.0	35,000	800	0.03	0.3	35,000	800	0.03	0.2	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
	0.05	5.0	35,000		0.02	0.2	35,000	800	0.02	0.1	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
1.5	0.1	4.5	26,000	800	0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
	0.1	7.5	26,000		0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
2.0	0.1	6.0	20,000	800	0.03	0.7	20,000	800	0.03	0.7	15,000	600	0.03	0.7
	0.2		20,000				20,000				15,000			
	0.3		20,000				20,000				15,000			
	0.5		20,000				20,000				15,000			

GSXB 20000 type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Ballnose R | 30° Helix Angle | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1

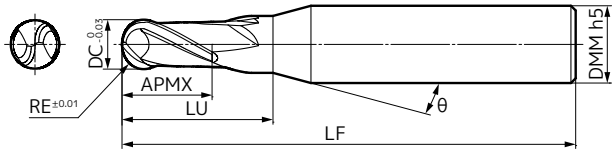
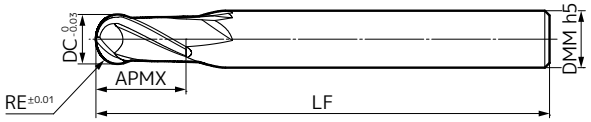


Fig 2



DC	θ
< ø2	10°
ø2 or more	15°

Body

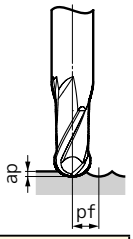
Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXB 20020	★	**0.20**	**0.4**	0.6	0.8	50	4	1
20030	★	**0.30**	**0.6**	0.9	1.2	50	4	1
20050	★	**0.50**	**1.0**	1.5	2.0	50	4	1
20075	★	**0.75**	**1.5**	2.5	3.0	50	4	1
20100	★	**1.00**	**2.0**	3.0	4.0	60	6	1
GSXB 20125	★	**1.25**	**2.5**	4.0	5.0	60	6	1
20150	★	**1.50**	**3.0**	4.5	6.0	60	6	1
20200	★	**2.00**	**4.0**	6.0	8.0	70	6	1
20250	★	**2.50**	**5.0**	7.5	10.0	80	6	1
20300	★	**3.00**	**6.0**	9.0	—	80	6	2
GSXB 20350	★	**3.50**	**7.0**	11.0	20.0	90	8	1
20400	★	**4.00**	**8.0**	12.0	—	90	8	2
20500	★	**5.00**	**10.0**	15.0	—	100	10	2
20600	★	**6.00**	**12.0**	18.0	—	110	12	2
20700	★	**7.00**	**14.0**	21.0	38.0	110	16	1
GSXB 20800	★	**8.00**	**16.0**	24.0	—	140	16	2
20900	★	**9.00**	**18.0**	27.0	50.0	140	20	1
21000	★	**10.00**	**20.0**	30.0	—	160	20	2

Grade: ACB20

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSXB 20000 type



Recommended Cutting Conditions

1. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
2. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Radius Milling

Work Material / Cutting Conditions RE(mm)	Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 50HRC)		Cast Iron Special Cast Iron		Stainless Steel Titanium Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
0.20	50,000	2,100	35,000	1,150	50,000	2,100	50,000	1,750
0.30	50,000	2,500	35,000	1,350	50,000	2,500	50,000	2,100
0.50	50,000	3,000	35,000	1,600	50,000	3,000	50,000	2,500
0.75	35,000	3,000	24,000	1,650	35,000	3,200	34,000	2,500
1.00	27,500	3,000	19,000	1,700	35,000	3,900	26,000	2,500
1.25	22,500	3,000	15,500	1,700	28,000	3,900	21,000	2,500
1.50	19,000	3,000	13,000	1,700	24,000	3,900	17,500	2,500
2.00	17,000	3,800	12,000	2,100	20,000	4,100	15,000	2,700
2.50	15,500	4,300	11,000	2,200	18,000	4,600	12,000	2,500
3.00	14,000	4,700	10,500	2,500	16,500	5,300	10,500	2,500
3.50	12,500	4,200	9,000	2,100	14,000	4,500	9,000	2,200
4.00	11,000	3,500	7,900	1,900	12,500	4,000	7,800	1,900
5.00	9,000	2,800	6,300	1,500	10,500	3,300	6,300	1,500
6.00	7,500	2,400	5,200	1,250	8,700	2,800	5,200	1,250
7.00	6,400	2,100	4,500	1,100	7,400	2,400	4,500	1,100
8.00	5,600	1,800	3,900	950	6,500	2,100	3,900	950
9.00	5,000	1,600	3,500	850	5,800	1,900	3,500	850
10.00	4,500	1,450	3,100	750	5,200	1,700	3,150	750
Standard Depth of Cut ap	0.02DC		0.02DC		0.02DC		0.02DC	
Standard Depth of Cut pf	0.05DC		0.05DC		0.05DC		0.05DC	

GSBH 20000SF type

Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | GS HARD Coat | Ballnose R | 25° Helix Angle | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1

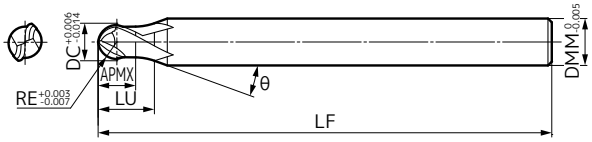
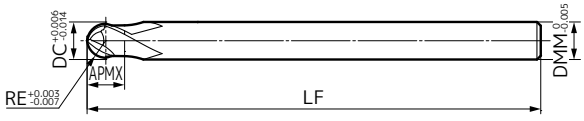


Fig 2



DC	θ
< ø2	10°
ø2 or more	15°

Body

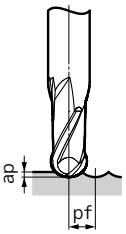
Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSBH 20020SF	★	**0.20**	**0.4**	0.4	0.6	50	4	1
20030SF	★	**0.30**	**0.6**	0.6	0.9	50	4	1
20050SF	★	**0.50**	**1.0**	1.0	1.5	50	4	1
20075SF	★	**0.75**	**1.5**	1.5	2.3	50	4	1
20100SF	★	**1.00**	**2.0**	2.0	3.0	60	6	1
GSBH 20125SF	★	**1.25**	**2.5**	2.5	3.8	60	6	1
20150SF	★	**1.50**	**3.0**	3.0	4.5	60	6	1
20200SF	★	**2.00**	**4.0**	4.0	6.0	70	6	1
20250SF	★	**2.50**	**5.0**	5.0	7.5	80	6	1
20300SF	★	**3.00**	**6.0**	6.0	—	80	6	2
GSBH 20400SF	★	**4.00**	**8.0**	8.0	—	90	8	2
20500SF	★	**5.00**	**10.0**	10.0	—	100	10	2
20600SF	★	**6.00**	**12.0**	12.0	—	110	12	2

Grade: ACF07D

Recommended Cutting Conditions

1. When the depth of cut is lowered, feed rate can be increased further.
2. If the machine is not suited to the recommended spindle speed, please use the maximum spindle speed available. In this case, lower the feed rate by the same ratio.
3. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Radius Milling

Work Material / Cutting Conditions / RE(mm)	Medium Hardened Steel Pre-hardened Steel, Die Steel (40 to 50HRC)		Hardened Steel X40CrMoV5-1 (50 to 55HRC)		Hardened Steel X153CrMoV12 (55 to 60HRC)		Hardened Steel S 6-5-2-5 (60 to 65HRC)	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
0.20	50,000	500	50,000	500	50,000	500	50,000	500
0.30	50,000	800	50,000	800	50,000	800	50,000	700
0.50	50,000	1,400	50,000	1,400	50,000	1,300	42,000	1,000
0.75	50,000	2,000	50,000	2,000	37,300	1,400	28,000	1,000
1.00	38,100	2,100	38,100	2,100	28,000	1,400	21,000	1,000
1.25	30,500	2,100	30,500	2,100	22,400	1,400	16,800	1,000
1.50	25,400	2,100	25,400	2,100	18,700	1,400	14,000	1,000
2.00	19,100	2,100	19,100	2,100	14,000	1,400	10,500	1,000
2.50	15,300	2,100	15,300	2,100	11,200	1,400	8,400	1,000
3.00	12,700	2,100	12,700	2,100	9,300	1,400	7,000	1,000
4.00	9,500	2,100	9,500	2,100	7,000	1,400	5,300	1,000
5.00	7,600	2,100	7,600	2,100	5,600	1,400	4,200	1,000
6.00	6,400	2,100	6,400	2,100	4,700	1,400	3,500	1,000
Standard Depth of Cut ap	0.08DC				0.05DC			
Standard Depth of Cut pf	0.25DC				0.15DC			

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SNB 2000DL type

Aluminum Alloy | Copper Alloy

2 Flutes | AURORA Coat DLC | Ballnose R | 30° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | R-Grooving | Profiling

Fig 1

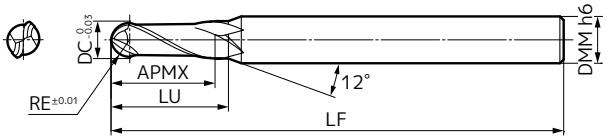
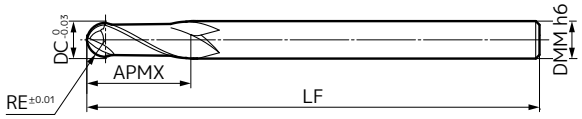


Fig 2



Body

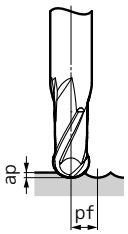
Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SNB 2020DL	★	**1.0**	**2.0**	3.0	5	60	6	1
2030DL	★	**1.5**	**3.0**	4.5	8	80	6	1
2040DL	★	**2.0**	**4.0**	6.0	12	80	6	1
2050DL	★	**2.5**	**5.0**	7.5	14	90	6	1
2060DL	★	**3.0**	**6.0**	9.0	—	100	6	2
SNB 2080DL	★	**4.0**	**8.0**	12.0	—	100	8	2
2100DL	★	**5.0**	**10.0**	15.0	—	120	10	2
2120DL	★	**6.0**	**12.0**	18.0	—	120	12	2
2160DL	★	**8.0**	**16.0**	24.0	—	160	16	2

Grade: DL1200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Radius Milling

Work Material		Aluminum Alloy			
Cutting Conditions		Wet		Dry	
RE(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		48,000	1,500	48,000	1,000
1.5		38,000	2,100	38,000	1,500
2.0		31,000	2,800	31,000	2,000
2.5		24,000	2,800	24,000	2,000
3.0		20,000	2,800	20,000	2,000
4.0		15,000	2,800	15,000	2,000
5.0		13,000	3,000	13,000	2,100
6.0		10,000	3,000	10,000	2,100
8.0		7,700	3,000	7,700	2,100
Standard Depth of Cut	ap	0.1DC		0.1DC	
	pf	0.2DC		0.2DC	

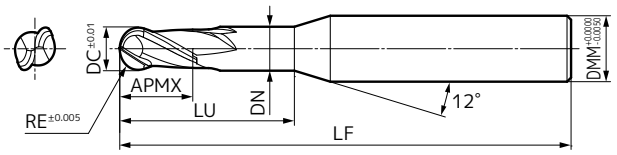
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SNB2 type

Aluminum Alloy | Copper Alloy

2 Flutes | AURORA Coat DLC | Ballnose R | 30° Helix Angle | Shoulder Milling | Groove Finishing | R-Grooving | Profiling | For Copper Electrodes

Fig 1



Body

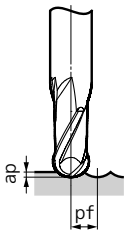
Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
SNB2 0005 0034DL	★	**0.05**	**0.1**	0.1	0.3	45	0.09	4	1
0005 0064DL	★	**0.05**	**0.1**	0.1	0.6	45	0.09	4	1
0010 0054DL	★	**0.10**	**0.2**	0.2	0.5	45	0.18	4	1
0010 0104DL	★	**0.10**	**0.2**	0.2	1.0	45	0.18	4	1
0010 0204DL	★	**0.10**	**0.2**	0.2	2.0	45	0.18	4	1
SNB2 0015 0054DL	★	**0.15**	**0.3**	0.3	0.5	45	0.27	4	1
0015 0104DL	★	**0.15**	**0.3**	0.3	1.0	45	0.27	4	1
0015 0204DL	★	**0.15**	**0.3**	0.3	2.0	45	0.27	4	1
0015 0304DL	★	**0.15**	**0.3**	0.3	3.0	45	0.27	4	1
0020 0104DL	★	**0.20**	**0.4**	0.4	1.0	45	0.36	4	1
SNB2 0020 0204DL	★	**0.20**	**0.4**	0.4	2.0	45	0.36	4	1
0020 0304DL	★	**0.20**	**0.4**	0.4	3.0	45	0.36	4	1
0020 0404DL	★	**0.20**	**0.4**	0.4	4.0	45	0.36	4	1
0025 0104DL	★	**0.25**	**0.5**	0.45	1.0	45	0.45	4	1
0025 0204DL	★	**0.25**	**0.5**	0.45	2.0	45	0.45	4	1
SNB2 0025 0304DL	★	**0.25**	**0.5**	0.45	3.0	45	0.45	4	1
0025 0404DL	★	**0.25**	**0.5**	0.45	4.0	45	0.45	4	1
0030 0204DL	★	**0.30**	**0.6**	0.6	2.0	45	0.54	4	1
0030 0304DL	★	**0.30**	**0.6**	0.6	3.0	45	0.54	4	1
0030 0404DL	★	**0.30**	**0.6**	0.6	4.0	45	0.54	4	1
SNB2 0030 0504DL	★	**0.30**	**0.6**	0.6	5.0	45	0.54	4	1
0030 0604DL	★	**0.30**	**0.6**	0.6	6.0	45	0.54	4	1
0050 0304DL	★	**0.50**	**1.0**	1.5	3.0	45	0.90	4	1
0050 0404DL	★	**0.50**	**1.0**	1.5	4.0	45	0.90	4	1
0050 0604DL	★	**0.50**	**1.0**	1.5	6.0	45	0.90	4	1
SNB2 0050 0804DL	★	**0.50**	**1.0**	1.5	8.0	50	0.90	4	1
0050 1004DL	★	**0.50**	**1.0**	1.5	10.0	50	0.90	4	1
0075 0304DL	★	**0.75**	**1.5**	2.3	3.0	45	1.35	4	1
0075 0604DL	★	**0.75**	**1.5**	2.3	6.0	45	1.35	4	1
0075 1004DL	★	**0.75**	**1.5**	2.3	10.0	50	1.35	4	1
SNB2 0100 0304DL	★	**1.00**	**2.0**	3.0	3.0	50	1.80	4	1
0100 0604DL	★	**1.00**	**2.0**	3.0	6.0	50	1.80	4	1
0100 1004DL	★	**1.00**	**2.0**	3.0	10.0	50	1.80	4	1
0100 1504DL	★	**1.00**	**2.0**	3.0	15.0	60	1.80	4	1
0100 2004DL	★	**1.00**	**2.0**	3.0	20.0	60	1.80	4	1
SNB2 0200 1606DL	★	**2.00**	**4.0**	6.0	16.0	80	3.60	6	1
0200 2006DL	★	**2.00**	**4.0**	6.0	20.0	80	3.60	6	1
0200 3006DL	★	**2.00**	**4.0**	6.0	30.0	80	3.60	6	1

Grade: DL1200

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SNB2 type



Recommended Cutting Conditions

1. For radius processing, reduce the feed to half the recommended feed.
2. Insoluble cutting oil is recommended.
3. Because of the high spindle speeds, runout of the endmill when mounted should be less than 10μm.

Radius Milling

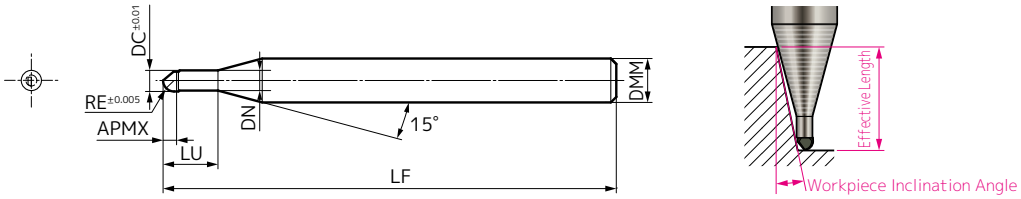
Work Material / Cutting Conditions / ISO Cat. No.	Copper Alloy			
	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Standard depth of cut (mm) ap	ae
SNB2 0005 0034DL	20,000 -50,000	90	0.005	0.005
0005 0064DL		80	0.005	0.005
SNB2 0010 0054DL	20,000 -50,000	350	0.01	0.02
0010 0104DL		350	0.007	0.015
0010 0204DL		200	0.005	0.005
SNB2 0015 0054DL	20,000 -50,000	400	0.015	0.025
0015 0104DL		400	0.01	0.02
0015 0204DL		300	0.007	0.01
0015 0304DL		250	0.005	0.008
SNB2 0020 0104DL	20,000 -30,000	800	0.025	0.05
0020 0204DL		700	0.02	0.03
0020 0304DL		600	0.015	0.02
0020 0404DL		400	0.007	0.015
SNB2 0025 0104DL	20,000 -30,000	1,000	0.04	0.07
0025 0204DL		800	0.03	0.06
0025 0304DL		700	0.02	0.05
0025 0404DL		600	0.015	0.04
SNB2 0030 0204DL	20,000 -30,000	1,400	0.05	0.15
0030 0304DL		1,200	0.04	0.1
0030 0404DL		1,000	0.03	0.07
0030 0504DL		700	0.03	0.06
0030 0604DL		600	0.015	0.03
SNB2 0050 0304DL	20,000 -30,000	3,500	0.2	0.4
0050 0404DL		3,000	0.15	0.4
0050 0604DL		2,500	0.13	0.3
0050 0804DL		2,000	0.07	0.15
0050 1004DL		1,200	0.04	0.07
SNB2 0075 0304DL	20,000	4,000	0.25	0.4
0075 0604DL	20,000	3,200	0.15	0.4
0075 1004DL	20,000	2,000	0.1	0.3
SNB2 0100 0304DL	16,000	4,500	0.4	0.6
0100 0604DL	16,000	3,500	0.35	0.6
0100 1004DL	16,000	3,000	0.25	0.4
0100 1504DL	12,000	2,000	0.15	0.3
0100 2004DL	10,000	1,500	0.1	0.2
SNB2 0200 1606DL	16,000	4,000	0.4	0.8
0200 2006DL	16,000	3,500	0.4	0.8
0200 3006DL	12,000	3,000	0.2	0.4

NPDBS type

Cemented Carbide | Hard Brittle Materials

1 Flute | Binderless PCD | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body (for Standard Finishing)

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Effective Length for Workpiece Inclination Angle 0.5°	1°	1.5°	2°	3°	Fig
NPDBS 1010-004	★	**0.1**	**0.2**	0.1	0.4	40	0.18	4	0.42	0.43	0.44	0.46	0.48	1
1020-008	★	**0.2**	**0.4**	0.2	0.8	40	0.38	4	0.83	0.85	0.87	0.90	0.95	1
1030-010	★	**0.3**	**0.6**	0.3	1.0	40	0.58	4	1.03	1.06	1.08	1.11	1.17	1
1050-020	★	**0.5**	**1.0**	0.5	2.0	40	0.95	4	2.10	2.15	2.20	2.26	2.39	1
1100-030	★	**1.0**	**2.0**	1.0	3.0	40	1.95	4	3.11	3.18	3.25	3.33	3.51	1

Grade: NPD10

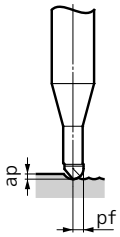
Identification Code

NPDB S 1 010 - 004

Series Code	For Standard Finishing	Number of Flutes	Ballnose Radius	Neck Length
NPDB	S	1	010	004

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.1	0.4	40,000	100	0.001	0.001
0.2	0.8	40,000	150	0.002	0.001
0.3	1.0	40,000	200	0.003	0.001
0.5	2.0	40,000	400	0.005	0.003
1.0	3.0	40,000	600	0.010	0.005

*Radius accuracy inspection report is included inside the case. I131
*Long neck type is also available depending on the size. Please consult us separately.

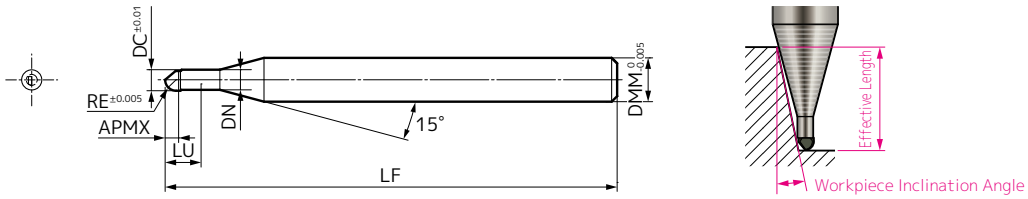
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

NPDB type

Cemented Carbide | Hard Brittle Materials

1 Flute | Binderless PCD | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body (for Precise Finishing)

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Effective Length for Workpiece Inclination Angle 0.5°	1°	1.5°	2°	3°	Fig
NPDB 1010-004	★	**0.1**	**0.2**	0.1	0.4	40	0.18	4	0.42	0.43	0.44	0.46	0.48	1
1020-008	★	**0.2**	**0.4**	0.2	0.8	40	0.38	4	0.83	0.85	0.87	0.90	0.95	1
1030-010	★	**0.3**	**0.6**	0.3	1.0	40	0.58	4	1.03	1.06	1.08	1.11	1.17	1
1050-020	★	**0.5**	**1.0**	0.5	2.0	40	0.95	4	2.10	2.15	2.20	2.26	2.39	1
1100-030	★	**1.0**	**2.0**	1.0	3.0	40	1.95	4	3.11	3.18	3.25	3.33	3.51	1

Grade: NPD10

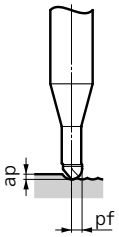
Identification Code

NPDB 1 010 - 004

Series Code	Number of Flutes	Ballnose Radius	Neck Length

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.1	0.4	40,000	100	0.001	0.001
0.2	0.8	40,000	150	0.002	0.001
0.3	1.0	40,000	200	0.003	0.001
0.5	2.0	40,000	400	0.005	0.003
1.0	3.0	40,000	600	0.010	0.005

*Radius accuracy inspection report is included inside the case. I131
*Long neck type is also available depending on the size. Please consult us separately.

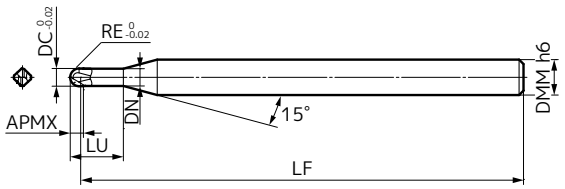
★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SDCB type

Cemented Carbide | Hard Brittle Materials

2 Flutes | SUMIDIA Coat | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body (For Rough/Medium Finishing)

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
SDCB 2R050-015	★	**0.5**	**1.0**	0.6	1.5	50	0.94	4	1
2R050-020	★	**0.5**	**1.0**	0.6	2.0	50	0.94	4	1
2R050-030	★	**0.5**	**1.0**	0.6	3.0	50	0.94	4	1
2R050-050	★	**0.5**	**1.0**	0.6	5.0	50	0.94	4	1
SDCB 2R100-025	★	**1.0**	**2.0**	1.4	2.5	50	1.92	4	1
2R100-040	★	**1.0**	**2.0**	1.4	4.0	50	1.92	4	1
2R100-060	★	**1.0**	**2.0**	1.4	6.0	50	1.92	4	1
2R100-100	★	**1.0**	**2.0**	1.4	10.0	50	1.92	4	1

Grade: DCM20

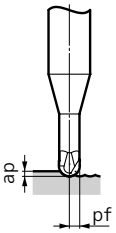
Identification Code

SDCB 2 R050 - 015

SDCB: Series Code | 2: Number of Flutes | R050: Ballnose Radius | 015: Neck Length

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.5	1.5	30,000	300	0.05	0.25
1.0	2.5	30,000	300	0.10	0.30

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

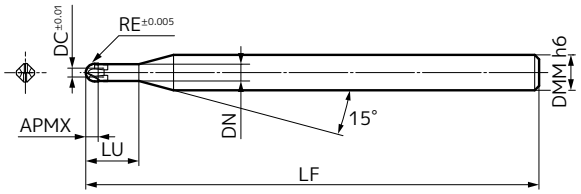
MEMO

BNBP type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
BNBP 2R020-0124	★	**0.20**	**0.4**	0.3	1.2	50	0.37	4	1
2R020-0126	★	**0.20**	**0.4**	0.3	1.2	50	0.37	6	1
2R020-0204	★	**0.20**	**0.4**	0.3	2.0	50	0.37	4	1
2R020-0304	★	**0.20**	**0.4**	0.3	3.0	50	0.37	4	1
2R020-0404	★	**0.20**	**0.4**	0.3	4.0	50	0.37	4	1
BNBP 2R030-0154	★	**0.30**	**0.6**	0.4	1.5	50	0.57	4	1
2R030-0156	★	**0.30**	**0.6**	0.4	1.5	50	0.57	6	1
2R030-0204	★	**0.30**	**0.6**	0.4	2.0	50	0.57	4	1
2R030-0304	★	**0.30**	**0.6**	0.4	3.0	50	0.57	4	1
2R030-0404	★	**0.30**	**0.6**	0.4	4.0	50	0.57	4	1
BNBP 2R030-0504	★	**0.30**	**0.6**	0.4	5.0	50	0.57	4	1
2R030-0604	★	**0.30**	**0.6**	0.4	6.0	50	0.57	4	1
2R050-0254	★	**0.50**	**1.0**	0.6	2.5	50	0.97	4	1
2R050-0256	★	**0.50**	**1.0**	0.6	2.5	50	0.97	6	1
2R050-0304	★	**0.50**	**1.0**	0.6	3.0	50	0.97	4	1
BNBP 2R050-0404	★	**0.50**	**1.0**	0.6	4.0	50	0.97	4	1
2R050-0604	★	**0.50**	**1.0**	0.6	6.0	50	0.97	4	1
2R050-0804	★	**0.50**	**1.0**	0.6	8.0	50	0.97	4	1
2R075-0404	★	**0.75**	**1.5**	0.9	4.0	50	1.47	4	1
2R075-0406	★	**0.75**	**1.5**	0.9	4.0	50	1.47	6	1
BNBP 2R100-0554	★	**1.00**	**2.0**	1.4	5.5	50	1.97	4	1
2R100-0556	★	**1.00**	**2.0**	1.4	5.5	50	1.97	6	1
2R100-0804	★	**1.00**	**2.0**	1.4	8.0	50	1.97	4	1

Grade: BN350

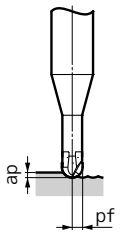
Identification Code

BNBP 2 R030 - 015 4

Series Code	Number of Flutes	Ballnose Radius	Neck Length	Shank Dia.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BNBP type



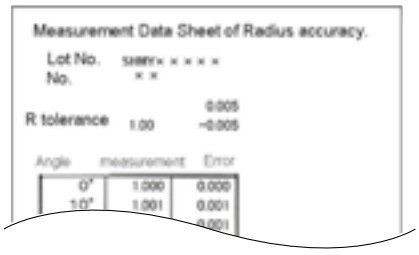
Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

Work Material		X42Cr13, NAK80, X40CrMoV5-1 (Up to 52HRC)				X170CrVMo18-3-1, X153CrMoV12, X153CrMoV12 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.2	1.2	40,000	1,000	0.005	0.010	40,000	800	0.005	0.010	40,000	600	0.005	0.005
	2.0	40,000	800	0.005	0.010	40,000	600	0.005	0.010	40,000	400	0.005	0.005
	3.0	40,000	600	0.005	0.010	40,000	500	0.005	0.010	40,000	300	0.005	0.005
	4.0	40,000	500	0.005	0.010	40,000	400	0.005	0.005	40,000	200	0.005	0.005
0.3	1.5	40,000	1,600	0.020	0.020	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020
	2.0	40,000	1,500	0.010	0.020	40,000	1,300	0.010	0.020	40,000	1,100	0.010	0.010
	3.0	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020	40,000	1,000	0.010	0.010
	4.0	30,000	1,200	0.010	0.010	30,000	1,000	0.010	0.010	30,000	700	0.005	0.010
	5.0	30,000	800	0.010	0.010	30,000	700	0.005	0.010	30,000	600	0.005	0.005
	6.0	30,000	600	0.005	0.010	30,000	500	0.005	0.005	30,000	400	0.005	0.005
0.5	2.5	40,000	2,800	0.040	0.050	40,000	2,800	0.030	0.040	40,000	2,200	0.020	0.030
	3.0	40,000	2,600	0.040	0.050	40,000	2,600	0.030	0.040	40,000	2,100	0.020	0.030
	4.0	40,000	2,400	0.030	0.050	40,000	2,400	0.020	0.030	40,000	2,000	0.020	0.020
	6.0	25,000	1,500	0.020	0.030	25,000	1,500	0.010	0.020	25,000	1,300	0.010	0.010
	8.0	16,000	1,200	0.020	0.020	16,000	1,100	0.010	0.020	16,000	850	0.010	0.010
0.75	4.0	32,000	2,400	0.030	0.030	32,000	2,200	0.020	0.030	32,000	2,000	0.020	0.020
1.0	5.5	40,000	4,000	0.050	0.050	40,000	4,000	0.030	0.030	40,000	3,000	0.020	0.030
	8.0	32,000	3,000	0.030	0.050	32,000	2,600	0.020	0.030	32,000	2,200	0.010	0.020

■ Radius Accuracy Inspection Test Results

Radius accuracy inspection report is attached as below with the ballnose type.


Measurement Data Sheet of Radius accuracy.

Lot No.

No.

R tolerance 1.00 0.005 −0.005

Angle	measurement	Error
0°	1.000	0.000
1.0°	1.001	0.001

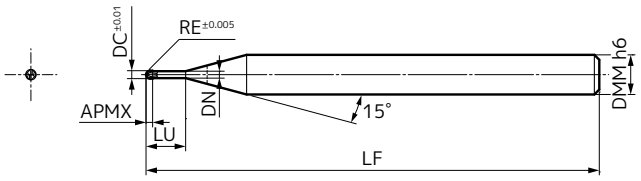


BNBC type

Copper Alloy

2 Flutes | CBN | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
BNBC 2R010-0034	★	**0.1**	**0.2**	0.2	0.3	50	0.17	4	1
2R010-0104	★	**0.1**	**0.2**	0.2	1.0	50	0.17	4	1
2R020-0054	★	**0.2**	**0.4**	0.3	0.5	50	0.37	4	1
2R020-0204	★	**0.2**	**0.4**	0.3	2.0	50	0.37	4	1
2R030-0104	★	**0.3**	**0.6**	0.4	1.0	50	0.57	4	1
BNBC 2R030-0304	★	**0.3**	**0.6**	0.4	3.0	50	0.57	4	1
2R050-0304	★	**0.5**	**1.0**	0.6	3.0	50	0.97	4	1

Grade: BN700

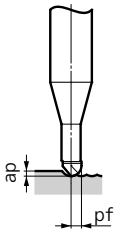
Identification Code

BNBC 2 R030 - 010 4

Series Code | Number of Flutes | Ballnose Radius | Neck Length | Shank Dia.

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.



Side Milling

Work Material / Cutting Conditions / ISO Cat. No.	Copper Alloy			
	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Standard depth of cut (mm) ap	pf
BNBC 2R010-0034	20,000 -50,000	350	0.01	0.02
2R010-0104		350	0.007	0.015
BNBC 2R020-0054	20,000 -50,000	800	0.025	0.05
2R020-0204		700	0.02	0.03
BNBC 2R030-0104	20,000 -50,000	1,400	0.05	0.15
2R030-0304		1,200	0.04	0.1
BNBC 2R050-0304	20,000 -50,000	2,200	0.15	0.35

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

GSXSLT 30000C-1.5D type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | GSX Coat | Gash Land | 40° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

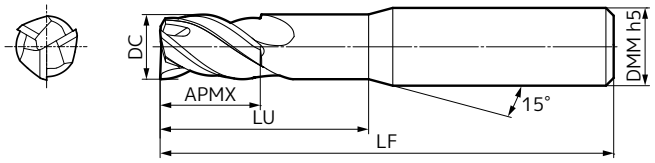
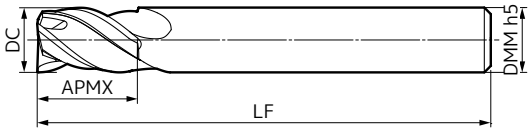


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXSLT 30100C-1.5D	★	1.0	1.5	2.5	40	4	1
30150C-1.5D	★	1.5	2.3	3.3	40	4	1
30200C-1.5D	★	2.0	3.0	4.0	40	4	1
30250C-1.5D	★	2.5	3.8	4.8	40	4	1
30300C-1.5D	★	3.0	4.5	6.0	45	6	1
GSXSLT 30400C-1.5D	★	4.0	6.0	7.5	45	6	1
30500C-1.5D	★	5.0	7.5	9.5	50	6	1
30600C-1.5D	★	6.0	9.0	—	50	6	2
30700C-1.5D	★	7.0	11.0	13.0	60	8	1
30800C-1.5D	★	8.0	12.0	—	60	8	2
GSXSLT 30900C-1.5D	★	9.0	14.0	16.0	70	10	1
31000C-1.5D	★	10.0	15.0	—	70	10	2
31200C-1.5D	★	12.0	18.0	—	75	12	2

Grade: ACF20

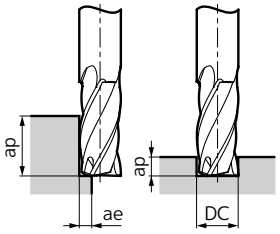
Identification Code

GSXSLT 3 0100 C - 1.5D

Series Code	Number of Flutes	Dia.	Corner Style C: Gash Land	Cutting Edge Length

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GSXSLT 3000C-1.5D type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. Use step machining of 0.1 DC when drilling stainless steel, heat-resistant alloy, and titanium alloy.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0		11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0		6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0		4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0		3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0		2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0		2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard Depth of Cut	ap	1.5DC										1.0DC					
	ae	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0		11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0		6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0		4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0		3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0		2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0		2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut	ap	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

Drilling

Work Material / Cutting Conditions	Structural Steel SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Heat-Resistant Alloy Titanium Alloy	
DC(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	70	19,600	90	19,600	90	18,300	60	12,700	40	9,000	25	11,000	20	4,500	10
2.0	11,200	90	11,200	120	11,200	120	10,500	80	7,300	50	5,300	30	6,400	25	2,650	15
4.0	6,400	130	6,400	160	6,400	160	6,000	110	4,200	70	3,000	40	3,600	30	1,500	20
6.0	4,600	160	4,600	200	4,600	200	4,300	130	3,000	80	2,200	50	2,650	40	1,150	20
8.0	3,400	160	3,400	200	3,400	200	3,200	130	2,200	80	1,600	50	2,000	40	800	20
10.0	2,800	160	2,800	200	2,800	200	2,600	130	1,800	80	1,300	50	1,600	40	650	20
12.0	2,300	160	2,300	200	2,300	200	2,200	130	1,500	80	1,100	50	1,300	40	500	20

SSUP 3000ZX type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | ZX Coat | Gash Land | 50° Helix Angle | Shoulder Milling | Groove Milling | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

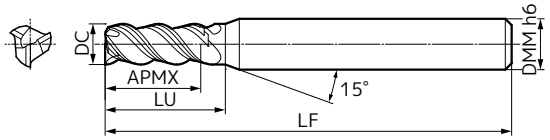


Fig 2

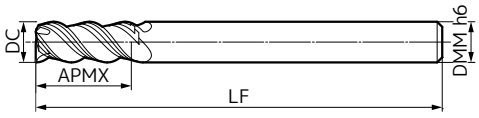
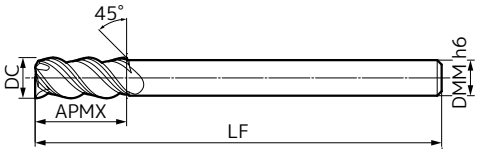


Fig 3



DC	Tolerance
D ≤ 3.0	-0.014 -0.028
3.0 < D ≤ 6.0	-0.020 -0.038
6.0 < D	-0.025 -0.047

Body

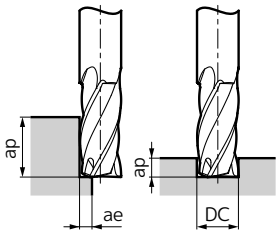
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSUP 3020ZX	★	**2.0**	6.0	7.0	50	4	1
3025ZX	★	**2.5**	8.0	9.0	50	4	1
3030ZX	★	**3.0**	8.0	9.5	50	6	1
3035ZX	★	**3.5**	10.0	11.5	50	6	1
3040ZX	★	**4.0**	11.0	12.5	50	6	1
SSUP 3045ZX	★	**4.5**	11.0	12.5	50	6	1
3050ZX	★	**5.0**	13.0	14.5	60	6	1
3055ZX	★	**5.5**	13.0	14.5	60	6	1
3060ZX	★	**6.0**	13.0	—	60	6	2
3065ZX	★	**6.5**	16.0	18.0	70	8	1
SSUP 3070ZX	★	**7.0**	16.0	18.0	70	8	1
3075ZX	★	**7.5**	16.0	18.0	70	8	1
3080ZX	★	**8.0**	19.0	—	80	8	2
3085ZX	★	**8.5**	19.0	21.5	90	10	1
3090ZX	★	**9.0**	19.0	21.5	90	10	1
SSUP 3095ZX	★	**9.5**	19.0	21.5	90	10	1
3100ZX	★	**10.0**	22.0	—	90	10	2
3110ZX	★	**11.0**	22.0	24.5	90	12	1
3120ZX	★	**12.0**	26.0	—	90	12	2
3130ZX	★	**13.0**	26.0	—	100	12	3
SSUP 3140ZX	★	**14.0**	26.0	28.5	110	16	1
3150ZX	★	**15.0**	26.0	28.5	110	16	1
3160ZX	★	**16.0**	32.0	—	115	16	2

Grade: ACZ50M

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SSUP 3000ZX type



Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Side Milling and Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel (*)		Heat-Resistant Alloy Titanium Alloy (20 to 45HRC)	
DC(mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		9,000	540	6,000	320	4,000	240	5,500	240	2,600	90
4.0		6,600	600	4,500	340	3,000	280	4,000	240	2,000	90
6.0		4,800	720	3,000	360	2,500	280	3,000	360	1,200	90
8.0		3,600	750	2,200	460	2,000	300	2,000	390	1,000	100
10.0		2,800	750	1,800	460	1,500	300	1,700	410	800	120
12.0		2,400	710	1,500	410	1,200	280	1,500	380	700	100
14.0		2,200	660	1,300	370	1,000	270	1,200	320	600	95
16.0		1,800	490	1,100	320	800	230	1,000	270	500	90
Side Milling	ap	1.5DC									
	ae	0.1DC				0.05DC		0.1DC		0.05DC	
Groove Milling	ap	1.0DC				0.2DC		0.3DC		0.2DC	

1. For groove milling of stainless steel, use 60% of the recommended spindle speed and 40% of the recommended feed rate. (*)
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Drilling

Work Material / Cutting Conditions	Carbon Steel, Cast Iron (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel		Heat-Resistant Alloy Titanium Alloy (20 to 45HRC)	
DC(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0	9,000	150	6,000	100	4,000	60	6,400	25	2,600	20
4.0	6,600	250	4,500	170	3,000	80	3,600	30	2,000	40
6.0	4,800	300	3,000	200	2,500	110	2,650	40	1,200	40
8.0	3,600	300	2,200	200	2,000	120	2,000	40	1,000	50
10.0	2,800	300	1,800	200	1,500	120	1,600	40	800	50
12.0	2,400	300	1,500	200	1,200	120	1,300	40	700	50
14.0	2,200	250	1,300	150	1,000	80	1,150	35	600	40
16.0	1,800	200	1,100	120	800	60	1,000	35	500	30

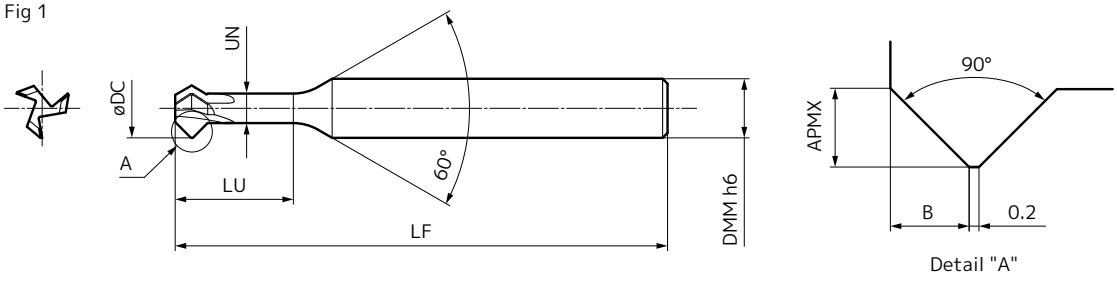
1. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
2. Supply water-soluble coolant when machining stainless steel, heat-resistant alloy and titanium alloy. Use dry machining (air blow) for all other work materials.

AVIC type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel / Die Steel | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron | Aluminum Alloy | Copper Alloy

New | 3 Flutes | GS HARD Coat | Uncoated Carbide | Sharp Corner | 30° Helix Angle | Chamfering

Fig 1



Body

Dimensions (mm)

	ISO Cat. No.	Stock: KH26 for Titanium Alloys	Stock: ACF07C for Ni-based Heat-resistant Alloys	Dia. DC	Cutting Edge Length B	Cutting Edge Depth APMX	Neck Dia. UN	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
Metric	**AVIC 302000-45-0.4(E)**	★	★	**2.0**	0.5	0.4	1.0	4	40	4	1
	303000-45-0.6(E)	★	★	**3.0**	0.7	0.6	1.6	6	40	4	1
	304000-45-0.8(E)	★	★	**4.0**	0.9	0.8	2.2	8	50	4	1
	305000-45-1.0(E)	★	★	**5.0**	1.2	1.0	2.6	10	50	6	1
	306000-45-1.4(E)	★	★	**6.0**	1.6	1.4	3.0	12	50	6	1
	308000-45-1.5(E)	★	★	**8.0**	1.7	1.5	4.6	16	60	8	1
	310000-45-1.7(E)	★	★	**10.0**	1.9	1.7	6.0	20	70	10	1
	312000-45-2.0(E)	★	★	**12.0**	2.2	2.0	7.5	24	70	12	1
Inch	**AVIC 302383-45-0.4(E)**	★	★	**2.383**	0.5	0.4	1.3	3.9	38.1	3.175	1
	303175-45-0.6(E)	★	★	**3.175**	0.7	0.6	1.6	6.3	38.1	3.175	1
	303969-45-0.8(E)			**3.969**	0.9	0.8	2.1	7.9	50.8	4.763	1
	304763-45-1.0(E)	★	★	**4.763**	1.2	1.0	2.4	9.5	50.8	4.763	1
	306350-45-1.4(E)	★	★	**6.350**	1.6	1.4	3.0	12.7	50.8	6.350	1
	307938-45-1.5(E)	★	★	**7.938**	1.7	1.5	4.6	15.8	63.5	7.938	1
	309525-45-1.7(E)	★	★	**9.525**	1.9	1.7	5.6	20.6	76.2	9.525	1
	312700-45-2.0(E)			**12.700**	2.2	2.0	8.0	23.8	76.2	12.700	1

*Add E as the part number suffix for ACF07C

Grades: Uncoated: KH26 Coated: ACF07C

Recommended Cutting Conditions

Work Material / Cutting Conditions	Structural Steel, Carbon Steel SS, SC		Stainless Steel X5CrNi18-10, X5CrNiMo17-12-2		Titanium Alloy		Ni-based Heat-resistant Alloy	
DC(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0	11,100	1,700	8,000	720	4,800	430	3,200	190
3.0	7,400	1,100	5,300	480	3,200	290	2,100	130
4.0	5,600	840	4,000	360	2,400	220	1,600	100
5.0	4,500	670	3,200	290	1,900	170	1,300	80
6.0	3,700	560	2,700	240	1,600	140	1,100	60
8.0	2,800	420	2,000	180	1,200	110	800	50
10.0	2,200	330	1,600	140	960	90	640	40
12.0	1,900	280	1,300	120	800	70	530	30

1. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
2. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

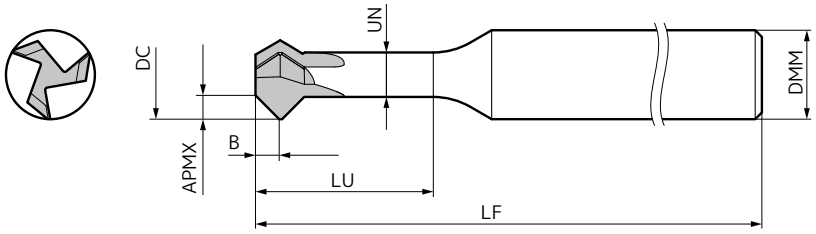
Chamfering Endmills AVIC type Design Inquiry Sheet

After filling in the required dimensions and other information, contact our nearest sales office or distributor.

Feel free to contact us with other requests as well.

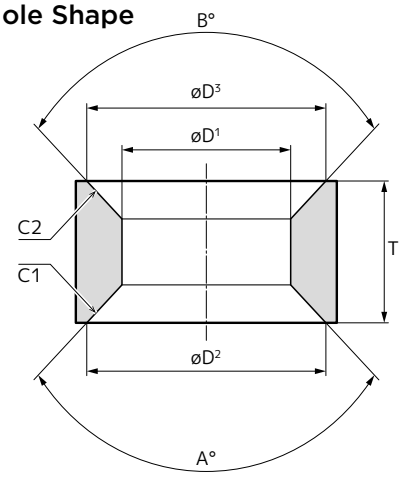
Company Name/Contact

■ Tool Shape



Part	Value
Work Material	
DC	
B	
APMX	
UN	
LU	
LF	
DMM	
Number of Flutes	

■ Workpiece: Hole Shape



Part	Value
Work Material	
Workpiece	☐ Hole Shape ☐ Ext. Shape
øD1	
øD2	
øD3	
A	
B	
C1	
C2	
T	

■ Workpiece: External Shape



Drills J

J1 to J235



		Drill Selection Guide J2-1
		Application Range of Major Drills J3
		Drill Coatings J5
Solid Carbide Drill	General-purpose	MULTIDRILL NeXEO MDE series J9
		SumiDRILL SDP series J27
	For Flat Bottom Hole	Flat MULTIDRILL MDF series J33
	For High-efficiency Drilling of Steel and Cast Iron (New)	MULTIDRILL SDPX series J45
	For High Efficiency	Super MULTIDRILL GS series / HGS series ... J57
	For Stainless Steel	MULTIDRILL MDM series J69
		SumiDRILL SDM series J79
	For Cast Iron	Strong MULTIDRILL HX series J85
	For High-efficiency, Deep Holes	Super MULTIDRILL XHGS series / PHT series ... J93
	For Non-Ferrous Metals	MULTIDRILL MDA series J103
	For Non-Ferrous Metals	Super MULTIDRILL NHGS series J111
	For CFRP	SUMIDIA Coat Drills SDC series J116
	For Aluminum Alloy	SUMIDIA Drills DAL series / DDL series J117
	For Small Diameter Deep Holes	Micro Long Drill MLDH-L type / MLDH-P type J118
	For Very Small Holes	Micro MULTIDRILL MDUS series / MDUP series /
	For Very Small Holes	MINI-MULTIDRILL MDSS series J121
		MULTIDRILL Made-to-Order Design Request Sheet ... J123
Indexable Head type Drill	Indexable Head type Drills	SEC-MULTIDRILL SMD series J125
		Heads for General Steel / Cast Iron / Exotic Alloys: MTL type / MSL type / MEL type J126
		NAL Type DLC Coated for non-ferrous and Aluminum alloys J139
		Heads for Flat Bottom Hole: MFS type ... J149
		Heads for Rolled Steel for Welded Structures (for welded structures): MB type ... J157
		SEC-MULTIDRILL Made-to-Order Design Request Sheet ... J159
Indexable Insert type Drill	General-purpose (New)	SumiDrill GDX series J161
	General-purpose (Expansion)	SumiDrill WDX series J181
	For Deep Drilling / Pocketing	SEC-Plunge Drill PDL series/SEC-Plunge Mill PCT series ... J195
Solid Reamer	For High-efficiency, High-precision Reaming	SumiReamer SSR series J201
Indexable Insert type Reamer	For High-efficiency Reaming	SumiReamer SR series J211
		SR Reamer Small J213
		SR Reamer Medium J215
		SR Reamer Large J223

Stock Markings and Symbols

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

Drill Selection Guide

Applications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance	Ref. Page
General-purpose	P M K S	MULTIDRILL NeXEO **MDE-E** type	MDEOOOOSOOE02	ø1.0 to 20.0		J14
			MDEOOOOSOOE04	ø1.0 to 20.0		
	P M K N S	MULTIDRILL NeXEO **MDE-H** type	MDEOOOOSOOH03	ø1.0 to 20.0		J20
			MDEOOOOSOOH05	ø1.0 to 20.0		
			MDEOOOOSOOH08	ø1.0 to 16.0		
High Efficiency	P M K N S H	SumiDrill Power **SDP** series	SDPOOOOU3HAK	ø3.0 to 16.0		J27
			SDPOOOOU5HAK	ø3.0 to 16.0		
			SDPOOOOU7HAK	ø3.0 to 16.0		
	P M S	SumiDrill Power **SDM** series	SDMOOOOU3HAK	ø3.0 to 16.0		J79
			SDMOOOOU5HAK	ø3.0 to 16.0		
	P K	SumiDrill Power **SDPX** series	SDPXOOOOSOOH03	ø3.0 to 16.0		J45
			SDPXOOOOSOOH05	ø3.0 to 16.0		
			SDPXOOOOSOOH07	ø3.0 to 16.0		
	P K	Super MULTIDRILL **GS** series	MDWOOOOGS2	ø1.0 to 20.0		J57
			MDWOOOOGS4	ø1.0 to 20.0		
	P M K S	Super MULTIDRILL **HGS** series	MDWOOOOHGS3	ø1.5 to 20.0		J57
			MDWOOOOHGS5	ø1.5 to 20.0		
			MDWOOOOHGS8	ø1.5 to 16.0		
Flat Bottom Hole	P M K N	Flat MULTIDRILL **MDF** series	MDFOOOOS2D	ø0.3 to 20.0		J33
			MDFOOOOL2D	ø3.0 to 20.0		
			MDFOOOOH3D	ø3.0 to 16.0		
			MDFOOOOH5D	ø3.0 to 16.0		
Deep Hole	P M K	Super MULTIDRILL **XHGS** series	MDWOOOOXHGS10	ø2.1 to 16.0		J93
			MDWOOOOXHGS12	ø2.5 to 16.0		
			MDWOOOOXHGS15	ø2.1 to 16.0		
			MDWOOOOXHGS20	ø2.1 to 14.0		
			MDWOOOOXHGS25	ø2.1 to 12.0		
			MDWOOOOXHGS30	ø2.1 to 10.0		
		Guide Drill for Long Drills **PHT** series	MDWOOOOPHT	ø2.1 to 16.0		J93
Thin Plates	P M K S	MULTIDRILL NeXEO **MDE-E** type for Hub Drilling	MDEOOOOSOOE02H	ø8.8 to ø13.97		J14
Stainless Steel	M S	MULTIDRILL **MDM** series	MDMOOOOSOOH03	ø3.0 to ø16.0		J69
			MDMOOOOSOOH05	ø3.0 to ø16.0		
Cast Iron	K	Strong MULTIDRILL **HX** series	MDWOOOOHX3	ø3.0 to 20.0		J85
			MDWOOOOHX5	ø3.0 to 20.0		
			MDWOOOOHX8	ø3.0 to 18.0		
Non-Ferrous Metal	N	MULTIDRILL **MDA** series	MDAOOOOSOOH03	ø1.0 to 12.0		J103
			MDAOOOOSOOH05	ø1.0 to 12.0		
			MDAOOOOSOOH10	ø1.0 to 12.0		
			MDAOOOOSOOH15	ø1.0 to 3.0		
			MDAOOOOSOOH20	ø1.0 to 3.0		
		Super MULTIDRILL **NHGS** series	MDWOOOONHGS3	ø3.0 to 16.0		J111
			MDWOOOONHGS5	ø3.0 to 16.0		
			MDWOOOONHGS10	ø3.0 to 16.0		
		SUMIDIA Drills **DAL** series	DALOOOOH	ø5.0 to 12.0		J117
		SUMIDIA Drills **DDL** series	DDLOOOOH	ø5.0 to 12.0		J117

Drill Selection Guide

Series	Drilling Depth (L/D)	Coated Carbide	Coolant Supply	P			H		M	S		K		N			Ref. Page
				C/0.28% or below	C 0.29%	SKD SKS	45HRC or less	46HRC and above	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
MDE-E type	2D 4D	NX Coat	External	○	◎	◎	○		○	○	○	◎	◎				J14
MDE-H type	3D 5D 8D	NX Coat	Internal	◎	◎	◎	○		◎	○	○	◎	◎	○	○		J20
SDPtype	3D 5D 7D	DD Coat	Internal	◎	◎	○	◎		○	○	◎	◎	◎		◎		J27
SDM type	3D 5D	DD Coat	Internal	○	○	○			◎	○	○						J79
SDPX series	3D 5D 7D	HF Coat	Internal	◎	◎	◎	◎					◎	◎				J45
GS series	2D 4D	DEX Coat	External	○	◎	◎	○	○	○	○	○	○	◎				J57
HGS series	3D 5D 8D	DEX Coat	Internal	◎	◎	◎	○	○	◎	◎	○	○	◎		○		J57
MDF series	2D 3D 5D	PVD Coat	External S2D	◎	◎	◎	○		○	○	○	○	○	○			J33
			External L2D	◎	◎	◎	○		○			○	○	○			
			Internal	◎	◎	◎	○		○			○	○	○			
XHGS series	10D 12D 15D 20D 25D 30D	DEX Coat	Internal	○	◎	◎	○		○			○	◎				J93
PHT series	Pilot 3D	DEX Coat	Internal	○	◎	◎	○		○			○	◎				J93
MDE-E type For Hub Drilling	2D	NX Coat	External	○	◎	◎	○		○	○	○	◎	◎				J14
MDM series	3D 5D	NX Coat	Internal	○	○				◎	◎	○	○	○				J69
HX series	3D 5D 8D	DEX Coat	Internal									◎	◎				J85
MDA series	3D 5D 10D 15D 20D	AURORA Coat X DLC	Internal											◎	◎		J103
NHGS series	3D 5D 10D	AURORA Coat DLC	Internal											◎	◎		J111
DAL series	3D	-	External											◎		○	J117
DDL series	3D	-	External											◎		○	J117

Drill Selection Guide

Applications/ Specifications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance	Ref. Page
CFRP	CFRP	SUMIDIA Coat Drill **SDC** series	MDSOOOOO**SDC**3	ø2.0 to 10.0		J116
Small Diameter Deep Hole	P M K	Micro Long Drill **MLDH-L** type	**MLDH**OOOO**L**5	ø0.8 to 2.0		J118
			MLDHOOOO**L**12	ø0.8 to 2.0		
			MLDHOOOO**L**20	ø0.8 to 2.0		
			MLDHOOOO**L**30	ø0.8 to 2.0		
		Guide Drill for MLDH series **MLDH-P** type	**MLDH**OOOO**P**	ø0.8 to 2.0		J118
Very Small Diameters	P M K H	MINI-MULTIDRILL **MDSS** series	**MDSS**OOOO	ø0.2 to 1.0		J121
	P M N	Micro MULTIDRILL **MDUS** series	**MDUS**OOOO-30C	ø0.03 to 0.19		J121
		Micro Multi Pointing Drill **MDUP** series	**MDUP**OOOO-30C	ø0.03 to 0.18		J121
Indexable Head type Focus on Edge Sharpness	P M K	SEC-MULTIDRILL **SMD-MSL** type Head	**SMDH**OOO-1.5D/-1.5DF	ø12.0 to 30.8 D: ø13.5 to 30.8		J126
			SMDHOOOM*(M3)*/-3D/-3DF			
			SMDHOOOL*(M5)*/-5D/-5DF			
			SMDHOOOD*(M8)*/-8D/-8DF			
			SMDHOOO-12D			
Indexable Head type High-efficiency	P K	SEC-MULTIDRILL **SMD-MTL** type Head	**SMDH**OOO-1.5D/-1.5DF	ø12.0 to 30.8 M, L: ø12.0 to 42.5 D: ø13.5 to 42.5		J126
			SMDHOOOM*(M3)*/-3D/-3DF			
			SMDHOOOL*(M5)*/-5D/-5DF			
			SMDHOOOD*(M8)*/-8D/-8DF			
			SMDHOOO-12D			
Indexable Head type Low Resistance	P M K	SEC-MULTIDRILL **SMD-MEL** type Head	**SMDH**OOO-1.5D/-1.5DF	ø12.0 to 30.8 D: ø13.5 to 30.8		J126
			SMDHOOOM*(M3)*/-3D/-3DF			
			SMDHOOOL*(M5)*/-5D/-5DF			
			SMDHOOOD*(M8)*/-8D/-8DF			
			SMDHOOO-12D			
Indexable Head type For Flat Bottom Hole	P M K N	SEC-MULTIDRILL **SMD-MFS** type Head	**SMDH**OOO-1.5D/1.5DF/S	ø12.0 to 30.0		J149
Indexable Head type for welded structures	P	SEC-MULTIDRILL **SMD-MB** type Head	**SMDH**OOOB3	ø24.5 to 26.7		J157
Indexable Head type for non-ferrous and Aluminum Alloys	N	SEC-MULTIDRILL **SMD-NAL** type Head	**SMDH**OOO-1.5D/-1.5DF	ø12.0 to 30.5		J139
			SMDHOOOM*(M3)*/-3D/-3DF			
			SMDHOOOL*(M5)*/-5D/-5DF			
			SMDHOOOD*(M8)*/-8D/-8DF			
			SMDHOOO-12D			
Indexable Insert type	P M K	SumiDrill **GDX** series	**GDXH**OOOD2S/D3S/D4SOO-OO	ø15.5 to 27.0		J161
			GDXHOOOD5S/D6S/D7SOO-OO	ø15.5 to 27.0		
	P M K N	SumiDrill **WDX** series	**WDX**OOOD2SOO	ø13.0 to 68.0		J181
			WDXOOOD3SOO	ø13.0 to 68.0		
			WDXOOOD4SOO	ø13.0 to 63.0		
			WDXOOOD5SOO	ø13.0 to 55.0		
	P K S N	SEC-Plunge Drill **PDL** series	**PDL**OOOD2SOO	ø16.0 to 40.0		J195
			PDLOOOD3SOO	ø16.0 to 40.0		
	P K S N	SEC-Plunge Mill **PCT** series	**PCT**OOOD3SOO	ø16.0 to 40.0		J195
			PCTOOOD5SOO	ø16.0 to 40.0		
Solid Reamer	P K	SumiReamer **SSR** series	**SSR**OOOH7T	ø2.97 to 12.0		J201
			SSROOOH7S			
			SSROOOJT			
			SSROOOJS			
Indexable Insert type Reamer	P M K N	SumiReamer **SR** series	**SRG**OO.OH7-OOO-OOO12R1	ø11.9 to 140.6		J211
			SRLOO.OH7-OOO-OOO12R1	ø11.9 to 140.6		

Drill Selection Guide

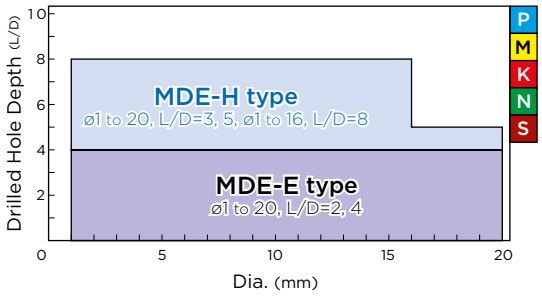
Series	Drilling Depth (L/D)	Coated Carbide	Coolant Supply	P			H		M	S		K		N			Ref. Page
				C/0.28% or below	C 0.29%	SKD SKS	45HRC or less	46HRC and above	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
SDC series	3D	SUMIDIA Coat	Dry											○		◎	J116
MLDH-L type	5D 12D 20D 30D	PVD Coat	Internal	◎	◎	○	○		◎	○	○	◎	◎	○			J118
MLDH-P type	Pilot 2D	PVD Coat	Internal	◎	◎	○	○		◎	○	○	◎	◎	○			J118
MDSS series	10D	FB Coat	External	◎	◎	◎	◎	○	◎		○	◎	◎	○			J121
MDUS series	10D	PVD Coat	External	◎	◎				◎					○	◎		J121
MDUP series	Pilot 1D	PVD Coat	External	◎	◎				◎					○	◎		J121
SMD -MSL type Head	1.5D 3D 5D 8D 12D	NX Coat		◎	○				◎	○	○	◎	◎				J126
SMD -MTL type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	◎	○	○					◎	◎				J126
SMD -MEL type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	○		○		◎	○	○	◎	◎	○			J126
SMD -MFS type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	◎		○		○			○	○	○			J149
SMD -MB type Head	3D	DEX Coat	Internal	◎	◎												J157
SMD -NAL type Head	1.5D 3D 5D 8D 12D	Aurora DLC Coating	Internal											◎	◎		J139
GDX series	2D 3D 4D 5D 6D 7D	PVD Coat CVD Coat	Internal	◎	◎		○		◎			◎	◎				J161
WDX series	2D 3D 4D 5D	PVD Coat AURORA Coat DLC CVD Coat	Internal	◎	◎		○		◎			◎	◎	◎			J181
PDL series	2D 3D	PVD Coat AURORA Coat DLC CVD Coat	Internal	◎	◎		○		○	◎		◎	◎	◎	○		J195
PCT series	3D 5D	PVD Coat AURORA Coat DLC CVD Coat	Internal	◎	◎		○		○	◎		◎	◎	◎	○		J195
SSR series		PVD Coat	Internal	◎	◎	◎	○					◎	◎				J201
SR series		PVD Coat AURORA Coat DLC	Internal	◎	◎	◎	○		◎	○	○	◎	◎	○	○		J211

Application Range of Major Drills

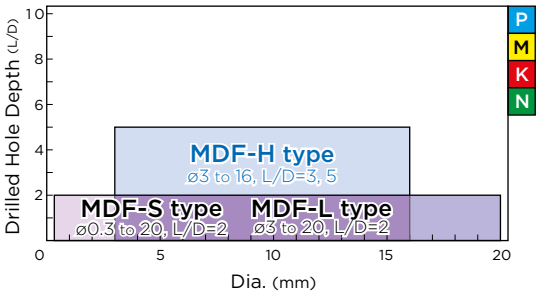
Coolant: **External supply** / Internal supply

■ Solid Carbide Drills

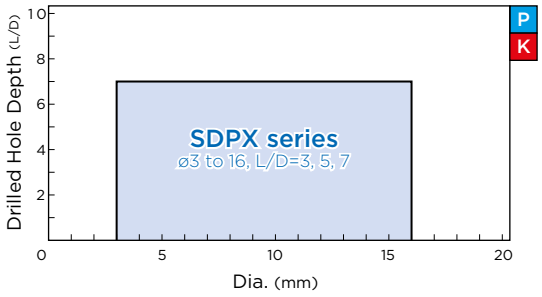
General-purpose MULTIDRILL NeXEO MDE series J9



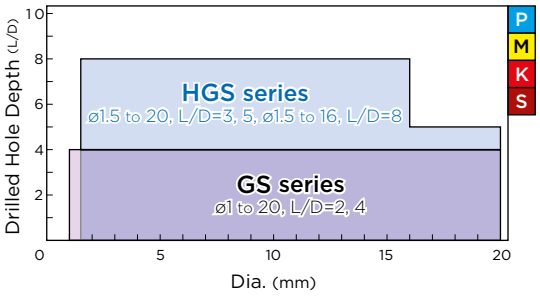
Flat MULTIDRILL MDF series J33



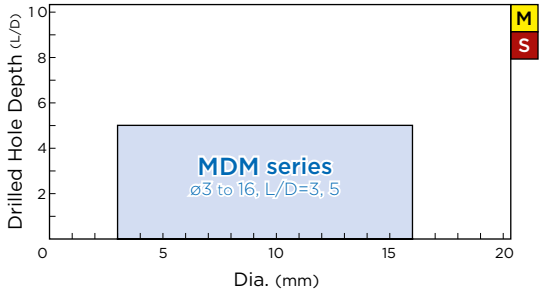
High-efficiency MULTIDRILL SDPX series



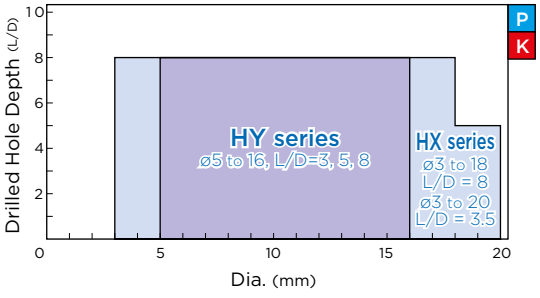
High-efficiency Super MULTIDRILL GS/HGS series J57



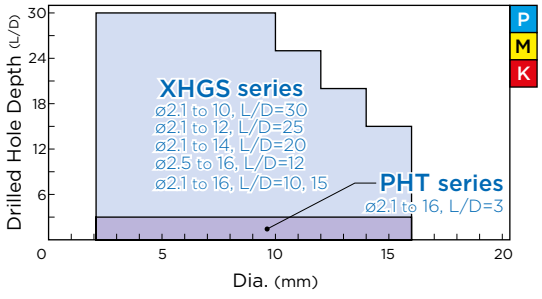
For Stainless Steel MULTIDRILL MDM series J69



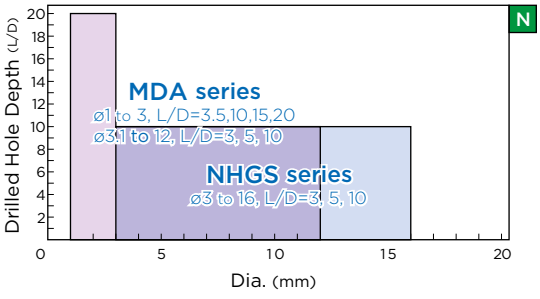
For Cast Iron Strong MULTIDRILL HX series J85
High-efficiency Strong MULTIDRILL HY series



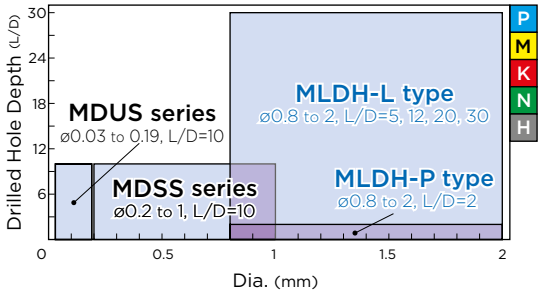
For Deep Holes Super MULTIDRILL XHGS/PHT series J93



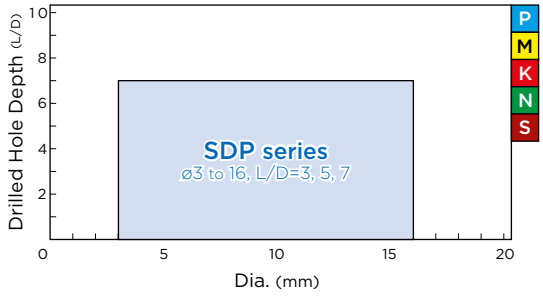
For Non-Ferrous Metal MULTIDRILL MDA series J103
Aluminum Alloy Super MULTIDRILL NHGS series J111



Small Diameter Micro Long Drill MLDH-L/MLDH-P types J118
Very Small Diameter MULTIDRILL MDUS/MDSS series J121



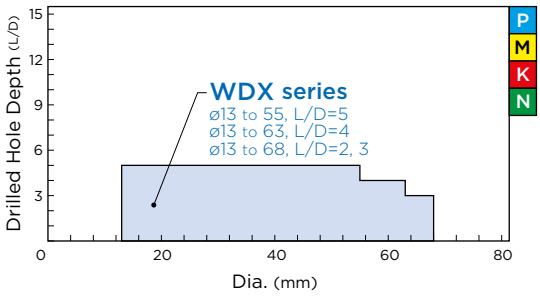
General-purpose SumiDrill Power SDP-type J9



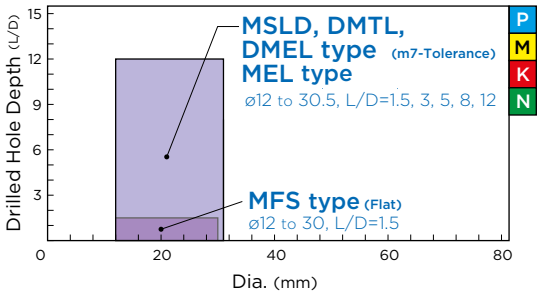
Application Range of Major Drills

■ Indexable Insert type Drills

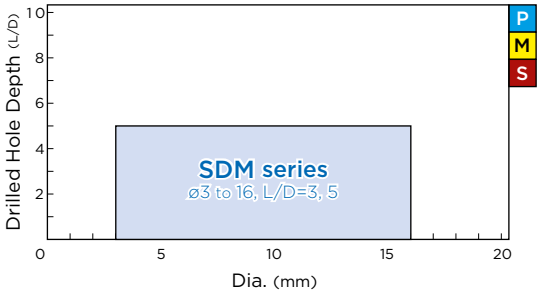
SumiDrill WDX series J181



SEC-MULTIDRILL SMDT series
MSLD type Head / DMTL type Head / DMEL type Head / MEL type / MFS J125 2

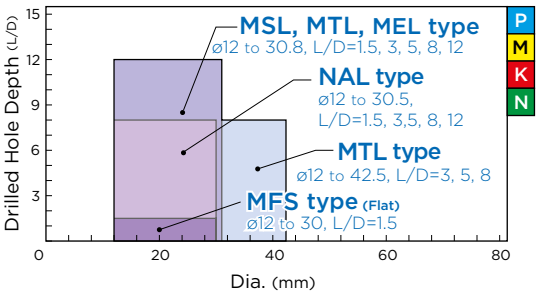


For Stainless Steel SumiDrill Power SDM-type J69

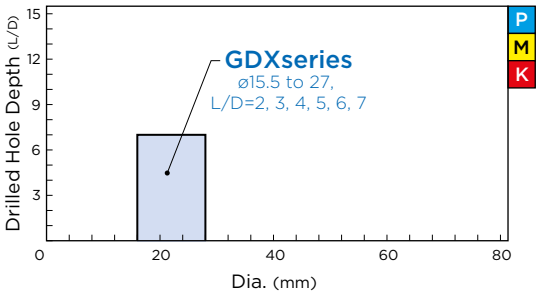


■ Indexable Head type Drills

SEC-MULTIDRILL SMD series
MTL type Head / MEL type / MSL type Head / MFS type Head J125



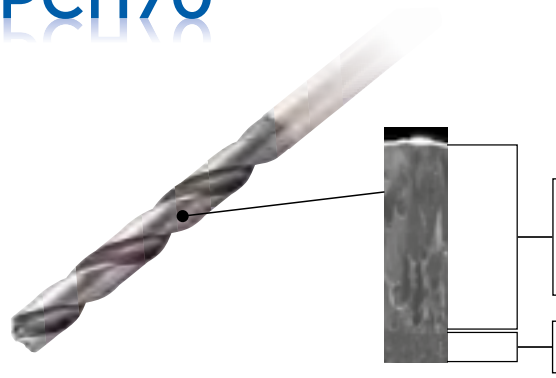
SumiDrill GDX series J181



Drill Coatings

New Grade

PCH70



HF Coat

HF Coat

- TiAlCrSi-based super multi-layered coating realises excellent wear resistance and thermal resistance
  Tough TiAlB-based coating is utilised on the carbide substrate to improve coating strength and fracture resistance

Super multi-layered TiAlCrSi
Hardness HV: 46GPa
Starting Temperature for Oxidisation: 1,100°C

TiAlB-based toughness layer

Balances wear and fracture resistance

General-purpose grade

ACT100

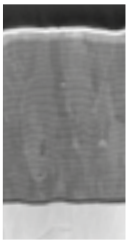


MULTIDRILL NeXEO - Next for Everyone -

NX Coat

NX Coat

- Sumitomo Electric Hardmetal's proprietary nano-coating technology provides stable tool life across a wide range of cutting conditions over a variety of work materials.
- Coating Structure



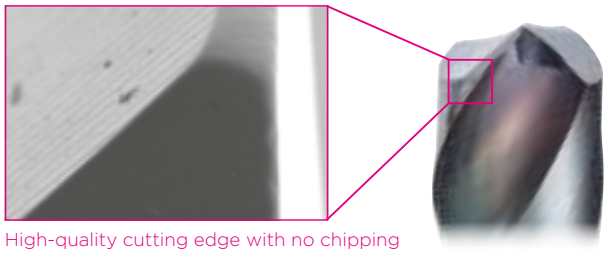
Super multi-layered TiAlCrSi coating
Hardness (HV): 46GPa
Oxidisation Starting Temperature: 1,100°C

Highly Adhesive Layer

■ Features

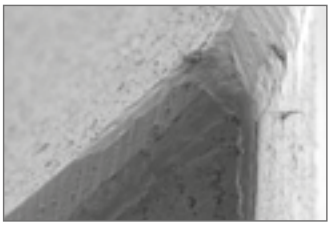
- High-quality, high-hardness, high-strength coating based on ABSOTECH™ technology achieves excellent wear and thermal resistance.
- Resistant to peripheral edge chipping
- High-quality edge provides stable tool life

MULTIDRILL NeXEO MDE series



High-quality cutting edge with no chipping

Competitor's Product A



Chipping in edge coating



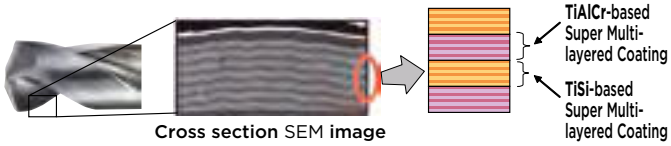
DEX Coat

DEX Coat

Sumitomo Electric Hardmetal's dedicated coating for drills utilises nano-coating technology to provide long tool life.

■ Features

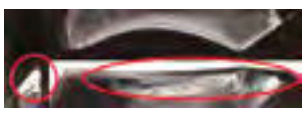
- Coating Structure
  World's first compound super multi-layered coating made from alternate layers of two super multi-layered substrates.



Cross section SEM image

- Silicon and chrome improve wear, thermal and adhesion resistance.
- Super multi-layered structure offers improved chipping resistance

■ DEX Coat Application Examples

MULTIDRILL GS series with DEX Coat (after drilling 100 holes)	
Competitor's Product A (after 70m of machining)	

Tool : MDW 0800GS4
Work Material : Cf53 (200HB)
Cutting Conditions : vc = 70m/min, f = 0.25mm/rev, H = 32mm, External Coolant Supply (Water-soluble)

Drill Coatings



AURORA Coat X DLX1700

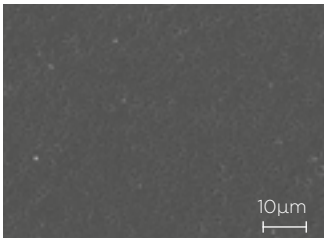
■ General Features

AURORA Coat X, which has ultra-enhanced smoothness through our proprietary new coating technology, low coefficient of friction and high-hardness thin DLC (Diamond Like Carbon) layer, improves wear and adhesion resistance, to realise long and stable tool life in drilling of aluminum alloys and non-ferrous metals.

■ Features

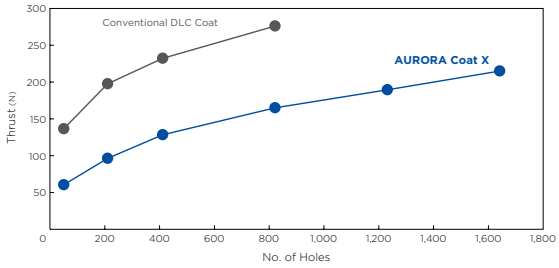
- Thin, ultra-smooth DLC coating
  Significantly improved adhesion resistance in drilling of aluminum alloy and non-ferrous metals
  Significantly reduced cutting force, contributing to long and stable tool life

● Coating Surface Properties



(SEM image)

● Cutting Force



Work Material: ADC12 Machine: Vertical Machining Centre BT30 Tool: MDA0600S06H05 (ø6mm x 5D)
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)



AURORA Coat DL1300 DL1500

■ General Features

High-hardness, low-friction coefficient AURORA Coat has excellent adhesion resistance in drilling of aluminum alloy and non-ferrous metals, and works in combination with a special cutting edge shape to achieve stable tool life.

■ Features

- **Thin, smooth DLC coating with a low coefficient of friction**
  Suppresses adhesion to the cutting edge and reduces cutting force during drilling of aluminum alloy and non-ferrous metals
- **High adhesion strength withstands violent cutting conditions**
  The world's first coating applicable to cutting tools, with our proprietary coating technique improving adhesion strength

■ AURORA Coat Application Examples

AURORA Coat Super MULTIDRILL NHGS series (after drilling 100 holes)	 Clean cutting edge with no adhesion
Competitor's Product B (after drilling 20 holes)	 Severe adhesion

Tool : MDW 0800NHGS5
Work Material : G-AlSi12(Cu)
Cutting Conditions: vc = 200m/min, f = 1.0mm/rev, H = 32mm, Internal Coolant Supply

Drill Coatings



SUMIDIA Coat

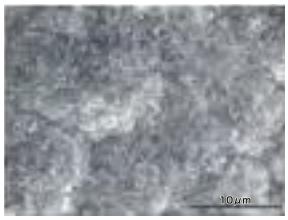
■ General Features

Our original polycrystalline diamond coating technology achieves over 10 times the wear resistance of uncoated carbide.
Excellent diamond layer adhesion is achieved with a combination of a dedicated substrate for diamond coating and a proprietary coating pre-treatment technique.

■ Features

- **Creating a fine-grained diamond coating with both high strength and high wear resistance on the smooth surface required for drilling CFRP**





■ SUMIDIA Coat Application Examples

SUMIDIA Coat	Competitor's Diamond Coating
	
No. of Workpieces: 600 holes Able to continue 	No. of Workpieces: 50 holes Coating peels and burrs are formed 

Tool : SUMIDIA Coat Drill ø6.35mm
Work Material : CFRP
Cutting Conditions : vc = 130m/min, f = 0.075mm/rev, H = 15mm, Through Hole Dry

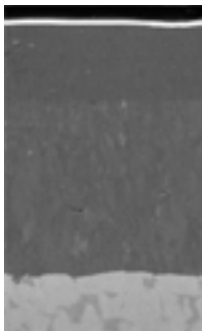
General-purpose grade

PCX70



SUMI-Power Coat

■ Coating Structure



Improved anti-adhesion AlCrTiN lubricant layer coating with high Al content improves friction condition.

High wear resistance
Tough and hard
AlCrTiN super multilayer

Substrate

■ Features

- The specific and optimum solution for a wide range of application conditions
- Top performance parameters, maximum feed and stable long tool life
- Good balance of high wear resistance and toughness
- Reliable and high productivity performance

MEMO

NeXEO MDE series



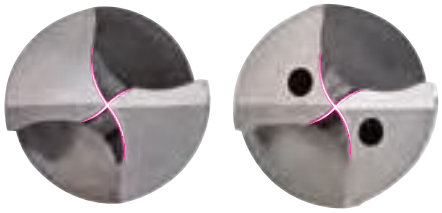
■ General Features

- Innovative new general purpose drill. Utilising the ACT100 grade.
- Applicable to a wide range of materials from high carbon steel and die steel to stainless steel. Enables stable drilling even on small machining centres and small lathes.
- NX Coat made with ABSOTECH™ technology for excellent wear resistance and thermal resistance.
- Low resistance chip breaking.

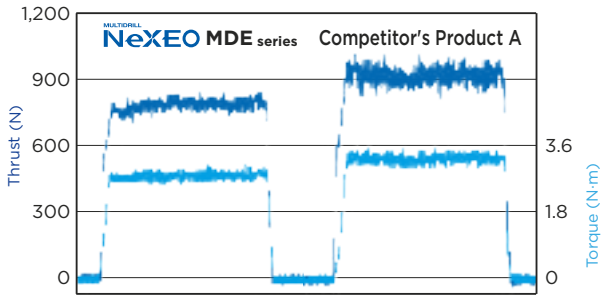
■ Features and Applications

- RX THINNING reduces thrust. Also ideal for small machining centres and small lathes.
- Further reduces cutting force with overlap thinning, suppressing wear in hub drilling. Excellent for shallow holes.
  *L/D=2 sizes only

RX THINNING + Arc Shaped Cutting Lip | **Overlap Thinning**



External Coolant Supply | Internal Coolant Supply | For Hub Drilling

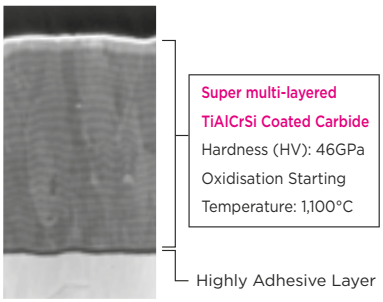


Work Material : Cf53
Diameter : ø8mm
Hole Depth : 5D
Cutting Conditions : vc = 80m/min, f = 0.15mm/rev, H = 38mm (Through), Internal Coolant Supply (Water-soluble)

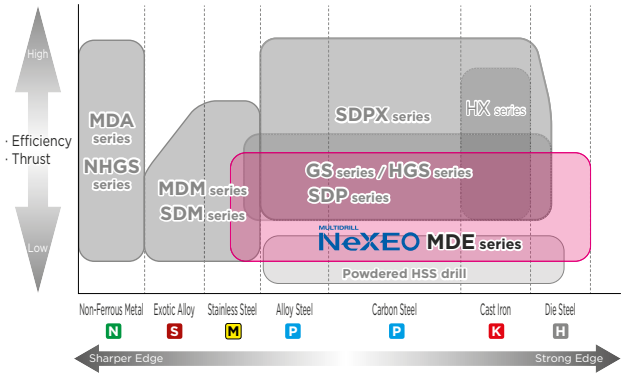
- General-purpose drill suitable for a wide range of work materials and cutting conditions

General-purpose grade

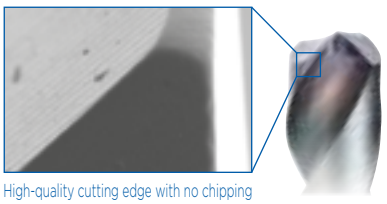
ACT100



- **Micro-grained carbide substrate**
  Achieves both wear and fracture resistance
- **NX Coat**
  High-quality, high-hardness, high-strength coating based on ABSOTECH™ technology achieves excellent wear and thermal resistance.
- **High-quality edge provides stable tool life**



MULTIDRILL NeXEO MDE series



High-quality cutting edge with no chipping

Competitor's Product B



Chipping in edge coating

- Strong arc-shaped cutting edge design for good chip evacuation

MULTIDRILL NeXEO MDE series



Chips are broken into small pieces

Competitor's Product C



Elongated chips

Work Material : Cf53
Diameter : ø9mm
Hole Depth : 5D
Cutting Conditions : vc = 80m/min, f = 0.15mm/rev
Internal Coolant Supply (Water-soluble)

NeXEO MDE series

● Drills holes with good precision and high quality

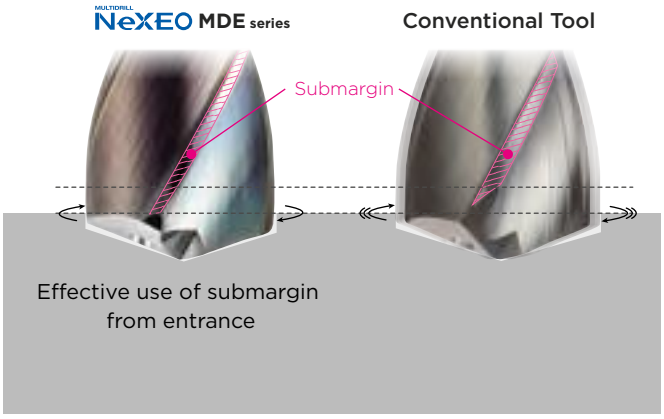


Internal Coolant Supply: Double margin

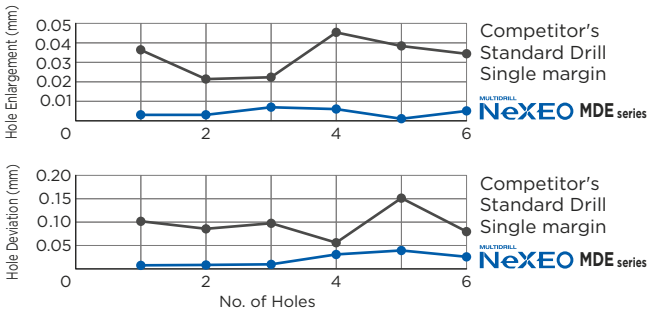


External Coolant Supply: Single margin

● Special double margin for good hole precision (internal coolant supply)

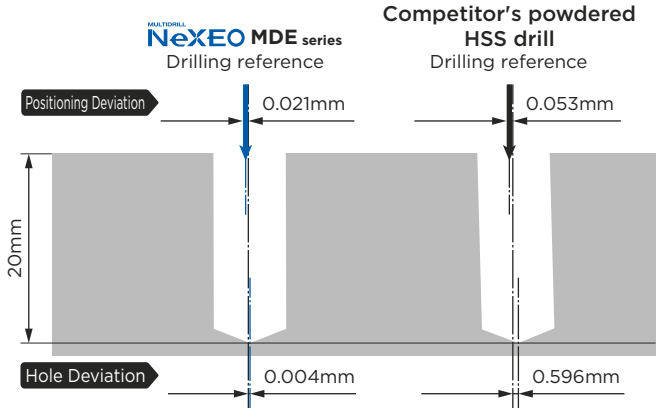


● Comparison of hole precision (die steel drilling)



Work Material : DH31S (similar 1.2379) (49HRC)
Tool : MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions : vc = 17m/min, f = 0.07mm/rev
Internal Coolant Supply (Water-soluble)

● Compared to powdered HSS drill, good hole precision (die steel drilling)



Good hole position accuracy
Minimal hole deviation

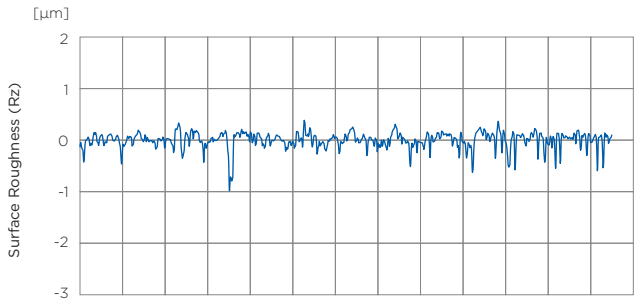
Work Material : NAK55 (similar 1.2343)
Tool : MDE 0680S07E04 (ø6.8mmx4D)
Cutting Conditions : vc = 50m/min, f = 0.1mm/rev, H = 20mm,
External Coolant Supply (Water-soluble)

● Comparison of hole wall

NeXEO MDE series



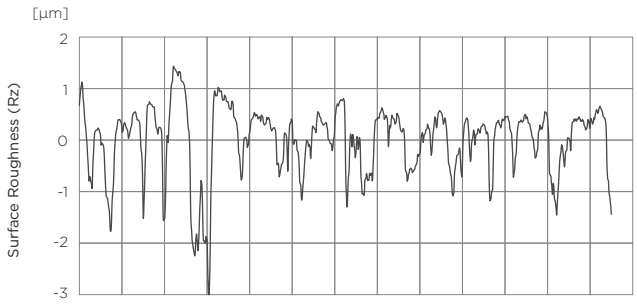
Shiny and good



Competitor's powdered HSS drill



Cloudiness due to blemishes

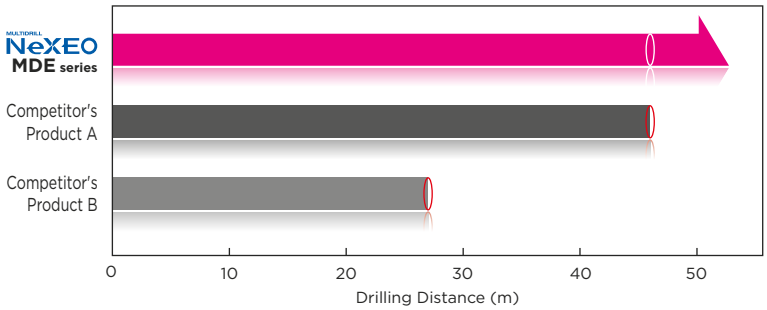


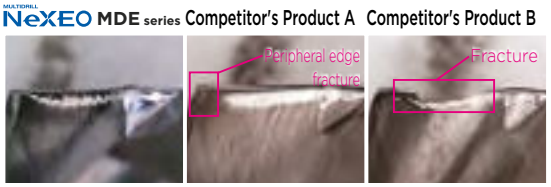
NeXEO MDE series

■ Application Examples

High Carbon Steel

ACT100 grade achieves high wear resistance and peripheral edge fracture resistance





After drilling 46m | After drilling 46m | After drilling 27m

Work Material: Cf53, Machine: BT30 Vertical Machining Centre, Tool: MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions: vc = 80m/min, f = 0.15mm/rev, H = 38mm (Through), Internal Coolant Supply (Water-soluble)

Low Carbon Steel

Good chip control in low carbon steel drilling

NeXEO MDE series



Chips are broken into small pieces

Conventional Drill A

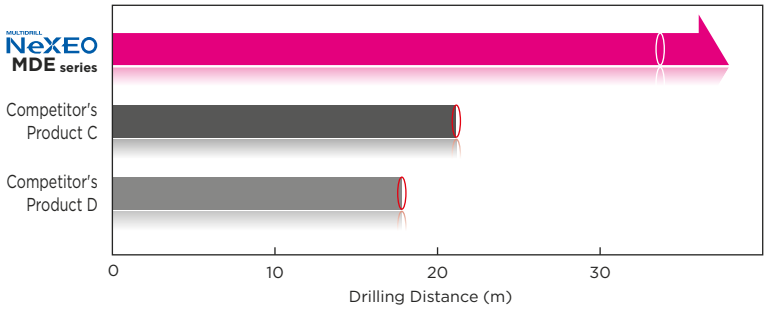


Elongated chips

Work Material: SM material (machine tool frame), Machine: Large double column machining centre, Tool: MDE 1150S12H05 (ø11.5mmx5D)
Cutting Conditions: vc = 100m/min, f = 0.25mm/rev, Internal Coolant Supply (Water-soluble), Cutting Distance: Approx. 20m per 30 min

Ultra-hard Alloy Steel

ACT100 grade and new edge design prevent workpiece adhesion fracture





After drilling 34m
Minimal adhesion | After drilling 21m | After drilling 18m

Work Material: 42CrMo4 (30HRC), Machine: BT30 vertical machining centre, Tool: MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions: vc = 80m/min, f = 0.15mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble)

Stainless Steel

Stable drilling of stainless steel on a lathe

NeXEO MDE series



Conventional Drill B



Work Material: X15CrNi25-20, Machine: NC lathe (workpiece rotates), Tool: MDE 0350S04H05 (ø3.5mmx5D)
Cutting Conditions: vc = 40m/min, f = 0.05mm/rev, H = 14mm, Internal Coolant Supply (Non-water-soluble), No. of Workpieces: 5,000

NeXEO MDE series

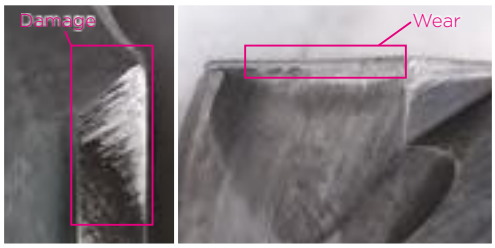
Ductile Cast Iron

NX coat reduces margin damage and rake face wear

NeXEO MDE series



Competitor's Product E



Work Material: GGG-40.3, Machine: HSK63 machining centre, Tool: MDE 079S08H05 (ø7.9mmx5D), with hole
Cutting Conditions: vc = 70m/min, f = 0.1mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble) Cutting Distance: 64m

Frequency of Replacement Compared to Powdered HSS drill

Long tool life approx. 10 times longer than powdered HSS drill

NeXEO MDE series No. of Workpieces: 12,000 holes



Competitor's Product F: Powdered HSS drill No. of Workpieces: 1,200 holes

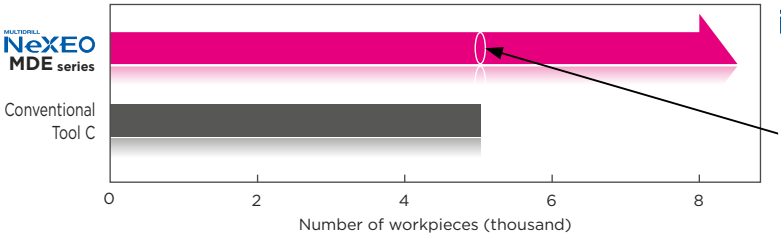


Work Material: C15 (automotive parts), Machine: BT30 small machining centre
Tool: MDE 0680S07E04 (ø6.8mm x 4D)
Cutting Conditions: vc = 60m/min, f = 0.15mm/rev External Coolant Supply (Non-water-soluble)

Tool: Competitor's Product F Powdered HSS drill (ø6.8mm x 4D)
Cutting Conditions: vc = 40m/min, f = 0.15mm/rev External Coolant Supply (Non-water-soluble)

Stainless Steel, Small Lathe

Low resistance, good chip control and long, stable tool life



NeXEO MDE series

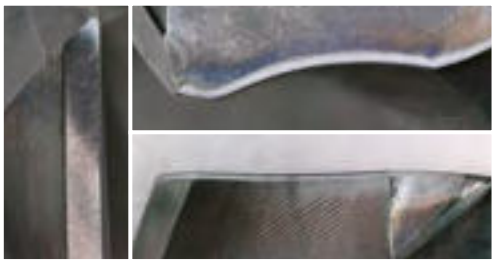


Work Material: X2CrNiMo17-13-2 (95 to 100HRB) (plugs), Machine: Automatic CNC lathe (workpiece rotates), Tool: MDE 0680S07E2 (ø6.8mmx2D)
Cutting Conditions: vc = 50m/min, f = 0.09mm/rev, External Coolant Supply (Non-water-soluble)

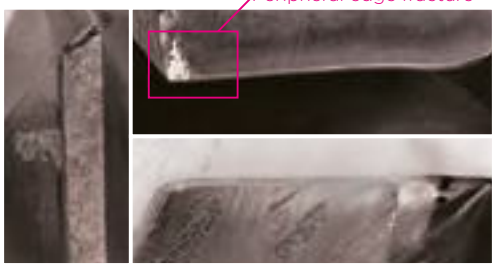
High Carbon Steel, Small Machining Centre

Achieves long and stable tool life even in low feed drilling of high carbon steel

NeXEO MDE series



Competitor's Product G



Work Material: C45, Machine: BT30 small machining centre, Tool: MDE 0830S07E4 (ø8.3mmx4D)
Cutting Conditions: vc = 30m/min, f = 0.08mm/rev, External Coolant Supply (Non-water soluble), No. of Workpieces: 150

NeXEO MDE series

● Series expansion of small diameter drills from ø1.0mm to 2.9mm

■ Application Examples

Low Carbon Steel

NeXEO MDE series





After drilling 900 holes

Competitor's Product H





After drilling 900 holes

Work Material: 15CrMo5, Machine: BT30 vertical machining centre, Tool: MDE 0100S03H05 (ø1.0mmx5D), with hole
Cutting Conditions: vc = 40m/min, f = 0.04mm/rev, H = 5mm (Through), Internal Coolant Supply (Water-soluble)

Stainless Steel

NeXEO MDE series





After drilling 3,840 holes

Conventional Drill D





After drilling 3,840 holes

Work Material: X5CrNi18-10, Machine: BT30 vertical machining centre, Tool: MDE 0200S03H05 (ø2.0mmx5D), with hole
Cutting Conditions: vc = 40m/min, f = 0.04mm/rev, H = 10mm (Through), Internal Coolant Supply (Water-soluble)

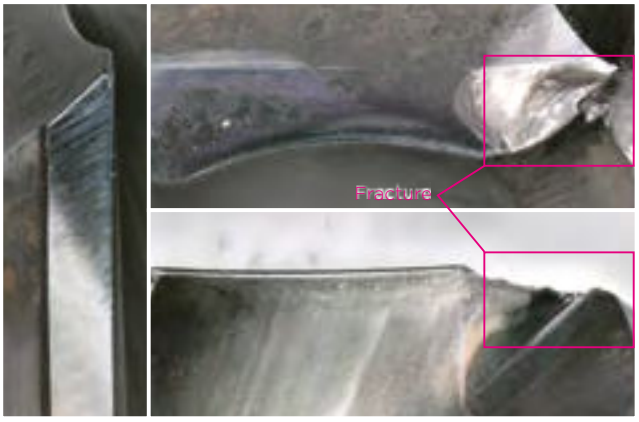
Hole for Press-fitting Bolt in Inner Shaft of Hub

NeXEO MDE series



After drilling 2,500 workpieces (5 holes per workpiece)

Conventional Drill E



After drilling 1,000 workpieces (5 holes per workpiece)

Work Material: C55 equivalent, Machine: Vertical machining centre, Tool: MDE 1397S14E02H (ø13.97mmx2D)
Cutting Conditions: vc = 75m/min, f = 0.2mm/rev, H = 15mm (through), External Coolant Supply (Water-soluble)

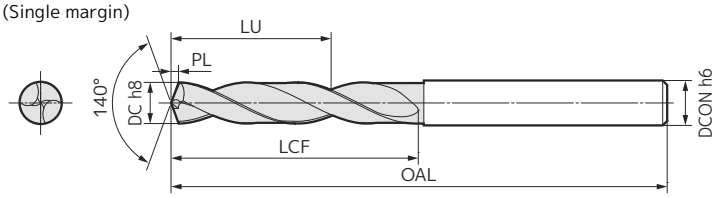
NeXEO MDE-E type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat 2D 4D

*For tolerances, refer to Chapter N - References.

Fig 1 (Single margin)



Diameter ø1.0 to 3.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	2	★	MDE 0100S03E02	5.7	7.2	45.2	0.2	3.0	1
	4	★	0100S03E04	7.7	9.2	49.2	0.2	3.0	1
1.1	2	★	MDE 0110S03E02	5.6	7.2	45.2	0.2	3.0	1
	4	★	0110S03E04	7.6	9.2	49.2	0.2	3.0	1
1.2	2	★	MDE 0120S03E02	6.4	8.2	45.2	0.2	3.0	1
	4	★	0120S03E04	8.4	10.2	49.2	0.2	3.0	1
1.3	2	★	MDE 0130S03E02	6.3	8.2	45.2	0.2	3.0	1
	4	★	0130S03E04	9.3	11.2	49.2	0.2	3.0	1
1.4	2	★	MDE 0140S03E02	7.2	9.3	45.3	0.3	3.0	1
	4	★	0140S03E04	9.2	11.3	49.3	0.3	3.0	1
1.5	2	★	MDE 0150S03E02	7.1	9.3	45.3	0.3	3.0	1
	4	★	0150S03E04	10.1	12.3	49.3	0.3	3.0	1
1.6	2	★	MDE 0160S03E02	7.9	10.3	45.3	0.3	3.0	1
	4	★	0160S03E04	10.9	13.3	49.3	0.3	3.0	1
1.7	2	★	MDE 0170S03E02	7.8	10.3	45.3	0.3	3.0	1
	4	★	0170S03E04	10.8	13.3	49.3	0.3	3.0	1
1.8	2	★	MDE 0180S03E02	8.6	11.3	45.3	0.3	3.0	1
	4	★	0180S03E04	11.6	14.3	49.3	0.3	3.0	1
1.9	2	★	MDE 0190S03E02	8.5	11.3	45.3	0.3	3.0	1
	4	★	0190S03E04	12.5	15.3	49.3	0.3	3.0	1
2.0	2	★	MDE 0200S03E02	9.4	12.4	45.4	0.4	3.0	1
	4	★	0200S03E04	13.4	16.4	49.4	0.4	3.0	1
2.1	2	★	MDE 0210S03E02	9.3	12.4	45.4	0.4	3.0	1
	4	★	0210S03E04	13.3	16.4	49.4	0.4	3.0	1
2.2	2	★	MDE 0220S03E02	10.1	13.4	45.4	0.4	3.0	1
	4	★	0220S03E04	14.1	17.4	49.4	0.4	3.0	1
2.3	2	★	MDE 0230S03E02	10.0	13.4	45.4	0.4	3.0	1
	4	★	0230S03E04	14.0	17.4	49.4	0.4	3.0	1
2.4	2	★	MDE 0240S03E02	10.8	14.4	45.4	0.4	3.0	2
	4	★	0240S03E04	14.8	18.4	49.4	0.4	3.0	2
2.5	2	★	MDE 0250S03E02	10.8	14.5	45.5	0.5	3.0	2
	4	★	0250S03E04	14.8	18.5	49.5	0.5	3.0	2
2.6	2	★	MDE 0260S03E02	11.6	15.5	45.5	0.5	3.0	2
	4	★	0260S03E04	15.6	19.5	49.5	0.5	3.0	2
2.7	2	★	MDE 0270S03E02	11.5	15.5	45.5	0.5	3.0	2
	4	★	0270S03E04	15.5	19.5	49.5	0.5	3.0	2
2.76	2	★	MDE 0276S03E02	11.3	15.5	45.5	0.5	3.0	2
2.78	2	★	0278S03E02	11.3	15.5	45.5	0.5	3.0	2
2.8	2	★	MDE 0280S03E02	11.3	15.5	45.5	0.5	3.0	2
	4	★	0280S03E04	15.3	19.5	49.5	0.5	3.0	2
2.9	2	★	MDE 0290S03E02	11.2	15.5	45.5	0.5	3.0	2
	4	★	0290S03E04	15.2	19.5	49.5	0.5	3.0	2
3.0	2	★	MDE 0300S03E02	9.0	13.5	45.5	0.5	3.0	2
	4	★	0300S03E04	15.0	19.5	49.5	0.5	3.0	2

Grade: ACT100

Diameter ø3.1 to 5.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.1	2	★	MDE 0310S04E02	15.0	19.6	54.6	0.6	4.0	2
	4	★	0310S04E04	20.0	24.6	60.6	0.6	4.0	2
3.2	2	★	MDE 0320S04E02	14.8	19.6	54.6	0.6	4.0	2
	4	★	0320S04E04	19.8	24.6	60.6	0.6	4.0	2
3.3	2	★	MDE 0330S04E02	14.7	19.6	54.6	0.6	4.0	2
	4	★	0330S04E04	19.7	24.6	60.6	0.6	4.0	2
3.4	2	★	MDE 0340S04E02	14.5	19.6	54.6	0.6	4.0	2
	4	★	0340S04E04	19.5	24.6	60.6	0.6	4.0	2
3.5	2	★	MDE 0350S04E02	14.4	19.6	54.6	0.6	4.0	2
	4	★	0350S04E04	19.4	24.6	60.6	0.6	4.0	2
3.6	2	★	MDE 0360S04E02	16.3	21.7	54.7	0.7	4.0	2
	4	★	0360S04E04	22.3	27.7	60.7	0.7	4.0	2
3.66	2	★	MDE 0366S04E02	16.2	21.7	54.7	0.7	4.0	2
3.68	2	★	0368S04E02	16.2	21.7	54.7	0.7	4.0	2
3.7	2	★	MDE 0370S04E02	16.2	21.7	54.7	0.7	4.0	2
	4	★	0370S04E04	22.2	27.7	60.7	0.7	4.0	2
3.8	2	★	MDE 0380S04E02	16.0	21.7	54.7	0.7	4.0	2
	4	★	0380S04E04	22.0	27.7	60.7	0.7	4.0	2
3.9	2	★	MDE 0390S04E02	15.9	21.7	54.7	0.7	4.0	2
	4	★	0390S04E04	21.9	27.7	60.7	0.7	4.0	2
4.0	2	★	MDE 0400S04E02	15.7	21.7	54.7	0.7	4.0	2
	4	★	0400S04E04	21.7	27.7	60.7	0.7	4.0	2
4.1	2	★	MDE 0410S05E02	17.6	23.7	61.7	0.7	5.0	2
	4	★	0410S05E04	25.6	31.7	76.7	0.7	5.0	2
4.2	2	★	MDE 0420S05E02	17.5	23.8	61.8	0.8	5.0	2
	4	★	0420S05E04	25.5	31.8	76.8	0.8	5.0	2
4.3	2	★	MDE 0430S05E02	17.4	23.8	61.8	0.8	5.0	2
	4	★	0430S05E04	25.4	31.8	76.8	0.8	5.0	2
4.4	2	★	MDE 0440S05E02	17.2	23.8	61.8	0.8	5.0	2
	4	★	0440S05E04	25.2	31.8	76.8	0.8	5.0	2
4.5	2	★	MDE 0450S05E02	17.1	23.8	61.8	0.8	5.0	2
	4	★	0450S05E04	25.1	31.8	76.8	0.8	5.0	2
4.6	2	★	MDE 0460S05E02	18.9	25.8	61.8	0.8	5.0	2
	4	★	0460S05E04	31.9	38.8	76.8	0.8	5.0	2
4.62	2	★	MDE 0462S05E02	18.9	25.8	61.8	0.8	5.0	2
4.64	2	★	0464S05E02	18.9	25.8	61.8	0.8	5.0	2
4.7	2	★	MDE 0470S05E02	18.9	25.9	61.9	0.9	5.0	2
	4	★	0470S05E04	31.9	38.9	76.9	0.9	5.0	2
4.8	2	★	MDE 0480S05E02	18.7	25.9	61.9	0.9	5.0	2
	4	★	0480S05E04	31.7	38.9	76.9	0.9	5.0	2
4.9	2	★	MDE 0490S05E02	18.6	25.9	61.9	0.9	5.0	2
	4	★	0490S05E04	31.6	38.9	76.9	0.9	5.0	2
5.0	2	★	MDE 0500S05E02	18.4	25.9	61.9	0.9	5.0	2
	4	★	0500S05E04	31.4	38.9	76.9	0.9	5.0	2

Grade: ACT100

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

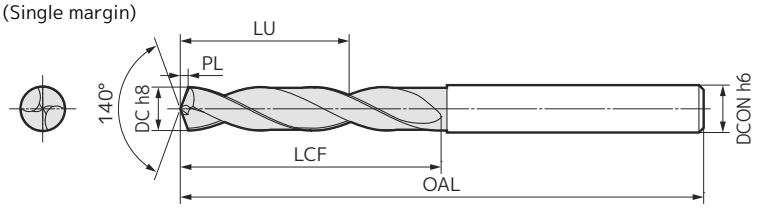
NeXEO MDE-E type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat | 2D | 4D

*For tolerances, refer to Chapter N - References.

Fig 1 (Single margin)



Diameter ø5.1 to 7.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.1	2	★	MDE 0510S06E02	18.3	25.9	65.9	0.9	6.0	2
	4	★	0510S06E04	32.3	39.9	81.9	0.9	6.0	2
5.2	2	★	MDE 0520S06E02	18.1	25.9	65.9	0.9	6.0	2
	4	★	0520S06E04	32.1	39.9	81.9	0.9	6.0	2
5.3	2	★	MDE 0530S06E02	18.1	26.0	66.0	1.0	6.0	2
	4	★	0530S06E04	32.1	40.0	82.0	1.0	6.0	2
5.4	2	★	MDE 0540S06E02	17.9	26.0	66.0	1.0	6.0	2
	4	★	0540S06E04	31.9	40.0	82.0	1.0	6.0	2
5.5	2	★	MDE 0550S06E02	17.8	26.0	66.0	1.0	6.0	2
	4	★	0550S06E04	31.8	40.0	82.0	1.0	6.0	2
5.52	2	★	MDE 0552S06E02	19.6	28.0	66.0	1.0	6.0	2
5.54	2	★	0554S06E02	19.6	28.0	66.0	1.0	6.0	2
5.6	2	★	MDE 0560S06E02	19.6	28.0	66.0	1.0	6.0	2
	4	★	0560S06E04	33.6	42.0	82.0	1.0	6.0	2
5.7	2	★	MDE 0570S06E02	19.5	28.0	66.0	1.0	6.0	2
	4	★	0570S06E04	33.5	42.0	82.0	1.0	6.0	2
5.8	2	★	MDE 0580S06E02	19.4	28.1	66.1	1.1	6.0	2
	4	★	0580S06E04	33.4	42.1	82.1	1.1	6.0	2
5.9	2	★	MDE 0590S06E02	19.3	28.1	66.1	1.1	6.0	2
	4	★	0590S06E04	33.3	42.1	82.1	1.1	6.0	2
6.0	2	★	MDE 0600S06E02	19.1	28.1	66.1	1.1	6.0	2
	4	★	0600S06E04	33.1	42.1	82.1	1.1	6.0	2
6.1	2	★	MDE 0610S07E02	23.0	32.1	74.1	1.1	7.0	2
	4	★	0610S07E04	34.0	43.1	84.1	1.1	7.0	2
6.2	2	★	MDE 0620S07E02	22.8	32.1	74.1	1.1	7.0	2
	4	★	0620S07E04	33.8	43.1	84.1	1.1	7.0	2
6.3	2	★	MDE 0630S07E02	22.7	32.1	74.1	1.1	7.0	2
	4	★	0630S07E04	33.7	43.1	84.1	1.1	7.0	2
6.4	2	★	MDE 0640S07E02	22.6	32.2	74.2	1.2	7.0	2
	4	★	0640S07E04	33.6	43.2	84.2	1.2	7.0	2
6.5	2	★	MDE 0650S07E02	22.5	32.2	74.2	1.2	7.0	2
	4	★	0650S07E04	33.5	43.2	84.2	1.2	7.0	2
6.6	2	★	MDE 0660S07E02	24.3	34.2	74.2	1.2	7.0	2
	4	★	0660S07E04	34.3	44.2	84.2	1.2	7.0	2
6.7	2	★	MDE 0670S07E02	24.2	34.2	74.2	1.2	7.0	2
	4	★	0670S07E04	34.2	44.2	84.2	1.2	7.0	2
6.8	2	★	MDE 0680S07E02	24.0	34.2	74.2	1.2	7.0	2
	4	★	0680S07E04	34.0	44.2	84.2	1.2	7.0	2
6.9	2	★	MDE 0690S07E02	24.0	34.3	74.3	1.3	7.0	2
	4	★	0690S07E04	34.0	44.3	84.3	1.3	7.0	2
7.0	2	★	MDE 0700S07E02	23.8	34.3	74.3	1.3	7.0	2
	4	★	0700S07E04	33.8	44.3	84.3	1.3	7.0	2
7.1	2	★	MDE 0710S08E02	23.7	34.3	79.3	1.3	8.0	2
	4	★	0710S08E04	35.7	46.3	91.3	1.3	8.0	2

Grade: ACT100

Diameter ø7.2 to 9.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.2	2	★	MDE 0720S08E02	23.5	34.3	79.3	1.3	8.0	2
	4	★	0720S08E04	35.5	46.3	91.3	1.3	8.0	2
7.3	2	★	MDE 0730S08E02	23.4	34.3	79.3	1.3	8.0	2
	4	★	0730S08E04	35.4	46.3	91.3	1.3	8.0	2
7.36	2	★	MDE 0736S08E02	23.2	34.3	79.3	1.3	8.0	2
7.38	2	★	0738S08E02	23.2	34.3	79.3	1.3	8.0	2
7.4	2	★	MDE 0740S08E02	23.2	34.3	79.3	1.3	8.0	2
	4	★	0740S08E04	35.2	46.3	91.3	1.3	8.0	2
7.5	2	★	MDE 0750S08E02	23.2	34.4	79.4	1.4	8.0	2
	4	★	0750S08E04	35.2	46.4	91.4	1.4	8.0	2
7.52	2	★	MDE 0752S08E02	26.0	37.4	79.4	1.4	8.0	2
7.54	2	★	0754S08E02	26.0	37.4	79.4	1.4	8.0	2
7.6	2	★	MDE 0760S08E02	26.0	37.4	79.4	1.4	8.0	2
	4	★	0760S08E04	38.0	49.4	91.4	1.4	8.0	2
7.7	2	★	MDE 0770S08E02	25.9	37.4	79.4	1.4	8.0	2
	4	★	0770S08E04	37.9	49.4	91.4	1.4	8.0	2
7.8	2	★	MDE 0780S08E02	25.7	37.4	79.4	1.4	8.0	2
	4	★	0780S08E04	37.7	49.4	91.4	1.4	8.0	2
7.9	2	★	MDE 0790S08E02	25.6	37.4	79.4	1.4	8.0	2
	4	★	0790S08E04	37.6	49.4	91.4	1.4	8.0	2
8.0	2	★	MDE 0800S08E02	25.5	37.5	79.5	1.5	8.0	2
	4	★	0800S08E04	37.5	49.5	91.5	1.5	8.0	2
8.1	2	★	MDE 0810S09E02	25.4	37.5	83.5	1.5	9.0	2
	4	★	0810S09E04	42.4	54.5	99.5	1.5	9.0	2
8.2	2	★	MDE 0820S09E02	25.2	37.5	83.5	1.5	9.0	2
	4	★	0820S09E04	42.2	54.5	99.5	1.5	9.0	2
8.3	2	★	MDE 0830S09E02	25.1	37.5	83.5	1.5	9.0	2
	4	★	0830S09E04	42.1	54.5	99.5	1.5	9.0	2
8.4	2	★	MDE 0840S09E02	24.9	37.5	83.5	1.5	9.0	2
	4	★	0840S09E04	41.9	54.5	99.5	1.5	9.0	2
8.5	2	★	MDE 0850S09E02	24.8	37.5	83.5	1.5	9.0	2
	4	★	0850S09E04	41.8	54.5	99.5	1.5	9.0	2
8.6	2	★	MDE 0860S09E02	26.7	39.6	83.6	1.6	9.0	2
	4	★	0860S09E04	43.7	56.6	99.6	1.6	9.0	2
8.7	2	★	MDE 0870S09E02	26.6	39.6	83.6	1.6	9.0	2
	4	★	0870S09E04	43.6	56.6	99.6	1.6	9.0	2
8.8	2	★	MDE 0880S09E02	26.4	39.6	83.6	1.6	9.0	2
	4	★	0880S09E04	43.4	56.6	99.6	1.6	9.0	2
8.9	2	★	MDE 0890S09E02	26.3	39.6	83.6	1.6	9.0	2
	4	★	0890S09E04	43.3	56.6	99.6	1.6	9.0	2
9.0	2	★	MDE 0900S09E02	26.1	39.6	83.6	1.6	9.0	2
	4	★	0900S09E04	43.1	56.6	99.6	1.6	9.0	2
9.1	2	★	MDE 0910S10E02	26.1	39.7	88.7	1.7	10.0	2
	4	★	0910S10E04	46.1	59.7	106.7	1.7	10.0	2

Grade: ACT100

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

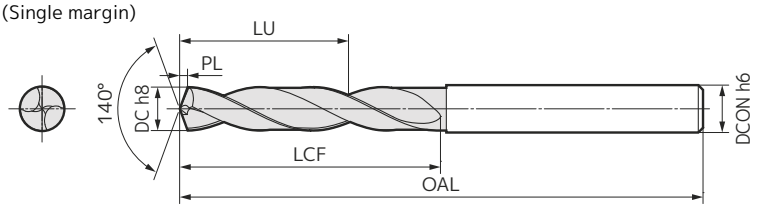
NeXEO MDE-E type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat | 2D | 4D

*For tolerances, refer to Chapter N - References.

Fig 1 (Single margin)



Diameter ø9.2 to 11.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.2	2	★	**MDE 0920S10E02**	25.9	39.7	88.7	1.7	10.0	2
	4	★	**0920S10E04**	45.9	59.7	106.7	1.7	10.0	2
9.24	2	★	**MDE 0924S10E02**	25.8	39.7	88.7	1.7	10.0	2
9.26	2	★	**0926S10E02**	25.8	39.7	88.7	1.7	10.0	2
9.3	2	★	**MDE 0930S10E02**	25.8	39.7	88.7	1.7	10.0	2
	4	★	**0930S10E04**	45.8	59.7	106.7	1.7	10.0	2
9.36	2	★	**MDE 0936S10E02**	25.6	39.7	88.7	1.7	10.0	2
9.38	2	★	**0938S10E02**	25.6	39.7	88.7	1.7	10.0	2
9.4	2	★	**MDE 0940S10E02**	25.6	39.7	88.7	1.7	10.0	2
	4	★	**0940S10E04**	45.6	59.7	106.7	1.7	10.0	2
9.5	2	★	**MDE 0950S10E02**	25.5	39.7	88.7	1.7	10.0	2
	4	★	**0950S10E04**	45.5	59.7	106.7	1.7	10.0	2
9.52	2	★	**MDE 0952S10E02**	28.3	42.7	88.7	1.7	10.0	2
9.54	2	★	**0954S10E02**	28.3	42.7	88.7	1.7	10.0	2
9.6	2	★	**MDE 0960S10E02**	28.3	42.7	88.7	1.7	10.0	2
	4	★	**0960S10E04**	47.3	61.7	106.7	1.7	10.0	2
9.7	2	★	**MDE 0970S10E02**	28.3	42.8	88.8	1.8	10.0	2
	4	★	**0970S10E04**	47.3	61.8	106.8	1.8	10.0	2
9.8	2	★	**MDE 0980S10E02**	28.1	42.8	88.8	1.8	10.0	2
	4	★	**0980S10E04**	47.1	61.8	106.8	1.8	10.0	2
9.9	2	★	**MDE 0990S10E02**	28.0	42.8	88.8	1.8	10.0	2
	4	★	**0990S10E04**	47.0	61.8	106.8	1.8	10.0	2
10.0	2	★	**MDE 1000S10E02**	27.8	42.8	88.8	1.8	10.0	2
	4	★	**1000S10E04**	46.8	61.8	106.8	1.8	10.0	2
10.1	2	★	**MDE 1010S11E02**	27.7	42.8	94.8	1.8	11.0	2
	4	★	**1010S11E04**	52.7	67.8	115.8	1.8	11.0	2
10.2	2	★	**MDE 1020S11E02**	27.6	42.9	94.9	1.9	11.0	2
	4	★	**1020S11E04**	52.6	67.9	115.9	1.9	11.0	2
10.3	2	★	**MDE 1030S11E02**	27.5	42.9	94.9	1.9	11.0	2
	4	★	**1030S11E04**	52.5	67.9	115.9	1.9	11.0	2
10.4	2	★	**MDE 1040S11E02**	27.3	42.9	94.9	1.9	11.0	2
	4	★	**1040S11E04**	52.3	67.9	115.9	1.9	11.0	2
10.5	2	★	**MDE 1050S11E02**	27.2	42.9	94.9	1.9	11.0	2
	4	★	**1050S11E04**	52.2	67.9	115.9	1.9	11.0	2
10.6	2	★	**MDE 1060S11E02**	31.0	46.9	94.9	1.9	11.0	2
	4	★	**1060S11E04**	54.0	69.9	115.9	1.9	11.0	2
10.7	2	★	**MDE 1070S11E02**	30.9	46.9	94.9	1.9	11.0	2
	4	★	**1070S11E04**	53.9	69.9	115.9	1.9	11.0	2
10.8	2	★	**MDE 1080S11E02**	30.8	47.0	95.0	2.0	11.0	2
	4	★	**1080S11E04**	53.8	70.0	116.0	2.0	11.0	2
10.9	2	★	**MDE 1090S11E02**	30.7	47.0	95.0	2.0	11.0	2
	4	★	**1090S11E04**	53.7	70.0	116.0	2.0	11.0	2
11.0	2	★	**MDE 1100S11E02**	30.5	47.0	95.0	2.0	11.0	2
	4	★	**1100S11E04**	53.5	70.0	116.0	2.0	11.0	2

Grade: ACT100

Diameter ø11.1 to 13.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.1	2	★	**MDE 1110S12E02**	30.4	47.0	102.0	2.0	12.0	2
	4	★	**1110S12E04**	56.4	73.0	123.0	2.0	12.0	2
11.2	2	★	**MDE 1120S12E02**	30.2	47.0	102.0	2.0	12.0	2
	4	★	**1120S12E04**	56.2	73.0	123.0	2.0	12.0	2
11.22	2	★	**MDE 1122S12E02**	30.2	47.0	102.0	2.0	12.0	2
11.24	2	★	**1124S12E02**	30.2	47.0	102.0	2.0	12.0	2
11.3	2	★	**MDE 1130S12E02**	30.2	47.1	102.1	2.1	12.0	2
	4	★	**1130S12E04**	56.2	73.1	123.1	2.1	12.0	2
11.36	2	★	**MDE 1136S12E02**	30.0	47.1	102.1	2.1	12.0	2
11.38	2	★	**1138S12E02**	30.0	47.1	102.1	2.1	12.0	2
11.4	2	★	**MDE 1140S12E02**	30.0	47.1	102.1	2.1	12.0	2
	4	★	**1140S12E04**	56.0	73.1	123.1	2.1	12.0	2
11.5	2	★	**MDE 1150S12E02**	29.9	47.1	102.1	2.1	12.0	2
	4	★	**1150S12E04**	55.9	73.1	123.1	2.1	12.0	2
11.6	2	★	**MDE 1160S12E02**	31.7	49.1	102.1	2.1	12.0	2
	4	★	**1160S12E04**	57.7	75.1	123.1	2.1	12.0	2
11.7	2	★	**MDE 1170S12E02**	31.6	49.1	102.1	2.1	12.0	2
	4	★	**1170S12E04**	57.6	75.1	123.1	2.1	12.0	2
11.8	2	★	**MDE 1180S12E02**	31.4	49.1	102.1	2.1	12.0	2
	4	★	**1180S12E04**	57.4	75.1	123.1	2.1	12.0	2
11.9	2	★	**MDE 1190S12E02**	31.4	49.2	102.2	2.2	12.0	2
	4	★	**1190S12E04**	57.4	75.2	123.2	2.2	12.0	2
12.0	2	★	**MDE 1200S12E02**	31.2	49.2	102.2	2.2	12.0	2
	4	★	**1200S12E04**	57.2	75.2	123.2	2.2	12.0	2
12.1	2	★	**MDE 1210S13E02**	31.1	49.2	102.2	2.2	13.0	2
	4	★	**1210S13E04**	60.1	78.2	139.2	2.2	13.0	2
12.2	2	★	**MDE 1220S13E02**	30.9	49.2	102.2	2.2	13.0	2
	4	★	**1220S13E04**	59.9	78.2	139.2	2.2	13.0	2
12.3	2	★	**MDE 1230S13E02**	30.8	49.2	102.2	2.2	13.0	2
	4	★	**1230S13E04**	59.8	78.2	139.2	2.2	13.0	2
12.4	2	★	**MDE 1240S13E02**	30.7	49.3	102.3	2.3	13.0	2
	4	★	**1240S13E04**	59.7	78.3	139.3	2.3	13.0	2
12.5	2	★	**MDE 1250S13E02**	30.6	49.3	102.3	2.3	13.0	2
	4	★	**1250S13E04**	59.6	78.3	139.3	2.3	13.0	2
12.6	2	★	**MDE 1260S13E02**	32.4	51.3	102.3	2.3	13.0	2
	4	★	**1260S13E04**	61.4	80.3	139.3	2.3	13.0	2
12.7	2	★	**MDE 1270S13E02**	32.3	51.3	102.3	2.3	13.0	2
	4	★	**1270S13E04**	61.3	80.3	139.3	2.3	13.0	2
12.8	2	★	**MDE 1280S13E02**	32.1	51.3	102.3	2.3	13.0	2
	4	★	**1280S13E04**	61.1	80.3	139.3	2.3	13.0	2
12.9	2	★	**MDE 1290S13E02**	32.0	51.3	102.3	2.3	13.0	2
	4	★	**1290S13E04**	61.0	80.3	139.3	2.3	13.0	2
13.0	2	★	**MDE 1300S13E02**	31.9	51.4	102.4	2.4	13.0	2
	4	★	**1300S13E04**	60.9	80.4	139.4	2.4	13.0	2

Grade: ACT100

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

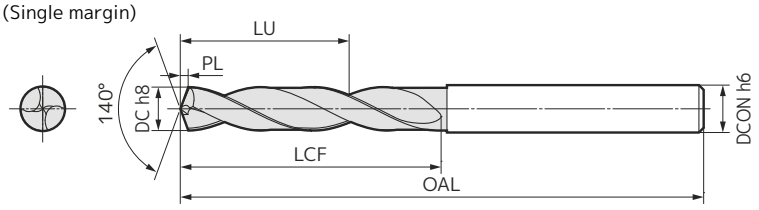
NeXEO MDE-E type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat | 2D | 4D

*For tolerances, refer to Chapter N - References.

Fig 2 (Single margin)



Diameter ø13.1 to 15.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.1	2	★	MDE 1310S14E02	32.8	52.4	107.4	2.4	14.0	2
	4	★	1310S14E04	66.8	86.4	149.4	2.4	14.0	2
13.2	2	★	MDE 1320S14E02	32.6	52.4	107.4	2.4	14.0	2
	4	★	1320S14E04	66.6	86.4	149.4	2.4	14.0	2
13.3	2	★	MDE 1330S14E02	32.5	52.4	107.4	2.4	14.0	2
	4	★	1330S14E04	66.5	86.4	149.4	2.4	14.0	2
13.4	2	★	MDE 1340S14E02	32.3	52.4	107.4	2.4	14.0	2
	4	★	1340S14E04	66.3	86.4	149.4	2.4	14.0	2
13.5	2	★	MDE 1350S14E02	32.3	52.5	107.5	2.5	14.0	2
	4	★	1350S14E04	66.3	86.5	149.5	2.5	14.0	2
13.6	2	★	MDE 1360S14E02	34.1	54.5	107.5	2.5	14.0	2
	4	★	1360S14E04	68.1	88.5	149.5	2.5	14.0	2
13.7	2	★	MDE 1370S14E02	34.0	54.5	107.5	2.5	14.0	2
	4	★	1370S14E04	68.0	88.5	149.5	2.5	14.0	2
13.8	2	★	MDE 1380S14E02	33.8	54.5	107.5	2.5	14.0	2
	4	★	1380S14E04	67.8	88.5	149.5	2.5	14.0	2
13.9	2	★	MDE 1390S14E02	33.7	54.5	107.5	2.5	14.0	2
	4	★	1390S14E04	67.7	88.5	149.5	2.5	14.0	2
14.0	2	★	MDE 1400S14E02	33.5	54.5	107.5	2.5	14.0	2
	4	★	1400S14E04	67.5	88.5	149.5	2.5	14.0	2
14.1	2	★	MDE 1410S15E02	33.5	54.6	110.6	2.6	15.0	2
	4	★	1410S15E04	70.5	91.6	155.6	2.6	15.0	2
14.2	2	★	MDE 1420S15E02	33.3	54.6	110.6	2.6	15.0	2
	4	★	1420S15E04	70.3	91.6	155.6	2.6	15.0	2
14.3	2	★	MDE 1430S15E02	33.2	54.6	110.6	2.6	15.0	2
	4	★	1430S15E04	70.2	91.6	155.6	2.6	15.0	2
14.4	2	★	MDE 1440S15E02	33.0	54.6	110.6	2.6	15.0	2
	4	★	1440S15E04	70.0	91.6	155.6	2.6	15.0	2
14.5	2	★	MDE 1450S15E02	32.9	54.6	110.6	2.6	15.0	2
	4	★	1450S15E04	69.9	91.6	155.6	2.6	15.0	2
14.6	2	★	MDE 1460S15E02	33.8	55.7	110.7	2.7	15.0	2
	4	★	1460S15E04	71.8	93.7	155.7	2.7	15.0	2
14.7	2	★	MDE 1470S15E02	33.7	55.7	110.7	2.7	15.0	2
	4	★	1470S15E04	71.7	93.7	155.7	2.7	15.0	2
14.8	2	★	MDE 1480S15E02	33.5	55.7	110.7	2.7	15.0	2
	4	★	1480S15E04	71.5	93.7	155.7	2.7	15.0	2
14.9	2	★	MDE 1490S15E02	33.4	55.7	110.7	2.7	15.0	2
	4	★	1490S15E04	71.4	93.7	155.7	2.7	15.0	2
15.0	2	★	MDE 1500S15E02	33.2	55.7	110.7	2.7	15.0	2
	4	★	1500S15E04	71.2	93.7	155.7	2.7	15.0	2
15.1	2	★	MDE 1510S16E02	33.1	55.7	114.7	2.7	16.0	2
	4	★	1510S16E04	74.1	96.7	162.7	2.7	16.0	2
15.2	2	★	MDE 1520S16E02	33.0	55.8	114.8	2.8	16.0	2
	4	★	1520S16E04	74.0	96.8	162.8	2.8	16.0	2

Grade: ACT100

Diameter ø15.3 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.3	2	★	MDE 1530S16E02	32.9	55.8	114.8	2.8	16.0	2
	4	★	1530S16E04	73.9	96.8	162.8	2.8	16.0	2
15.4	2	★	MDE 1540S16E02	32.7	55.8	114.8	2.8	16.0	2
	4	★	1540S16E04	73.7	96.8	162.8	2.8	16.0	2
15.5	2	★	MDE 1550S16E02	32.6	55.8	114.8	2.8	16.0	2
	4	★	1550S16E04	73.6	96.8	162.8	2.8	16.0	2
15.6	2	★	MDE 1560S16E02	34.4	57.8	114.8	2.8	16.0	2
	4	★	1560S16E04	75.4	98.8	162.8	2.8	16.0	2
15.7	2	★	MDE 1570S16E02	34.4	57.9	114.9	2.9	16.0	2
	4	★	1570S16E04	75.4	98.9	162.9	2.9	16.0	2
15.8	2	★	MDE 1580S16E02	34.2	57.9	114.9	2.9	16.0	2
	4	★	1580S16E04	75.2	98.9	162.9	2.9	16.0	2
15.9	2	★	MDE 1590S16E02	34.1	57.9	114.9	2.9	16.0	2
	4	★	1590S16E04	75.1	98.9	162.9	2.9	16.0	2
16.0	2	★	MDE 1600S16E02	33.9	57.9	114.9	2.9	16.0	2
	4	★	1600S16E04	74.9	98.9	162.9	2.9	16.0	2
16.5	2	★	MDE 1650S17E02	34.3	59.0	119.0	3.0	17.0	2
	4	★	1650S17E04	76.3	101.0	170.0	3.0	17.0	2
16.8	4	★	MDE 1680S17E04	75.9	101.1	170.1	3.1	17.0	2
17.0	2	★	MDE 1700S17E02	34.6	60.1	119.1	3.1	17.0	2
	4	★	1700S17E04	75.7	101.2	170.2	3.2	17.0	2
17.5	2	★	MDE 1750S18E02	35.0	61.2	123.2	3.2	18.0	2
	4	★	1750S18E04	77.0	103.2	170.2	3.2	18.0	2
18.0	2	★	MDE 1800S18E02	35.3	62.3	123.3	3.3	18.0	2
	4	★	1800S18E04	78.3	105.3	170.3	3.3	18.0	2
18.5	2	★	MDE 1850S19E02	34.7	62.4	126.4	3.4	19.0	2
	4	★	1850S19E04	79.7	107.4	182.4	3.4	19.0	2
19.0	2	★	MDE 1900S19E02	35.0	63.5	126.5	3.5	19.0	2
	4	★	1900S19E04	80.9	109.4	182.4	3.4	19.0	2
19.5	2	★	MDE 1950S20E02	35.3	64.5	130.5	3.5	20.0	2
	4	★	1950S20E04	84.3	113.5	182.5	3.5	20.0	2
19.7	4	★	MDE 1970S20E04	88.1	117.6	182.6	3.6	20.0	2
20.0	2	★	MDE 2000S20E02	35.6	65.6	130.6	3.6	20.0	2
	4	★	2000S20E04	87.6	117.6	182.6	3.6	20.0	2

Grade: ACT100

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

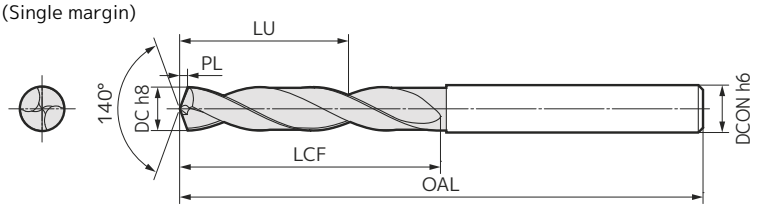
NeXEO MDE-E type for Hub Drilling (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat 2D

*For tolerances, refer to Chapter N - References.

Fig 1 (Single margin)



Diameter ø8.8 to 13.97mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.80	2	★	**MDE 0880S09E02H**	26.4	39.6	83.6	1.6	9.0	1
10.00	2	★	**1000S10E02H**	27.8	42.8	88.8	1.8	10.0	1
10.80	2	★	**1080S11E02H**	30.8	47.0	95.0	2.0	11.0	1
12.04	2	★	**1204S13E02H**	31.1	49.2	102.2	2.2	13.0	1
12.52	2	★	**1252S13E02H**	32.4	51.3	102.3	2.3	13.0	1
13.85	2	★	**1385S14E02H**	33.7	54.5	107.5	2.5	14.0	1
13.92	2	★	**1392S14E02H**	33.5	54.5	107.5	2.5	14.0	1
13.97	2	★	**1397S14E02H**	33.5	54.5	107.5	2.5	14.0	1

Grade: ACT100

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

NeXEO MDE-E type (External Coolant Supply)

Recommended Cutting Conditions (MDE-E type, External Coolant Supply, 2D/4D) Including hub drilling

1. The recommended cutting conditions below are for cases where a water soluble coolant is used (excluding drilling of stainless steel).
2. Supply sufficient water soluble coolant to the cutting edge.
3. If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
4. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
5. Make sure the flute does not enter the collet.
6. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
   *If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
7. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Work Material		Mild Steel/Low Carbon Steel S235JR/C15 up to 160HB		Carbon Steel C35/Cf53 up to 230HB		Alloy Steel CrMo/Cr 20 to 30HRC		Alloy Steel CrMo/Cr 30 to 38HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		30 to 80m/min		30 to 80m/min	
	Dia. ≥ ø3	60 to 100m/min		60 to 120m/min		50 to 100m/min		40 to 80m/min	
Diameter DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06
ø2.0		9,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08
ø2.5		9,500	0.04 to 0.08	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.04 to 0.08
ø3.0		8,500	0.05 to 0.12	8,500	0.05 to 0.12	7,500	0.05 to 0.12	6,400	0.05 to 0.12
ø4.0		6,400	0.07 to 0.17	6,400	0.07 to 0.17	5,600	0.07 to 0.17	4,800	0.07 to 0.17
ø5.0		5,100	0.08 to 0.20	5,100	0.08 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20
ø6.0		4,300	0.10 to 0.20	4,300	0.10 to 0.20	3,800	0.10 to 0.20	3,200	0.10 to 0.20
ø7.0		3,700	0.12 to 0.23	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.12 to 0.23
ø8.0		3,200	0.15 to 0.25	3,200	0.15 to 0.25	2,800	0.15 to 0.25	2,400	0.15 to 0.25
ø9.0		2,900	0.17 to 0.25	2,900	0.17 to 0.25	2,500	0.17 to 0.25	2,200	0.17 to 0.25
ø10.0		2,600	0.18 to 0.28	2,600	0.18 to 0.28	2,300	0.18 to 0.28	2,000	0.18 to 0.28
ø11.0		2,400	0.20 to 0.30	2,400	0.20 to 0.30	2,100	0.20 to 0.30	1,800	0.20 to 0.30
ø12.0		2,200	0.20 to 0.30	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30
ø14.0		1,900	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30
ø16.0		1,600	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30
ø18.0		1,500	0.20 to 0.30	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30
ø20.0		1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30
High-efficiency Product		GS series		GS series		GS series		GS series	

Work Material		Cast Iron GG-25 to 280HB		Ductile Cast Iron GGG-40.3/GGG-60 up to 270HB		Stainless Steel (oil-based drilling) X5CrNi18-10/X12Cr13 up to 200HB		Special Steel/Pre-hardened Steel 105WCr6/X40CrMoV5-1 (non-tempered) 30 to 38HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		20 to 50m/min		30 to 60m/min	
	Dia. ≥ ø3	60 to 100m/min		50 to 100m/min		20 to 50m/min		30 to 60m/min	
Diameter DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.02 to 0.05	8,500	0.02 to 0.04
ø2.0		8,000	0.04 to 0.08	8,000	0.04 to 0.08	6,300	0.03 to 0.06	7,100	0.03 to 0.06
ø2.5		9,000	0.04 to 0.08	8,500	0.04 to 0.08	5,100	0.03 to 0.07	5,700	0.03 to 0.06
ø3.0		8,500	0.06 to 0.15	7,500	0.05 to 0.12	4,300	0.05 to 0.10	5,400	0.05 to 0.12
ø4.0		6,400	0.08 to 0.18	5,600	0.07 to 0.17	3,200	0.05 to 0.10	4,000	0.07 to 0.17
ø5.0		5,100	0.10 to 0.20	4,500	0.08 to 0.20	2,600	0.06 to 0.15	3,200	0.08 to 0.20
ø6.0		4,300	0.12 to 0.23	3,800	0.10 to 0.20	2,200	0.06 to 0.15	2,700	0.10 to 0.20
ø7.0		3,700	0.12 to 0.23	3,200	0.12 to 0.23	1,900	0.06 to 0.18	2,300	0.10 to 0.20
ø8.0		3,200	0.18 to 0.25	2,800	0.15 to 0.25	1,600	0.06 to 0.20	2,000	0.12 to 0.25
ø9.0		2,900	0.17 to 0.25	2,500	0.17 to 0.25	1,500	0.08 to 0.20	1,800	0.12 to 0.25
ø10.0		2,600	0.18 to 0.28	2,300	0.18 to 0.28	1,300	0.08 to 0.20	1,600	0.12 to 0.25
ø11.0		2,400	0.20 to 0.30	2,100	0.20 to 0.30	1,200	0.08 to 0.20	1,500	0.15 to 0.30
ø12.0		2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,100	0.10 to 0.25	1,400	0.15 to 0.30
ø14.0		1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,000	0.10 to 0.25	1,200	0.15 to 0.30
ø16.0		1,600	0.20 to 0.30	1,400	0.20 to 0.30	800	0.10 to 0.25	1,000	0.15 to 0.30
ø18.0		1,500	0.20 to 0.30	1,300	0.20 to 0.30	800	0.10 to 0.25	900	0.15 to 0.30
ø20.0		1,300	0.20 to 0.30	1,200	0.20 to 0.30	700	0.10 to 0.25	800	0.15 to 0.30
High-efficiency Product		GS series		GS series		GS series		GS series	

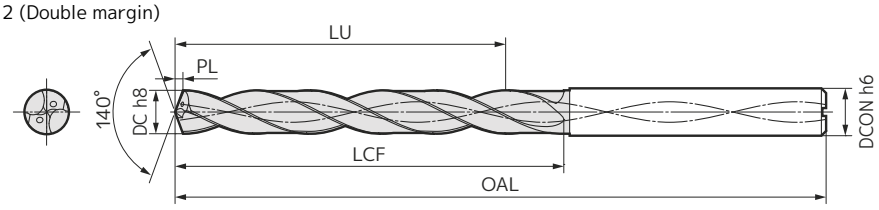
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Double margin)



Diameter ø1.0 to 2.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	3	★	MDE 0100S03H03	6.7	8.2	57.2	0.2	3.0	1
	5	★	0100S03H05	8.7	10.2	59.2	0.2	3.0	1
	8	★	0100S03H08	11.7	13.2	62.2	0.2	3.0	1
1.1	3	★	MDE 0110S03H03	6.6	8.2	57.2	0.2	3.0	1
	5	★	0110S03H05	8.6	10.2	59.2	0.2	3.0	1
	8	★	0110S03H08	12.6	14.2	62.2	0.2	3.0	1
1.2	3	★	MDE 0120S03H03	7.4	9.2	57.2	0.2	3.0	1
	5	★	0120S03H05	9.4	11.2	59.2	0.2	3.0	1
	8	★	0120S03H08	13.4	15.2	62.2	0.2	3.0	1
1.3	3	★	MDE 0130S03H03	7.3	9.2	57.2	0.2	3.0	1
	5	★	0130S03H05	10.3	12.2	59.2	0.2	3.0	1
	8	★	0130S03H08	14.3	16.2	62.2	0.2	3.0	1
1.4	3	★	MDE 0140S03H03	8.2	10.3	57.3	0.3	3.0	1
	5	★	0140S03H05	11.2	13.3	59.3	0.3	3.0	1
	8	★	0140S03H08	15.2	17.3	62.3	0.3	3.0	1
1.5	3	★	MDE 0150S03H03	9.1	11.3	57.3	0.3	3.0	1
	5	★	0150S03H05	12.1	14.3	59.3	0.3	3.0	1
	8	★	0150S03H08	16.1	18.3	62.3	0.3	3.0	1
1.6	3	★	MDE 0160S03H03	8.9	11.3	59.3	0.3	3.0	1
	5	★	0160S03H05	11.9	14.3	62.3	0.3	3.0	1
	8	★	0160S03H08	16.9	19.3	67.3	0.3	3.0	1
1.7	3	★	MDE 0170S03H03	9.8	12.3	59.3	0.3	3.0	1
	5	★	0170S03H05	12.8	15.3	62.3	0.3	3.0	1
	8	★	0170S03H08	17.8	20.3	67.3	0.3	3.0	1
1.8	3	★	MDE 0180S03H03	9.6	12.3	59.3	0.3	3.0	1
	5	★	0180S03H05	13.6	16.3	62.3	0.3	3.0	1
	8	★	0180S03H08	18.6	21.3	67.3	0.3	3.0	1
1.9	3	★	MDE 0190S03H03	10.5	13.3	59.3	0.3	3.0	1
	5	★	0190S03H05	14.5	17.3	62.3	0.3	3.0	1
	8	★	0190S03H08	19.5	22.3	70.3	0.3	3.0	1
2.0	3	★	MDE 0200S03H03	11.4	14.4	59.4	0.4	3.0	1
	5	★	0200S03H05	15.4	18.4	62.4	0.4	3.0	1
	8	★	0200S03H08	21.4	24.4	70.4	0.4	3.0	1
2.1	3	★	MDE 0210S03H03	11.3	14.4	59.4	0.4	3.0	1
	5	★	0210S03H05	15.3	18.4	62.4	0.4	3.0	1
	8	★	0210S03H08	22.3	25.4	70.4	0.4	3.0	1
2.2	3	★	MDE 0220S03H03	12.1	15.4	59.4	0.4	3.0	1
	5	★	0220S03H05	16.1	19.4	62.4	0.4	3.0	1
	8	★	0220S03H08	23.1	26.4	70.4	0.4	3.0	1
2.3	3	★	MDE 0230S03H03	12.0	15.4	63.4	0.4	3.0	1
	5	★	0230S03H05	17.0	20.4	68.4	0.4	3.0	1
	8	★	0230S03H08	24.0	27.4	75.4	0.4	3.0	1
2.4	3	★	MDE 0240S03H03	12.8	16.4	63.4	0.4	3.0	2
	5	★	0240S03H05	17.8	21.4	68.4	0.4	3.0	2
	8	★	0240S03H08	24.8	28.4	75.4	0.4	3.0	2

Grade: ACT100

Diameter ø2.5 to 3.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.5	3	★	MDE 0250S03H03	13.8	17.5	63.5	0.5	3.0	2
	5	★	0250S03H05	18.8	22.5	68.5	0.5	3.0	2
	8	★	0250S03H08	25.8	29.5	75.5	0.5	3.0	2
2.6	3	★	MDE 0260S03H03	13.6	17.5	63.5	0.5	3.0	2
	5	★	0260S03H05	18.6	22.5	68.5	0.5	3.0	2
	8	★	0260S03H08	26.6	30.5	75.5	0.5	3.0	2
2.7	3	★	MDE 0270S03H03	14.5	18.5	68.5	0.5	3.0	2
	5	★	0270S03H05	19.5	23.5	78.5	0.5	3.0	2
	8	★	0270S03H08	27.5	31.5	81.5	0.5	3.0	2
2.76	5	★	MDE 0276S03H05	20.3	24.5	78.5	0.5	3.0	2
2.78	5	★	0278S03H05	20.3	24.5	78.5	0.5	3.0	2
2.8	3	★	MDE 0280S03H03	14.3	18.5	68.5	0.5	3.0	2
	5	★	0280S03H05	20.3	24.5	78.5	0.5	3.0	2
	8	★	0280S03H08	28.3	32.5	81.5	0.5	3.0	2
2.9	3	★	MDE 0290S03H03	15.2	19.5	68.5	0.5	3.0	2
	5	★	0290S03H05	21.2	25.5	78.5	0.5	3.0	2
	8	★	0290S03H08	29.2	33.5	81.5	0.5	3.0	2
3.0	3	★	MDE 0300S03H03	14.0	18.5	68.5	0.5	3.0	2
	5	★	0300S03H05	24.0	28.5	78.5	0.5	3.0	2
	8	★	0300S03H08	29.0	33.5	81.5	0.5	3.0	2
3.1	3	★	MDE 0310S04H03	16.0	20.6	72.6	0.6	4.0	2
	5	★	0310S04H05	28.0	32.6	86.6	0.6	4.0	2
	8	★	0310S04H08	34.5	39.1	92.6	0.6	4.0	2
3.2	3	★	MDE 0320S04H03	15.8	20.6	72.6	0.6	4.0	2
	5	★	0320S04H05	27.8	32.6	86.6	0.6	4.0	2
	8	★	0320S04H08	34.3	39.1	92.6	0.6	4.0	2
3.3	3	★	MDE 0330S04H03	15.7	20.6	72.6	0.6	4.0	2
	5	★	0330S04H05	27.7	32.6	86.6	0.6	4.0	2
	8	★	0330S04H08	34.2	39.1	92.6	0.6	4.0	2
3.4	3	★	MDE 0340S04H03	15.5	20.6	72.6	0.6	4.0	2
	5	★	0340S04H05	27.5	32.6	86.6	0.6	4.0	2
	8	★	0340S04H08	34.0	39.1	92.6	0.6	4.0	2
3.5	3	★	MDE 0350S04H03	15.4	20.6	72.6	0.6	4.0	2
	5	★	0350S04H05	27.4	32.6	86.6	0.6	4.0	2
	8	★	0350S04H08	33.9	39.1	92.6	0.6	4.0	2
3.6	3	★	MDE 0360S04H03	17.8	23.2	72.7	0.7	4.0	2
	5	★	0360S04H05	31.3	36.7	86.7	0.7	4.0	2
	8	★	0360S04H08	39.3	44.7	92.7	0.7	4.0	2
3.66	5	★	MDE 0366S04H05	31.2	36.7	86.7	0.7	4.0	2
3.68	5	★	0368S04H05	31.2	36.7	86.7	0.7	4.0	2
3.7	3	★	MDE 0370S04H03	17.7	23.2	72.7	0.7	4.0	2
	5	★	0370S04H05	31.2	36.7	86.7	0.7	4.0	2
	8	★	0370S04H08	39.2	44.7	92.7	0.7	4.0	2

Grade: ACT100

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

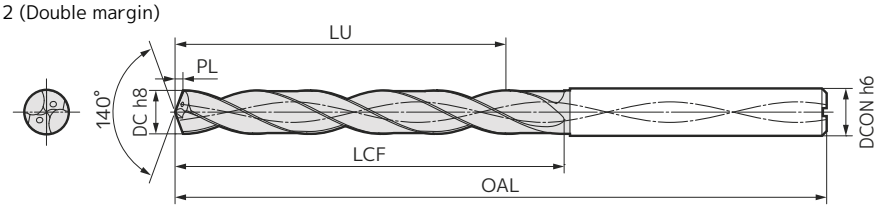
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Double margin)



Diameter ø3.8 to 5.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.8	3	★	MDE 0380S04H03	17.5	23.2	72.7	0.7	4.0	2
	5	★	0380S04H05	31.0	36.7	86.7	0.7	4.0	2
	8	★	0380S04H08	39.0	44.7	92.7	0.7	4.0	2
3.9	3	★	MDE 0390S04H03	17.4	23.2	72.7	0.7	4.0	2
	5	★	0390S04H05	30.9	36.7	86.7	0.7	4.0	2
	8	★	0390S04H08	38.9	44.7	92.7	0.7	4.0	2
4.0	3	★	MDE 0400S04H03	17.2	23.2	72.7	0.7	4.0	2
	5	★	0400S04H05	30.7	36.7	86.7	0.7	4.0	2
	8	★	0400S04H08	38.7	44.7	92.7	0.7	4.0	2
4.1	3	★	MDE 0410S05H03	19.6	25.7	80.7	0.7	5.0	2
	5	★	0410S05H05	34.6	40.7	98.7	0.7	5.0	2
	8	★	0410S05H08	44.1	50.2	105.7	0.7	5.0	2
4.2	3	★	MDE 0420S05H03	19.5	25.8	80.8	0.8	5.0	2
	5	★	0420S05H05	34.5	40.8	98.8	0.8	5.0	2
	8	★	0420S05H08	44.0	50.3	105.8	0.8	5.0	2
4.3	3	★	MDE 0430S05H03	19.4	25.8	80.8	0.8	5.0	2
	5	★	0430S05H05	34.4	40.8	98.8	0.8	5.0	2
	8	★	0430S05H08	43.9	50.3	105.8	0.8	5.0	2
4.4	3	★	MDE 0440S05H03	19.2	25.8	80.8	0.8	5.0	2
	5	★	0440S05H05	34.2	40.8	98.8	0.8	5.0	2
	8	★	0440S05H08	43.7	50.3	105.8	0.8	5.0	2
4.5	3	★	MDE 0450S05H03	19.1	25.8	80.8	0.8	5.0	2
	5	★	0450S05H05	34.1	40.8	98.8	0.8	5.0	2
	8	★	0450S05H08	43.6	50.3	105.8	0.8	5.0	2
4.6	3	★	MDE 0460S05H03	21.4	28.3	80.8	0.8	5.0	2
	5	★	0460S05H05	37.9	44.8	98.8	0.8	5.0	2
	8	★	0460S05H08	48.9	55.8	105.8	0.8	5.0	2
4.62	5	★	MDE 0462S05H05	37.9	44.8	98.8	0.8	5.0	2
4.64	5	★	0464S05H05	37.9	44.8	98.8	0.8	5.0	2
4.7	3	★	MDE 0470S05H03	21.4	28.4	80.9	0.9	5.0	2
	5	★	0470S05H05	37.9	44.9	98.9	0.9	5.0	2
	8	★	0470S05H08	48.9	55.9	105.9	0.9	5.0	2
4.8	3	★	MDE 0480S05H03	21.2	28.4	80.9	0.9	5.0	2
	5	★	0480S05H05	37.7	44.9	98.9	0.9	5.0	2
	8	★	0480S05H08	48.7	55.9	105.9	0.9	5.0	2
4.9	3	★	MDE 0490S05H03	21.1	28.4	80.9	0.9	5.0	2
	5	★	0490S05H05	37.6	44.9	98.9	0.9	5.0	2
	8	★	0490S05H08	48.6	55.9	105.9	0.9	5.0	2
5.0	3	★	MDE 0500S05H03	20.9	28.4	80.9	0.9	5.0	2
	5	★	0500S05H05	37.4	44.9	98.9	0.9	5.0	2
	8	★	0500S05H08	48.4	55.9	105.9	0.9	5.0	2
5.1	3	★	MDE 0510S06H03	20.8	28.4	82.9	0.9	6.0	2
	5	★	0510S06H05	37.3	44.9	100.9	0.9	6.0	2
	8	★	0510S06H08	53.8	61.4	118.9	0.9	6.0	2

Grade: ACT100

Diameter ø5.2 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.2	3	★	MDE 0520S06H03	20.6	28.4	82.9	0.9	6.0	2
	5	★	0520S06H05	37.1	44.9	100.9	0.9	6.0	2
	8	★	0520S06H08	53.6	61.4	118.9	0.9	6.0	2
5.3	3	★	MDE 0530S06H03	20.6	28.5	83.0	1.0	6.0	2
	5	★	0530S06H05	37.1	45.0	101.0	1.0	6.0	2
	8	★	0530S06H08	53.6	61.5	119.0	1.0	6.0	2
5.4	3	★	MDE 0540S06H03	20.4	28.5	83.0	1.0	6.0	2
	5	★	0540S06H05	36.9	45.0	101.0	1.0	6.0	2
	8	★	0540S06H08	53.4	61.5	119.0	1.0	6.0	2
5.5	3	★	MDE 0550S06H03	20.3	28.5	83.0	1.0	6.0	2
	5	★	0550S06H05	36.8	45.0	101.0	1.0	6.0	2
	8	★	0550S06H08	53.3	61.5	119.0	1.0	6.0	2
5.52	5	★	MDE 0552S06H05	40.6	49.0	101.0	1.0	6.0	2
5.54	5	★	0554S06H05	40.6	49.0	101.0	1.0	6.0	2
5.6	3	★	MDE 0560S06H03	22.6	31.0	83.0	1.0	6.0	2
	5	★	0560S06H05	40.6	49.0	101.0	1.0	6.0	2
	8	★	0560S06H08	58.6	67.0	119.0	1.0	6.0	2
5.7	3	★	MDE 0570S06H03	22.5	31.0	83.0	1.0	6.0	2
	5	★	0570S06H05	40.5	49.0	101.0	1.0	6.0	2
	8	★	0570S06H08	58.5	67.0	119.0	1.0	6.0	2
5.8	3	★	MDE 0580S06H03	22.4	31.1	83.1	1.1	6.0	2
	5	★	0580S06H05	40.4	49.1	101.1	1.1	6.0	2
	8	★	0580S06H08	58.4	67.1	119.1	1.1	6.0	2
5.9	3	★	MDE 0590S06H03	22.3	31.1	83.1	1.1	6.0	2
	5	★	0590S06H05	40.3	49.1	101.1	1.1	6.0	2
	8	★	0590S06H08	58.3	67.1	119.1	1.1	6.0	2
6.0	3	★	MDE 0600S06H03	22.1	31.1	83.1	1.1	6.0	2
	5	★	0600S06H05	40.1	49.1	101.1	1.1	6.0	2
	8	★	0600S06H08	58.1	67.1	119.1	1.1	6.0	2
6.1	3	★	MDE 0610S07H03	24.5	33.6	89.1	1.1	7.0	2
	5	★	0610S07H05	44.0	53.1	110.1	1.1	7.0	2
	8	★	0610S07H08	63.5	72.6	131.1	1.1	7.0	2
6.2	3	★	MDE 0620S07H03	24.3	33.6	89.1	1.1	7.0	2
	5	★	0620S07H05	43.8	53.1	110.1	1.1	7.0	2
	8	★	0620S07H08	63.3	72.6	131.1	1.1	7.0	2
6.3	3	★	MDE 0630S07H03	24.2	33.6	89.1	1.1	7.0	2
	5	★	0630S07H05	43.7	53.1	110.1	1.1	7.0	2
	8	★	0630S07H08	63.2	72.6	131.1	1.1	7.0	2
6.4	3	★	MDE 0640S07H03	24.1	33.7	89.2	1.2	7.0	2
	5	★	0640S07H05	43.6	53.2	110.2	1.2	7.0	2
	8	★	0640S07H08	63.1	72.7	131.2	1.2	7.0	2
6.5	3	★	MDE 0650S07H03	24.0	33.7	89.2	1.2	7.0	2
	5	★	0650S07H05	43.5	53.2	110.2	1.2	7.0	2
	8	★	0650S07H08	63.0	72.7	131.2	1.2	7.0	2

Grade: ACT100

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

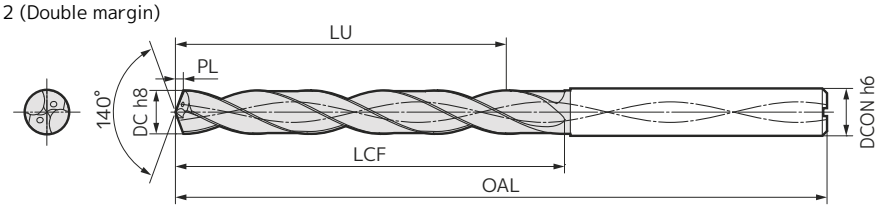
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Double margin)



Diameter ø6.6 to 7.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	3	★	MDE 0660S07H03	26.3	36.2	89.2	1.2	7.0	2
	5	★	0660S07H05	47.3	57.2	110.2	1.2	7.0	2
	8	★	0660S07H08	68.3	78.2	131.2	1.2	7.0	2
6.7	3	★	MDE 0670S07H03	26.2	36.2	89.2	1.2	7.0	2
	5	★	0670S07H05	47.2	57.2	110.2	1.2	7.0	2
	8	★	0670S07H08	68.2	78.2	131.2	1.2	7.0	2
6.8	3	★	MDE 0680S07H03	26.0	36.2	89.2	1.2	7.0	2
	5	★	0680S07H05	47.0	57.2	110.2	1.2	7.0	2
	8	★	0680S07H08	68.0	78.2	131.2	1.2	7.0	2
6.9	3	★	MDE 0690S07H03	26.0	36.3	89.3	1.3	7.0	2
	5	★	0690S07H05	47.0	57.3	110.3	1.3	7.0	2
	8	★	0690S07H08	68.0	78.3	131.3	1.3	7.0	2
7.0	3	★	MDE 0700S07H03	25.8	36.3	89.3	1.3	7.0	2
	5	★	0700S07H05	46.8	57.3	110.3	1.3	7.0	2
	8	★	0700S07H08	67.8	78.3	131.3	1.3	7.0	2
7.1	3	★	MDE 0710S08H03	28.2	38.8	95.3	1.3	8.0	2
	5	★	0710S08H05	50.7	61.3	119.3	1.3	8.0	2
	8	★	0710S08H08	73.2	83.8	143.3	1.3	8.0	2
7.2	3	★	MDE 0720S08H03	28.0	38.8	95.3	1.3	8.0	2
	5	★	0720S08H05	50.5	61.3	119.3	1.3	8.0	2
	8	★	0720S08H08	73.0	83.8	143.3	1.3	8.0	2
7.3	3	★	MDE 0730S08H03	27.9	38.8	95.3	1.3	8.0	2
	5	★	0730S08H05	50.4	61.3	119.3	1.3	8.0	2
	8	★	0730S08H08	72.9	83.8	143.3	1.3	8.0	2
7.36	5	★	MDE 0736S08H05	50.2	61.3	119.3	1.3	8.0	2
7.38	5	★	0738S08H05	50.2	61.3	119.3	1.3	8.0	2
7.4	3	★	MDE 0740S08H03	27.7	38.8	95.3	1.3	8.0	2
	5	★	0740S08H05	50.2	61.3	119.3	1.3	8.0	2
	8	★	0740S08H08	72.7	83.8	143.3	1.3	8.0	2
7.5	3	★	MDE 0750S08H03	27.7	38.9	95.4	1.4	8.0	2
	5	★	0750S08H05	50.2	61.4	119.4	1.4	8.0	2
	8	★	0750S08H08	72.7	83.9	143.4	1.4	8.0	2
7.52	5	★	MDE 0752S08H05	54.0	65.4	119.4	1.4	8.0	2
7.54	5	★	0754S08H05	54.0	65.4	119.4	1.4	8.0	2
7.6	3	★	MDE 0760S08H03	30.0	41.4	95.4	1.4	8.0	2
	5	★	0760S08H05	54.0	65.4	119.4	1.4	8.0	2
	8	★	0760S08H08	78.0	89.4	143.4	1.4	8.0	2
7.7	3	★	MDE 0770S08H03	29.9	41.4	95.4	1.4	8.0	2
	5	★	0770S08H05	53.9	65.4	119.4	1.4	8.0	2
	8	★	0770S08H08	77.9	89.4	143.4	1.4	8.0	2
7.8	3	★	MDE 0780S08H03	29.7	41.4	95.4	1.4	8.0	2
	5	★	0780S08H05	53.7	65.4	119.4	1.4	8.0	2
	8	★	0780S08H08	77.7	89.4	143.4	1.4	8.0	2

Grade: ACT100

Diameter ø7.9 to 9.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.9	3	★	MDE 0790S08H03	29.6	41.4	95.4	1.4	8.0	2
	5	★	0790S08H05	53.6	65.4	119.4	1.4	8.0	2
	8	★	0790S08H08	77.6	89.4	143.4	1.4	8.0	2
8.0	3	★	MDE 0800S08H03	29.5	41.5	95.5	1.5	8.0	2
	5	★	0800S08H05	53.5	65.5	119.5	1.5	8.0	2
	8	★	0800S08H08	77.5	89.5	143.5	1.5	8.0	2
8.1	3	★	MDE 0810S09H03	31.9	44.0	101.5	1.5	9.0	2
	5	★	0810S09H05	57.4	69.5	128.5	1.5	9.0	2
	8	★	0810S09H08	82.9	95.0	155.5	1.5	9.0	2
8.2	3	★	MDE 0820S09H03	31.7	44.0	101.5	1.5	9.0	2
	5	★	0820S09H05	57.2	69.5	128.5	1.5	9.0	2
	8	★	0820S09H08	82.7	95.0	155.5	1.5	9.0	2
8.3	3	★	MDE 0830S09H03	31.6	44.0	101.5	1.5	9.0	2
	5	★	0830S09H05	57.1	69.5	128.5	1.5	9.0	2
	8	★	0830S09H08	82.6	95.0	155.5	1.5	9.0	2
8.4	3	★	MDE 0840S09H03	31.4	44.0	101.5	1.5	9.0	2
	5	★	0840S09H05	56.9	69.5	128.5	1.5	9.0	2
	8	★	0840S09H08	82.4	95.0	155.5	1.5	9.0	2
8.5	3	★	MDE 0850S09H03	31.3	44.0	101.5	1.5	9.0	2
	5	★	0850S09H05	56.8	69.5	128.5	1.5	9.0	2
	8	★	0850S09H08	82.3	95.0	155.5	1.5	9.0	2
8.6	3	★	MDE 0860S09H03	33.7	46.6	101.6	1.6	9.0	2
	5	★	0860S09H05	60.7	73.6	128.6	1.6	9.0	2
	8	★	0860S09H08	87.7	100.6	155.6	1.6	9.0	2
8.7	3	★	MDE 0870S09H03	33.6	46.6	101.6	1.6	9.0	2
	5	★	0870S09H05	60.6	73.6	128.6	1.6	9.0	2
	8	★	0870S09H08	87.6	100.6	155.6	1.6	9.0	2
8.8	3	★	MDE 0880S09H03	33.4	46.6	101.6	1.6	9.0	2
	5	★	0880S09H05	60.4	73.6	128.6	1.6	9.0	2
	8	★	0880S09H08	87.4	100.6	155.6	1.6	9.0	2
8.9	3	★	MDE 0890S09H03	33.3	46.6	101.6	1.6	9.0	2
	5	★	0890S09H05	60.3	73.6	128.6	1.6	9.0	2
	8	★	0890S09H08	87.3	100.6	155.6	1.6	9.0	2
9.0	3	★	MDE 0900S09H03	33.1	46.6	101.6	1.6	9.0	2
	5	★	0900S09H05	60.1	73.6	128.6	1.6	9.0	2
	8	★	0900S09H08	87.1	100.6	155.6	1.6	9.0	2
9.1	3	★	MDE 0910S10H03	35.6	49.2	107.7	1.7	10.0	2
	5	★	0910S10H05	64.1	77.7	137.7	1.7	10.0	2
	8	★	0910S10H08	92.6	106.2	167.7	1.7	10.0	2
9.2	3	★	MDE 0920S10H03	35.4	49.2	107.7	1.7	10.0	2
	5	★	0920S10H05	63.9	77.7	137.7	1.7	10.0	2
	8	★	0920S10H08	92.4	106.2	167.7	1.7	10.0	2

Grade: ACT100

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

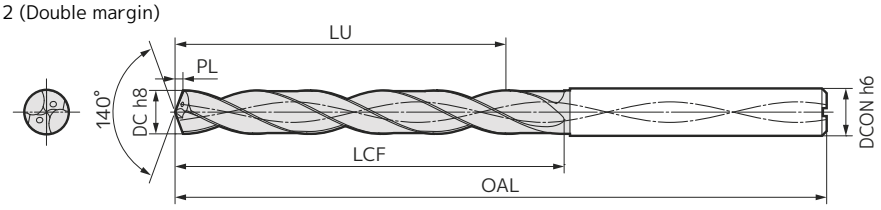
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Double margin)



Diameter ø9.24 to 10.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.24	5	★	MDE 0924S10H05	63.8	77.7	137.7	1.7	10.0	2
9.26	5	★	0926S10H05	63.8	77.7	137.7	1.7	10.0	2
9.3	3	★	MDE 0930S10H03	35.3	49.2	107.7	1.7	10.0	2
	5	★	0930S10H05	63.8	77.7	137.7	1.7	10.0	2
	8	★	0930S10H08	92.3	106.2	167.7	1.7	10.0	2
9.36	5	★	MDE 0936S10H05	63.6	77.7	137.7	1.7	10.0	2
9.38	5	★	0938S10H05	63.6	77.7	137.7	1.7	10.0	2
9.4	3	★	MDE 0940S10H03	35.1	49.2	107.7	1.7	10.0	2
	5	★	0940S10H05	63.6	77.7	137.7	1.7	10.0	2
	8	★	0940S10H08	92.1	106.2	167.7	1.7	10.0	2
9.5	3	★	MDE 0950S10H03	35.0	49.2	107.7	1.7	10.0	2
	5	★	0950S10H05	63.5	77.7	137.7	1.7	10.0	2
	8	★	0950S10H08	92.0	106.2	167.7	1.7	10.0	2
9.52	5	★	MDE 0952S10H05	67.3	81.7	137.7	1.7	10.0	2
9.54	5	★	0954S10H05	67.3	81.7	137.7	1.7	10.0	2
9.6	3	★	MDE 0960S10H03	37.3	51.7	107.7	1.7	10.0	2
	5	★	0960S10H05	67.3	81.7	137.7	1.7	10.0	2
	8	★	0960S10H08	97.3	111.7	167.7	1.7	10.0	2
9.7	3	★	MDE 0970S10H03	37.3	51.8	107.8	1.8	10.0	2
	5	★	0970S10H05	67.3	81.8	137.8	1.8	10.0	2
	8	★	0970S10H08	97.3	111.8	167.8	1.8	10.0	2
9.8	3	★	MDE 0980S10H03	37.1	51.8	107.8	1.8	10.0	2
	5	★	0980S10H05	67.1	81.8	137.8	1.8	10.0	2
	8	★	0980S10H08	97.1	111.8	167.8	1.8	10.0	2
9.9	3	★	MDE 0990S10H03	37.0	51.8	107.8	1.8	10.0	2
	5	★	0990S10H05	67.0	81.8	137.8	1.8	10.0	2
	8	★	0990S10H08	97.0	111.8	167.8	1.8	10.0	2
10.0	3	★	MDE 1000S10H03	36.8	51.8	107.8	1.8	10.0	2
	5	★	1000S10H05	66.8	81.8	137.8	1.8	10.0	2
	8	★	1000S10H08	96.8	111.8	167.8	1.8	10.0	2
10.1	3	★	MDE 1010S11H03	39.2	54.3	117.8	1.8	11.0	2
	5	★	1010S11H05	70.7	85.8	150.8	1.8	11.0	2
	8	★	1010S11H08	102.2	117.3	183.8	1.8	11.0	2
10.2	3	★	MDE 1020S11H03	39.1	54.4	117.9	1.9	11.0	2
	5	★	1020S11H05	70.6	85.9	150.9	1.9	11.0	2
	8	★	1020S11H08	102.1	117.4	183.9	1.9	11.0	2
10.3	3	★	MDE 1030S11H03	39.0	54.4	117.9	1.9	11.0	2
	5	★	1030S11H05	70.5	85.9	150.9	1.9	11.0	2
	8	★	1030S11H08	102.0	117.4	183.9	1.9	11.0	2
10.4	3	★	MDE 1040S11H03	38.8	54.4	117.9	1.9	11.0	2
	5	★	1040S11H05	70.3	85.9	150.9	1.9	11.0	2
	8	★	1040S11H08	101.8	117.4	183.9	1.9	11.0	2

Grade: ACT100

Diameter ø10.5 to 11.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.5	3	★	MDE 1050S11H03	38.7	54.4	117.9	1.9	11.0	2
	5	★	1050S11H05	70.2	85.9	150.9	1.9	11.0	2
	8	★	1050S11H08	101.7	117.4	183.9	1.9	11.0	2
10.6	3	★	MDE 1060S11H03	41.0	56.9	117.9	1.9	11.0	2
	5	★	1060S11H05	74.0	89.9	150.9	1.9	11.0	2
	8	★	1060S11H08	107.0	122.9	183.9	1.9	11.0	2
10.7	3	★	MDE 1070S11H03	40.9	56.9	117.9	1.9	11.0	2
	5	★	1070S11H05	73.9	89.9	150.9	1.9	11.0	2
	8	★	1070S11H08	106.9	122.9	183.9	1.9	11.0	2
10.8	3	★	MDE 1080S11H03	40.8	57.0	118.0	2.0	11.0	2
	5	★	1080S11H05	73.8	90.0	151.0	2.0	11.0	2
	8	★	1080S11H08	106.8	123.0	184.0	2.0	11.0	2
10.9	3	★	MDE 1090S11H03	40.7	57.0	118.0	2.0	11.0	2
	5	★	1090S11H05	73.7	90.0	151.0	2.0	11.0	2
	8	★	1090S11H08	106.7	123.0	184.0	2.0	11.0	2
11.0	3	★	MDE 1100S11H03	40.5	57.0	118.0	2.0	11.0	2
	5	★	1100S11H05	73.5	90.0	151.0	2.0	11.0	2
	8	★	1100S11H08	106.5	123.0	184.0	2.0	11.0	2
11.1	3	★	MDE 1110S12H03	42.9	59.5	124.0	2.0	12.0	2
	5	★	1110S12H05	77.4	94.0	160.0	2.0	12.0	2
	8	★	1110S12H08	111.9	128.5	196.0	2.0	12.0	2
11.2	3	★	MDE 1120S12H03	42.7	59.5	124.0	2.0	12.0	2
	5	★	1120S12H05	77.2	94.0	160.0	2.0	12.0	2
	8	★	1120S12H08	111.7	128.5	196.0	2.0	12.0	2
11.22	5	★	MDE 1122S12H05	77.2	94.0	160.0	2.0	12.0	2
11.24	5	★	1124S12H05	77.2	94.0	160.0	2.0	12.0	2
11.3	3	★	MDE 1130S12H03	42.7	59.6	124.1	2.1	12.0	2
	5	★	1130S12H05	77.2	94.1	160.1	2.1	12.0	2
	8	★	1130S12H08	111.7	128.6	196.1	2.1	12.0	2
11.36	5	★	MDE 1136S12H05	77.0	94.1	160.1	2.1	12.0	2
11.38	5	★	1138S12H05	77.0	94.1	160.1	2.1	12.0	2
11.4	3	★	MDE 1140S12H03	42.5	59.6	124.1	2.1	12.0	2
	5	★	1140S12H05	77.0	94.1	160.1	2.1	12.0	2
	8	★	1140S12H08	111.5	128.6	196.1	2.1	12.0	2
11.5	3	★	MDE 1150S12H03	42.4	59.6	124.1	2.1	12.0	2
	5	★	1150S12H05	76.9	94.1	160.1	2.1	12.0	2
	8	★	1150S12H08	111.4	128.6	196.1	2.1	12.0	2
11.6	3	★	MDE 1160S12H03	44.7	62.1	124.1	2.1	12.0	2
	5	★	1160S12H05	80.7	98.1	160.1	2.1	12.0	2
	8	★	1160S12H08	116.7	134.1	196.1	2.1	12.0	2
11.7	3	★	MDE 1170S12H03	44.6	62.1	124.1	2.1	12.0	2
	5	★	1170S12H05	80.6	98.1	160.1	2.1	12.0	2
	8	★	1170S12H08	116.6	134.1	196.1	2.1	12.0	2

Grade: ACT100

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

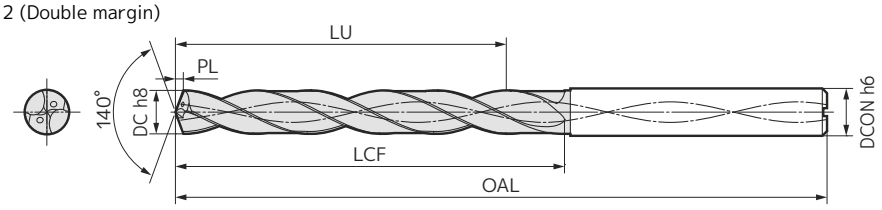
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Double margin)



Diameter ø11.8 to 13.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.8	3	★	MDE 1180S12H03	44.4	62.1	124.1	2.1	12.0	2
	5	★	1180S12H05	80.4	98.1	160.1	2.1	12.0	2
	8	★	1180S12H08	116.4	134.1	196.1	2.1	12.0	2
11.9	3	★	MDE 1190S12H03	44.4	62.2	124.2	2.2	12.0	2
	5	★	1190S12H05	80.4	98.2	160.2	2.2	12.0	2
	8	★	1190S12H08	116.4	134.2	196.2	2.2	12.0	2
12.0	3	★	MDE 1200S12H03	44.2	62.2	124.2	2.2	12.0	2
	5	★	1200S12H05	80.2	98.2	160.2	2.2	12.0	2
	8	★	1200S12H08	116.2	134.2	196.2	2.2	12.0	2
12.1	3	★	MDE 1210S13H03	46.6	64.7	130.2	2.2	13.0	2
	5	★	1210S13H05	84.1	102.2	169.2	2.2	13.0	2
	8	★	1210S13H08	121.6	139.7	208.2	2.2	13.0	2
12.2	3	★	MDE 1220S13H03	46.4	64.7	130.2	2.2	13.0	2
	5	★	1220S13H05	83.9	102.2	169.2	2.2	13.0	2
	8	★	1220S13H08	121.4	139.7	208.2	2.2	13.0	2
12.3	3	★	MDE 1230S13H03	46.3	64.7	130.2	2.2	13.0	2
	5	★	1230S13H05	83.8	102.2	169.2	2.2	13.0	2
	8	★	1230S13H08	121.3	139.7	208.2	2.2	13.0	2
12.4	3	★	MDE 1240S13H03	46.2	64.8	130.3	2.3	13.0	2
	5	★	1240S13H05	83.7	102.3	169.3	2.3	13.0	2
	8	★	1240S13H08	121.2	139.8	208.3	2.3	13.0	2
12.5	3	★	MDE 1250S13H03	46.1	64.8	130.3	2.3	13.0	2
	5	★	1250S13H05	83.6	102.3	169.3	2.3	13.0	2
	8	★	1250S13H08	121.1	139.8	208.3	2.3	13.0	2
12.6	3	★	MDE 1260S13H03	48.4	67.3	130.3	2.3	13.0	2
	5	★	1260S13H05	87.4	106.3	169.3	2.3	13.0	2
	8	★	1260S13H08	126.4	145.3	208.3	2.3	13.0	2
12.7	3	★	MDE 1270S13H03	48.3	67.3	130.3	2.3	13.0	2
	5	★	1270S13H05	87.3	106.3	169.3	2.3	13.0	2
	8	★	1270S13H08	126.3	145.3	208.3	2.3	13.0	2
12.8	3	★	MDE 1280S13H03	48.1	67.3	130.3	2.3	13.0	2
	5	★	1280S13H05	87.1	106.3	169.3	2.3	13.0	2
	8	★	1280S13H08	126.1	145.3	208.3	2.3	13.0	2
12.9	3	★	MDE 1290S13H03	48.0	67.3	130.3	2.3	13.0	2
	5	★	1290S13H05	87.0	106.3	169.3	2.3	13.0	2
	8	★	1290S13H08	126.0	145.3	208.3	2.3	13.0	2
13.0	3	★	MDE 1300S13H03	47.9	67.4	130.4	2.4	13.0	2
	5	★	1300S13H05	86.9	106.4	169.4	2.4	13.0	2
	8	★	1300S13H08	125.9	145.4	208.4	2.4	13.0	2
13.1	3	★	MDE 1310S14H03	50.3	69.9	136.4	2.4	14.0	2
	5	★	1310S14H05	90.8	110.4	178.4	2.4	14.0	2
	8	★	1310S14H08	131.3	150.9	220.4	2.4	14.0	2

Grade: ACT100

Diameter ø13.2 to 14.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.2	3	★	MDE 1320S14H03	50.1	69.9	136.4	2.4	14.0	2
	5	★	1320S14H05	90.6	110.4	178.4	2.4	14.0	2
	8	★	1320S14H08	131.1	150.9	220.4	2.4	14.0	2
13.3	3	★	MDE 1330S14H03	50.0	69.9	136.4	2.4	14.0	2
	5	★	1330S14H05	90.5	110.4	178.4	2.4	14.0	2
	8	★	1330S14H08	131.0	150.9	220.4	2.4	14.0	2
13.4	3	★	MDE 1340S14H03	49.8	69.9	136.4	2.4	14.0	2
	5	★	1340S14H05	90.3	110.4	178.4	2.4	14.0	2
	8	★	1340S14H08	130.8	150.9	220.4	2.4	14.0	2
13.5	3	★	MDE 1350S14H03	49.8	70.0	136.5	2.5	14.0	2
	5	★	1350S14H05	90.3	110.5	178.5	2.5	14.0	2
	8	★	1350S14H08	130.8	151.0	220.5	2.5	14.0	2
13.6	3	★	MDE 1360S14H03	52.1	72.5	136.5	2.5	14.0	2
	5	★	1360S14H05	94.1	114.5	178.5	2.5	14.0	2
	8	★	1360S14H08	136.1	156.5	220.5	2.5	14.0	2
13.7	3	★	MDE 1370S14H03	52.0	72.5	136.5	2.5	14.0	2
	5	★	1370S14H05	94.0	114.5	178.5	2.5	14.0	2
	8	★	1370S14H08	136.0	156.5	220.5	2.5	14.0	2
13.8	3	★	MDE 1380S14H03	51.8	72.5	136.5	2.5	14.0	2
	5	★	1380S14H05	93.8	114.5	178.5	2.5	14.0	2
	8	★	1380S14H08	135.8	156.5	220.5	2.5	14.0	2
13.9	3	★	MDE 1390S14H03	51.7	72.5	136.5	2.5	14.0	2
	5	★	1390S14H05	93.7	114.5	178.5	2.5	14.0	2
	8	★	1390S14H08	135.7	156.5	220.5	2.5	14.0	2
14.0	3	★	MDE 1400S14H03	51.5	72.5	136.5	2.5	14.0	2
	5	★	1400S14H05	93.5	114.5	178.5	2.5	14.0	2
	8	★	1400S14H08	135.5	156.5	220.5	2.5	14.0	2
14.1	3	★	MDE 1410S15H03	54.0	75.1	142.6	2.6	15.0	2
	5	★	1410S15H05	97.5	118.6	187.6	2.6	15.0	2
	8	★	1410S15H08	141.0	162.1	232.6	2.6	15.0	2
14.2	3	★	MDE 1420S15H03	53.8	75.1	142.6	2.6	15.0	2
	5	★	1420S15H05	97.3	118.6	187.6	2.6	15.0	2
	8	★	1420S15H08	140.8	162.1	232.6	2.6	15.0	2
14.3	3	★	MDE 1430S15H03	53.7	75.1	142.6	2.6	15.0	2
	5	★	1430S15H05	97.2	118.6	187.6	2.6	15.0	2
	8	★	1430S15H08	140.7	162.1	232.6	2.6	15.0	2
14.4	3	★	MDE 1440S15H03	53.5	75.1	142.6	2.6	15.0	2
	5	★	1440S15H05	97.0	118.6	187.6	2.6	15.0	2
	8	★	1440S15H08	140.5	162.1	232.6	2.6	15.0	2
14.5	3	★	MDE 1450S15H03	53.4	75.1	142.6	2.6	15.0	2
	5	★	1450S15H05	96.9	118.6	187.6	2.6	15.0	2
	8	★	1450S15H08	140.4	162.1	232.6	2.6	15.0	2

Grade: ACT100

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

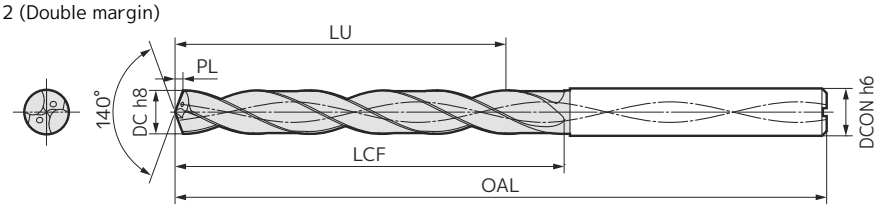
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Double margin)



Diameter ø14.6 to 15.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
14.6	3	★	**MDE 1460S15H03**	55.8	77.7	142.7	2.7	15.0	2
	5	★	**1460S15H05**	100.8	122.7	187.7	2.7	15.0	2
	8	★	**1460S15H08**	145.8	167.7	232.7	2.7	15.0	2
14.7	3	★	**MDE 1470S15H03**	55.7	77.7	142.7	2.7	15.0	2
	5	★	**1470S15H05**	100.7	122.7	187.7	2.7	15.0	2
	8	★	**1470S15H08**	145.7	167.7	232.7	2.7	15.0	2
14.8	3	★	**MDE 1480S15H03**	55.5	77.7	142.7	2.7	15.0	2
	5	★	**1480S15H05**	100.5	122.7	187.7	2.7	15.0	2
	8	★	**1480S15H08**	145.5	167.7	232.7	2.7	15.0	2
14.9	3	★	**MDE 1490S15H03**	55.4	77.7	142.7	2.7	15.0	2
	5	★	**1490S15H05**	100.4	122.7	187.7	2.7	15.0	2
	8	★	**1490S15H08**	145.4	167.7	232.7	2.7	15.0	2
15.0	3	★	**MDE 1500S15H03**	55.2	77.7	142.7	2.7	15.0	2
	5	★	**1500S15H05**	100.2	122.7	187.7	2.7	15.0	2
	8	★	**1500S15H08**	145.2	167.7	232.7	2.7	15.0	2
15.1	3	★	**MDE 1510S16H03**	57.6	80.2	148.7	2.7	16.0	2
	5	★	**1510S16H05**	104.1	126.7	196.7	2.7	16.0	2
	8	★	**1510S16H08**	150.6	173.2	244.7	2.7	16.0	2
15.2	3	★	**MDE 1520S16H03**	57.5	80.3	148.8	2.8	16.0	2
	5	★	**1520S16H05**	104.0	126.8	196.8	2.8	16.0	2
	8	★	**1520S16H08**	150.5	173.3	244.8	2.8	16.0	2
15.3	3	★	**MDE 1530S16H03**	57.4	80.3	148.8	2.8	16.0	2
	5	★	**1530S16H05**	103.9	126.8	196.8	2.8	16.0	2
	8	★	**1530S16H08**	150.4	173.3	244.8	2.8	16.0	2
15.4	3	★	**MDE 1540S16H03**	57.2	80.3	148.8	2.8	16.0	2
	5	★	**1540S16H05**	103.7	126.8	196.8	2.8	16.0	2
	8	★	**1540S16H08**	150.2	173.3	244.8	2.8	16.0	2
15.5	3	★	**MDE 1550S16H03**	57.1	80.3	148.8	2.8	16.0	2
	5	★	**1550S16H05**	103.6	126.8	196.8	2.8	16.0	2
	8	★	**1550S16H08**	150.1	173.3	244.8	2.8	16.0	2
15.6	3	★	**MDE 1560S16H03**	59.4	82.8	148.8	2.8	16.0	2
	5	★	**1560S16H05**	107.4	130.8	196.8	2.8	16.0	2
	8	★	**1560S16H08**	155.4	178.8	244.8	2.8	16.0	2
15.7	3	★	**MDE 1570S16H03**	59.4	82.9	148.9	2.9	16.0	2
	5	★	**1570S16H05**	107.4	130.9	196.9	2.9	16.0	2
	8	★	**1570S16H08**	155.4	178.9	244.9	2.9	16.0	2
15.8	3	★	**MDE 1580S16H03**	59.2	82.9	148.9	2.9	16.0	2
	5	★	**1580S16H05**	107.2	130.9	196.9	2.9	16.0	2
	8	★	**1580S16H08**	155.2	178.9	244.9	2.9	16.0	2
15.9	3	★	**MDE 1590S16H03**	59.1	82.9	148.9	2.9	16.0	2
	5	★	**1590S16H05**	107.1	130.9	196.9	2.9	16.0	2
	8	★	**1590S16H08**	155.1	178.9	244.9	2.9	16.0	2

Grade: ACT100

Diameter ø16.0 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
16.0	3	★	**MDE 1600S16H03**	58.9	82.9	148.9	2.9	16.0	2
	5	★	**1600S16H05**	106.9	130.9	196.9	2.9	16.0	2
	8	★	**1600S16H08**	154.9	178.9	244.9	2.9	16.0	2
16.5	3	★	**MDE 1650S17H03**	60.8	85.5	155.0	3.0	17.0	2
	5	★	**1650S17H05**	110.3	135.0	206.0	3.0	17.0	2
17.0	3	★	**MDE 1700S17H03**	62.6	88.1	155.1	3.1	17.0	2
	5	★	**1700S17H05**	113.6	139.1	206.1	3.1	17.0	2
17.5	3	★	**MDE 1750S18H03**	64.5	90.7	161.2	3.2	18.0	2
	5	★	**1750S18H05**	116.9	143.2	217.3	3.2	18.0	2
18.0	3	★	**MDE 1800S18H03**	66.3	93.3	161.3	3.3	18.0	2
	5	★	**1800S18H05**	120.3	147.3	217.3	3.3	18.0	2
18.5	3	★	**MDE 1850S19H03**	68.2	95.9	167.4	3.4	19.0	2
	5	★	**1850S19H05**	123.6	151.4	224.4	3.4	19.0	2
19.0	3	★	**MDE 1900S19H03**	70.0	98.5	167.5	3.5	19.0	2
	5	★	**1900S19H05**	127.0	155.5	224.5	3.5	19.0	2
19.5	3	★	**MDE 1950S20H03**	71.8	101.0	173.5	3.5	20.0	2
	5	★	**1950S20H05**	130.3	159.5	233.5	3.5	20.0	2
20.0	3	★	**MDE 2000S20H03**	73.6	103.6	173.6	3.6	20.0	2
	5	★	**2000S20H05**	133.6	163.6	233.6	3.6	20.0	2

Grade: ACT100

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

NeXEO MDE-H type (Internal Coolant Supply)

Recommended Cutting Conditions (MDE-H type, internal coolant supply, 3D/5D/8D)

1. The recommended cutting conditions below are for cases where a water soluble coolant is used.
2. MQL coolant is also usable. Note that external mixing MQL equipment may not generate MQL with a shank diameter (DCON) of ø16mm or more.
3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
4. Make sure the flute does not enter the collet.
5. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
   *If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

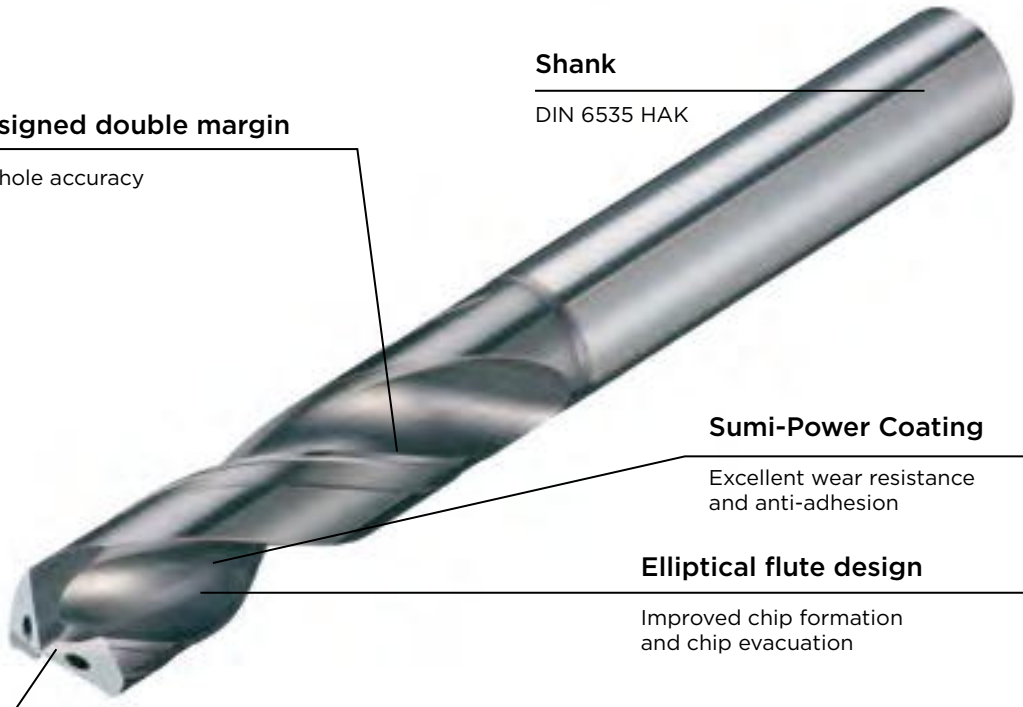
Work Material		Mild Steel/Low Carbon Steel S235JR/C15 up to 160HB		Carbon Steel C35/Cf53 up to 230HB		Alloy Steel CrMo/Cr 20 to 30HRC		Alloy Steel CrMo/Cr 30 to 38HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		30 to 80m/min		30 to 80m/min	
	Dia. ≥ ø3	60 to 100m/min		60 to 120m/min		50 to 100m/min		40 to 80m/min	
Diameter DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06
ø2.0		9,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08
ø2.5		9,500	0.04 to 0.08	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.04 to 0.08
ø3.0		9,600	0.05 to 0.12	8,500	0.05 to 0.12	7,500	0.05 to 0.12	6,400	0.05 to 0.12
ø4.0		7,200	0.07 to 0.17	6,400	0.07 to 0.17	5,600	0.07 to 0.17	4,800	0.07 to 0.17
ø5.0		5,800	0.08 to 0.20	5,100	0.08 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20
ø6.0		4,800	0.10 to 0.20	4,300	0.10 to 0.20	3,800	0.10 to 0.20	3,200	0.10 to 0.20
ø7.0		4,100	0.12 to 0.23	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.12 to 0.23
ø8.0		3,600	0.12 to 0.25	3,200	0.12 to 0.25	2,800	0.12 to 0.25	2,400	0.12 to 0.25
ø9.0		3,200	0.14 to 0.25	2,900	0.14 to 0.25	2,500	0.14 to 0.25	2,200	0.14 to 0.25
ø10.0		2,900	0.16 to 0.28	2,600	0.16 to 0.28	2,300	0.16 to 0.28	2,000	0.16 to 0.28
ø11.0		2,700	0.18 to 0.30	2,400	0.18 to 0.30	2,100	0.18 to 0.30	1,800	0.18 to 0.30
ø12.0		2,400	0.20 to 0.30	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30
ø14.0		2,100	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30
ø16.0		1,800	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30
ø18.0		1,600	0.20 to 0.30	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30
ø20.0		1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30
High-efficiency Product		HGS series		HGS series		HGS series		HGS series	

Work Material		Cast Iron GG-25 to 280HB		Ductile Cast Iron GGG-40.3/GGG-60 up to 270HB		Stainless Steel X5CrNi18-10/X12Cr13 up to 200HB		Special Steel/Pre-hardened Steel 105WCr6/X40CrMoV5-1 (non-tempered) 30 to 38HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		30 to 80m/min		30 to 60m/min	
	Dia. ≥ ø3	60 to 100m/min		50 to 100m/min		40 to 80m/min		30 to 60m/min	
Diameter DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.02 to 0.05	8,500	0.02 to 0.04
ø2.0		8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.03 to 0.06	7,100	0.03 to 0.06
ø2.5		9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.03 to 0.07	5,700	0.03 to 0.06
ø3.0		8,500	0.06 to 0.15	7,500	0.05 to 0.12	6,400	0.05 to 0.12	4,800	0.05 to 0.10
ø4.0		6,400	0.08 to 0.18	5,600	0.07 to 0.17	4,800	0.07 to 0.17	3,600	0.06 to 0.13
ø5.0		5,100	0.10 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20	2,900	0.07 to 0.15
ø6.0		4,300	0.12 to 0.23	3,800	0.10 to 0.20	3,200	0.10 to 0.20	2,400	0.08 to 0.18
ø7.0		3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.10 to 0.23	2,100	0.10 to 0.20
ø8.0		3,200	0.18 to 0.25	2,800	0.12 to 0.25	2,400	0.10 to 0.20	1,800	0.12 to 0.22
ø9.0		2,900	0.17 to 0.25	2,500	0.14 to 0.25	2,200	0.12 to 0.23	1,600	0.14 to 0.22
ø10.0		2,600	0.18 to 0.28	2,300	0.16 to 0.28	2,000	0.12 to 0.23	1,500	0.16 to 0.25
ø11.0		2,400	0.20 to 0.30	2,100	0.18 to 0.30	1,800	0.15 to 0.25	1,400	0.18 to 0.28
ø12.0		2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.15 to 0.25	1,200	0.18 to 0.28
ø14.0		1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.15 to 0.25	1,100	0.18 to 0.30
ø16.0		1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.15 to 0.25	900	0.18 to 0.30
ø18.0		1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.15 to 0.25	800	0.18 to 0.30
ø20.0		1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.15 to 0.25	720	0.18 to 0.30
High-efficiency Product		HX series (HY series)		HX series (HY series)		MDM series		HGS series	

*Non-ferrous metal machining is possible with conditions similar to P-class, but we recommend the use of a dedicated drill (MDA series).

SDP series (Internal Coolant Supply)

■ Features



Shank

DIN 6535 HAK

New designed double margin

Excellent hole accuracy

Sumi-Power Coating

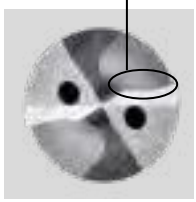
Excellent wear resistance
and anti-adhesion

Elliptical flute design

Improved chip formation
and chip evacuation

**Curved cutting edge,
optimized edge preparation**

Low cutting force

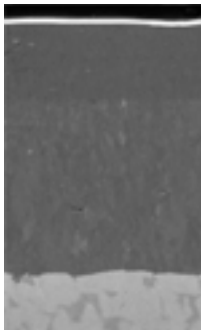


Stock Size

Ø3,0 ~ Ø12,0
Increment 0,1mm

Ø12,1 ~ Ø16,0
Standard diameter

Coating Structure



Improved anti-adhesion AlCrTiN lubricant layer coating with high Al content improves friction condition.

High wear resistance
Tough and hard
AlCrTiN super multilayer

Substrate

■ Advantages

- The specific and optimum solution for a wide range of application conditions
- Top performance parameters, maximum feed and stable long tool life
- Double margin design for high-precision holes
- Good balance of high wear resistance and toughness
- Curved cutting edge - ideal for removing chips
- Reliable and high productivity performance

■ Maximum Feed Rate Result

Feed Rate (mm/rev)	0,30	0,40	0,50	0,55	0,60	0,65	0,70	0,75	0,80
SDP Type	OK	OK	OK	OK	OK	OK	OK	OK	
Competitor	OK	 Breakage!							

Internal test conditions

Drill:	Ø 4, L/D = 5
Work Material:	Carbon Steel (C50)
Cutting Data:	v_c = 80 m/rev, a_p = 18 mm

SDP series - Recommended Cutting Conditions/Identification

■ Recommended Cutting Conditions

Material Group						SDP_____U_HAK PCX70					
ISO 513	Work Material	Type/ Structure	R_m N/mm²	Hardness HB30	Fitness	Ø 3,0–6,0 mm		Ø 6,1–10,0 mm		Ø 10,1–16,0 mm	
						v_c = m/min	Feed rate (mm/rev)	v_c = m/min	Feed rate (mm/rev)	v_c = m/min	Feed rate (mm/rev)
P	Carbon steel Cast steel	free cutting steel	420	125	◉	50-**80**-120	0,15-**0,20**-0,31	70-**110**-140	0,20-**0,25**-0,42	80-**120**-160	0,25-**0,30**-0,53
		construction steel	650	190	◉	50-**80**-120	0,15-**0,20**-0,31	70-**110**-140	0,20-**0,25**-0,42	80-**120**-160	0,25-**0,30**-0,53
		case-hardened steel	850	250	◉	50-**80**-120	0,15-**0,20**-0,31	70-**110**-140	0,20-**0,25**-0,42	80-**120**-160	0,25-**0,30**-0,53
		heat-treatable steel	750	270	◉	50-**80**-120	0,15-**0,20**-0,31	70-**110**-140	0,20-**0,25**-0,42	80-**120**-160	0,25-**0,30**-0,50
		spring steel	1000	300	◉	10-**20**-30	0,05-**0,06**-0,11	15-**22**-30	0,08-**0,09**-0,14	20-**28**-35	0,08-**0,09**-0,16
	Low alloy steel Cast steel	case-hardened steel	600	180	◉	50-**70**-90	0,10-**0,14**-0,24	60-**80**-110	0,15-**0,20**-0,32	70-**100**-120	0,20-**0,25**-0,40
		heat-treatable steel	930	275	◉	45-**65**-85	0,10-**0,14**-0,24	60-**80**-110	0,15-**0,22**-0,34	65-**95**-120	0,20-**0,25**-0,37
		bearing steel	1000	300	◎	40-**60**-80	0,10-**0,15**-0,26	60-**80**-110	0,15-**0,20**-0,32	60-**90**-120	0,20-**0,25**-0,37
		nitriding steel	1200	350	◉	35-**55**-75	0,10-**0,15**-0,26	55-**75**-110	0,15-**0,22**-0,32	55-**80**-110	0,20-**0,27**-0,38
		cold work steel	680	200	◎	30-**40**-50	0,10-**0,15**-0,25	30-**40**-50	0,12-**0,20**-0,28	30-**40**-50	0,12-**0,20**-0,32
	High alloy steel	tool steel	1100	325	◎	20-**30**-40	0,10-**0,12**-0,23	20-**30**-40	0,12-**0,15**-0,27	20-**30**-40	0,14-**0,18**-0,32
		hot work steel									
M	Stainless steel Cast steel	martensitic/ferritic	680	200	◎	40-**55**-70	0,08-**0,10**-0,21	40-**60**-75	0,10-**0,12**-0,25	50-**70**-80	0,10-**0,12**-0,25
		martensitic	820	240	○	30-**45**-60	0,08-**0,10**-0,20	40-**60**-70	0,10-**0,12**-0,24	50-**60**-80	0,10-**0,12**-0,24
		austenitic	600	180	○	30-**45**-60	0,08-**0,10**-0,20	40-**60**-70	0,10-**0,12**-0,24	50-**60**-80	0,10-**0,12**-0,24
		Duplex	740	230	○	30-**45**-60	0,06-**0,08**-0,18	40-**60**-70	0,08-**0,10**-0,23	50-**60**-80	0,10-**0,10**-0,23
K	Cast iron GG	ferritic/pearlitic		180	◉	50-**70**-90	0,15-**0,20**-0,36	60-**80**-100	0,20-**0,25**-0,40	70-**100**-120	0,25-**0,30**-0,42
		pearlitic		260	◉	40-**60**-80	0,15-**0,20**-0,36	50-**70**-90	0,20-**0,25**-0,40	60-**80**-100	0,25-**0,30**-0,42
	Cast iron GGG	ferritic		160	◉	50-**70**-90	0,15-**0,18**-0,31	60-**80**-100	0,20-**0,25**-0,40	70-**100**-120	0,25-**0,30**-0,42
		pearlitic		250	◉	40-**60**-80	0,15-**0,18**-0,31	50-**70**-90	0,20-**0,25**-0,40	70-**80**-100	0,25-**0,30**-0,42
S	Heat resisting alloys	Fe-based			◎	10-**20**-30	0,08-**0,09**-0,13	15-**22**-32	0,08-**0,10**-0,15	20-**28**-35	0,10-**0,12**-0,19
		Ni / Co-based			◎	10-**20**-30	0,08-**0,09**-0,13	15-**22**-32	0,08-**0,10**-0,15	20-**28**-35	0,10-**0,12**-0,19
	Titanium Titanium alloys	pure Titanium	430								
		Ti-Basis			◎	10-**20**-30	0,05-**0,06**-0,12	15-**22**-32	0,08-**0,09**-0,17	20-**28**-35	0,08-**0,09**-0,17
N	Aluminium Al-wrought alloys	pure aluminium									
		wrought alloys									
	Aluminium Cast alloys	Si ≤ 12 %									
		Si ≥ 12 %			○	70-**90**-100	0,15-**0,20**-0,25	80-**100**-120	0,20-**0,25**-0,30	100-**120**-140	0,25-**0,30**-0,35
		Al - Mg alloys									
	Zinc die-cast	Zn alloys									
	Copper alloys	Copper									
		Brass			◎	80-**100**-120	0,15-**0,20**-0,25	110-**130**-180	0,20-**0,25**-0,30	160-**180**-200	0,25-**0,30**-0,35
		Bronze									
H	Hardened steel	45 HRC			◎	10-**20**-30	0,08-**0,09**-0,10	15-**22**-32	0,08-**0,10**-0,12	20-**28**-35	0,12-**0,15**-0,20
		55 HRC									
		60 HRC									
		> 60 HRC									

◉ Preferred choice ◎ Suitable ○ Possible

■ SDM-Identification

SDP 0800U 3 HAK PCX70

- **SDP**: Sumi-Drill **M** (ISO-Code)
- **0800**: Drill Diameter 8,0mm
- **U**: Universal
- **3**: Drilling Depth 3D/5D
- **HAK**: DIN 6535 Form HAK
- PCX70: Grade

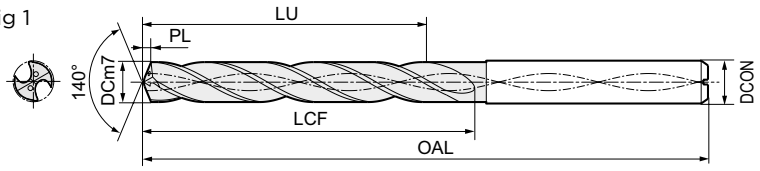
SDP series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DD Coat | 3D | 5D | 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø3.0 to 4.65mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	**SDP 0300 U3 HAK**	15.0	19.5	61.5	0.5	6.0	1
	5	★	**0300 U5 HAK**	22.0	26.5	65.5	0.5	6.0	1
	7	★	**0300 U7 HAK**	26.0	30.5	69.5	0.5	6.0	1
3.1	3	★	**SDP 0310 U3 HAK**	15.0	19.6	61.6	0.6	6.0	1
	5	★	**0310 U5 HAK**	22.0	26.6	65.6	0.6	6.0	1
	7	★	**0310 U7 HAK**	26.0	30.6	69.6	0.6	6.0	1
3.2	3	★	**SDP 0320 U3 HAK**	14.8	19.6	61.6	0.6	6.0	1
	5	★	**0320 U5 HAK**	21.8	26.6	65.6	0.6	6.0	1
	7	★	**0320 U7 HAK**	25.8	30.6	69.6	0.6	6.0	1
3.25	3	★	**SDP 0325 U3 HAK**	14.7	19.6	61.6	0.6	6.0	1
	5	★	**0325 U5 HAK**	21.7	26.6	65.6	0.6	6.0	1
	7		**0325 U7 HAK**	25.7	30.6	69.6	0.6	6.0	1
3.3	3	★	**SDP 0330 U3 HAK**	14.7	19.6	61.6	0.6	6.0	1
	5	★	**0330 U5 HAK**	21.7	26.6	65.6	0.6	6.0	1
	7	★	**0330 U7 HAK**	25.7	30.6	69.6	0.6	6.0	1
3.4	3	★	**SDP 0340 U3 HAK**	14.5	19.6	61.6	0.6	6.0	1
	5	★	**0340 U5 HAK**	21.5	26.6	65.6	0.6	6.0	1
	7	★	**0340 U7 HAK**	31.0	36.1	74.6	0.6	6.0	1
3.5	3	★	**SDP 0350 U3 HAK**	14.4	19.6	61.6	0.6	6.0	1
	5	★	**0350 U5 HAK**	21.4	26.6	65.6	0.6	6.0	1
	7	★	**0350 U7 HAK**	30.9	36.1	74.6	0.6	6.0	1
3.6	3	★	**SDP 0360 U3 HAK**	14.3	19.7	61.7	0.7	6.0	1
	5	★	**0360 U5 HAK**	21.3	26.7	65.7	0.7	6.0	1
	7	★	**0360 U7 HAK**	30.8	36.2	74.7	0.7	6.0	1
3.7	3	★	**SDP 0370 U3 HAK**	14.2	19.7	61.7	0.7	6.0	1
	5	★	**0370 U5 HAK**	21.2	26.7	65.7	0.7	6.0	1
	7	★	**0370 U7 HAK**	30.7	36.2	74.7	0.7	6.0	1
3.8	3	★	**SDP 0380 U3 HAK**	18.0	23.7	65.7	0.7	6.0	1
	5	★	**0380 U5 HAK**	30.0	35.7	73.7	0.7	6.0	1
	7	★	**0380 U7 HAK**	32.5	38.2	74.7	0.7	6.0	1
3.9	3	★	**SDP 0390 U3 HAK**	17.9	23.7	65.7	0.7	6.0	1
	5	★	**0390 U5 HAK**	29.9	35.7	73.7	0.7	6.0	1
	7	★	**0390 U7 HAK**	32.4	38.2	74.7	0.7	6.0	1
4.0	3	★	**SDP 0400 U3 HAK**	17.7	23.7	65.7	0.7	6.0	1
	5	★	**0400 U5 HAK**	29.7	35.7	73.7	0.7	6.0	1
	7	★	**0400 U7 HAK**	32.2	38.2	74.7	0.7	6.0	1
4.1	3	★	**SDP 0410 U3 HAK**	17.6	23.7	65.7	0.7	6.0	1
	5	★	**0410 U5 HAK**	29.6	35.7	73.7	0.7	6.0	1
	7	★	**0410 U7 HAK**	32.1	38.2	74.7	0.7	6.0	1
4.2	3	★	**SDP 0420 U3 HAK**	17.5	23.8	65.8	0.8	6.0	1
	5	★	**0420 U5 HAK**	29.5	35.8	73.8	0.8	6.0	1
	7	★	**0420 U7 HAK**	32.0	38.3	74.8	0.8	6.0	1
4.3	3	★	**SDP 0430 U3 HAK**	17.4	23.8	65.8	0.8	6.0	1
	5	★	**0430 U5 HAK**	29.4	35.8	73.8	0.8	6.0	1
	7	★	**0430 U7 HAK**	40.4	46.8	84.8	0.8	6.0	1
4.4	3	★	**SDP 0440 U3 HAK**	17.2	23.8	65.8	0.8	6.0	1
	5	★	**0440 U5 HAK**	29.2	35.8	73.8	0.8	6.0	1
	7	★	**0440 U7 HAK**	40.2	46.8	84.8	0.8	6.0	1
4.5	3	★	**SDP 0450 U3 HAK**	17.1	23.8	65.8	0.8	6.0	1
	5	★	**0450 U5 HAK**	29.1	35.8	73.8	0.8	6.0	1
	7	★	**0450 U7 HAK**	40.1	46.8	84.8	0.8	6.0	1
4.6	3	★	**SDP 0460 U3 HAK**	16.9	23.8	65.8	0.8	6.0	1
	5	★	**0460 U5 HAK**	28.9	35.8	73.8	0.8	6.0	1
	7	★	**0460 U7 HAK**	39.9	46.8	84.8	0.8	6.0	1
4.65	3	★	**SDP 0465 U3 HAK**	16.8	23.8	65.8	0.8	6.0	1
	5	★	**0465 U5 HAK**	28.8	35.8	73.8	0.8	6.0	1
	7	★	**0465 U7 HAK**	39.8	46.8	84.8	0.8	6.0	1

Grade: PCX70

Diameter ø4.7 to 6.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.7	3	★	**SDP 0470 U3 HAK**	16.9	23.9	65.9	0.9	6.0	1
	5	★	**0470 U5 HAK**	28.9	35.9	73.9	0.9	6.0	1
	7	★	**0470 U7 HAK**	39.9	46.9	84.9	0.9	6.0	1
4.8	3	★	**SDP 0480 U3 HAK**	20.7	27.9	65.9	0.9	6.0	1
	5	★	**0480 U5 HAK**	36.7	43.9	81.9	0.9	6.0	1
	7	★	**0480 U7 HAK**	44.7	51.9	89.9	0.9	6.0	1
4.9	3	★	**SDP 0490 U3 HAK**	20.6	27.9	65.9	0.9	6.0	1
	5	★	**0490 U5 HAK**	36.6	43.9	81.9	0.9	6.0	1
	7	★	**0490 U7 HAK**	44.6	51.9	89.9	0.9	6.0	1
5.0	3	★	**SDP 0500 U3 HAK**	20.4	27.9	65.9	0.9	6.0	1
	5	★	**0500 U5 HAK**	36.4	43.9	81.9	0.9	6.0	1
	7	★	**0500 U7 HAK**	44.4	51.9	89.9	0.9	6.0	1
5.1	3	★	**SDP 0510 U3 HAK**	20.3	27.9	65.9	0.9	6.0	1
	5	★	**0510 U5 HAK**	36.3	43.9	81.9	0.9	6.0	1
	7	★	**0510 U7 HAK**	44.3	51.9	89.9	0.9	6.0	1
5.2	3	★	**SDP 0520 U3 HAK**	20.1	27.9	65.9	0.9	6.0	1
	5	★	**0520 U5 HAK**	36.1	43.9	81.9	0.9	6.0	1
	7	★	**0520 U7 HAK**	44.1	51.9	89.9	0.9	6.0	1
5.3	3	★	**SDP 0530 U3 HAK**	20.1	28.0	66.0	1.0	6.0	1
	5	★	**0530 U5 HAK**	36.1	44.0	82.0	1.0	6.0	1
	7	★	**0530 U7 HAK**	44.1	52.0	90.0	1.0	6.0	1
5.4	3	★	**SDP 0540 U3 HAK**	19.9	28.0	66.0	1.0	6.0	1
	5	★	**0540 U5 HAK**	35.9	44.0	82.0	1.0	6.0	1
	7	★	**0540 U7 HAK**	50.9	59.0	97.0	1.0	6.0	1
5.5	3	★	**SDP 0550 U3 HAK**	19.8	28.0	66.0	1.0	6.0	1
	5	★	**0550 U5 HAK**	35.8	44.0	82.0	1.0	6.0	1
	7	★	**0550 U7 HAK**	50.8	59.0	97.0	1.0	6.0	1
5.55	3	★	**SDP 0555 U3 HAK**	19.7	28.0	66.0	1.0	6.0	1
	5	★	**0555 U5 HAK**	35.7	44.0	82.0	1.0	6.0	1
	7		**0555 U7 HAK**	50.7	59.0	97.0	1.0	6.0	1
5.6	3	★	**SDP 0560 U3 HAK**	19.6	28.0	66.0	1.0	6.0	1
	5	★	**0560 U5 HAK**	35.6	44.0	82.0	1.0	6.0	1
	7		**0560 U7 HAK**	50.6	59.0	97.0	1.0	6.0	1
5.7	3	★	**SDP 0570 U3 HAK**	19.5	28.0	66.0	1.0	6.0	1
	5	★	**0570 U5 HAK**	35.5	44.0	82.0	1.0	6.0	1
	7	★	**0570 U7 HAK**	50.5	59.0	97.0	1.0	6.0	1
5.8	3	★	**SDP 0580 U3 HAK**	19.4	28.1	66.1	1.1	6.0	1
	5	★	**0580 U5 HAK**	35.4	44.1	82.1	1.1	6.0	1
	7	★	**0580 U7 HAK**	50.4	59.1	97.1	1.1	6.0	1
5.9	3	★	**SDP 0590 U3 HAK**	19.3	28.1	66.1	1.1	6.0	1
	5	★	**0590 U5 HAK**	35.3	44.1	82.1	1.1	6.0	1
	7	★	**0590 U7 HAK**	50.3	59.1	97.1	1.1	6.0	1
6.0	3	★	**SDP 0600 U3 HAK**	19.1	28.1	66.1	1.1	6.0	1
	5	★	**0600 U5 HAK**	35.1	44.1	82.1	1.1	6.0	1
	7	★	**0600 U7 HAK**	50.1	59.1	97.1	1.1	6.0	1
6.1	3	★	**SDP 0610 U3 HAK**	25.0	34.1	79.1	1.1	8.0	1
	5	★	**0610 U5 HAK**	44.0	53.1	91.1	1.1	8.0	1
	7		**0610 U7 HAK**	59.0	68.1	106.1	1.1	8.0	1
6.2	3	★	**SDP 0620 U3 HAK**	24.8	34.1	79.1	1.1	8.0	1
	5	★	**0620 U5 HAK**	43.8	53.1	91.1	1.1	8.0	1
	7	★	**0620 U7 HAK**	58.8	68.1	106.1	1.1	8.0	1
6.3	3	★	**SDP 0630 U3 HAK**	24.7	34.1	79.1	1.1	8.0	1
	5	★	**0630 U5 HAK**	43.7	53.1	91.1	1.1	8.0	1
	7	★	**0630 U7 HAK**	58.7	68.1	106.1	1.1	8.0	1
6.4	3	★	**SDP 0640 U3 HAK**	24.6	34.2	79.2	1.2	8.0	1
	5	★	**0640 U5 HAK**	43.6	53.2	91.2	1.2	8.0	1
	7		**0640 U7 HAK**	58.6	68.2	106.2	1.2	8.0	1

Grade: PCX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

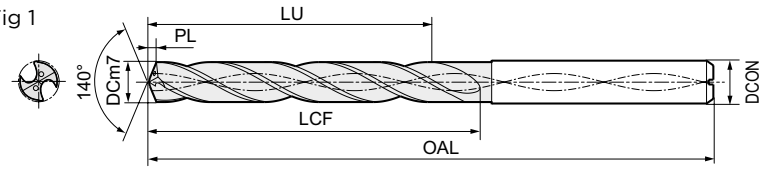
SDP series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DD Coat | 3D | 5D | 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø6.5 to 8.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.5	3	★	**SDP 0650 U3 HAK**	15.0	19.5	61.5	1.2	8.0	1
	5	★	**0650 U5 HAK**	22.0	26.5	65.5	1.2	8.0	1
	7	★	**0650 U7 HAK**	26.0	30.5	69.5	1.2	8.0	1
6.6	3	★	**SDP 0660 U3 HAK**	15.0	19.6	61.6	1.2	8.0	1
	5	★	**0660 U5 HAK**	22.0	26.6	65.6	1.2	8.0	1
	7	★	**0660 U7 HAK**	26.0	30.6	69.6	1.2	8.0	1
6.7	3	★	**SDP 0670 U3 HAK**	14.8	19.6	61.6	1.2	8.0	1
	5	★	**0670 U5 HAK**	21.8	26.6	65.6	1.2	8.0	1
	7	★	**0670 U7 HAK**	25.8	30.6	69.6	1.2	8.0	1
6.8	3	★	**SDP 0680 U3 HAK**	14.7	19.6	61.6	1.2	8.0	1
	5	★	**0680 U5 HAK**	21.7	26.6	65.6	1.2	8.0	1
	7	★	**0680 U7 HAK**	25.7	30.6	69.6	1.2	8.0	1
6.9	3	★	**SDP 0690 U3 HAK**	24.0	34.3	79.3	1.3	8.0	1
	5	★	**0690 U5 HAK**	43.0	53.3	91.3	1.3	8.0	1
	7	★	**0690 U7 HAK**	68.0	78.3	116.3	1.3	8.0	1
7.0	3	★	**SDP 0700 U3 HAK**	23.8	34.3	79.3	1.3	8.0	1
	5	★	**0700 U5 HAK**	42.8	53.3	91.3	1.3	8.0	1
	7	★	**0700 U7 HAK**	67.8	78.3	116.3	1.3	8.0	1
7.1	3	★	**SDP 0710 U3 HAK**	29.7	40.3	79.3	1.3	8.0	1
	5	★	**0710 U5 HAK**	42.7	53.3	91.3	1.3	8.0	1
	7	★	**0710 U7 HAK**	67.7	78.3	116.3	1.3	8.0	1
7.2	3	★	**SDP 0720 U3 HAK**	29.5	40.3	79.3	1.3	8.0	1
	5	★	**0720 U5 HAK**	42.5	53.3	91.3	1.3	8.0	1
	7	★	**0720 U7 HAK**	67.5	78.3	116.3	1.3	8.0	1
7.3	3	★	**SDP 0730 U3 HAK**	29.4	40.3	79.3	1.3	8.0	1
	5	★	**0730 U5 HAK**	42.4	53.3	91.3	1.3	8.0	1
	7		**0730 U7 HAK**	67.4	78.3	116.3	1.3	8.0	1
7.4	3	★	**SDP 0740 U3 HAK**	29.2	40.3	79.3	1.3	8.0	1
	5	★	**0740 U5 HAK**	42.2	53.3	91.3	1.3	8.0	1
	7		**0740 U7 HAK**	67.2	78.3	116.3	1.3	8.0	1
7.5	3	★	**SDP 0750 U3 HAK**	29.2	40.4	79.4	1.4	8.0	1
	5	★	**0750 U5 HAK**	42.2	53.4	91.4	1.4	8.0	1
	7	★	**0750 U7 HAK**	67.2	78.4	116.4	1.4	8.0	1
7.6	3	★	**SDP 0760 U3 HAK**	29.0	40.4	79.4	1.4	8.0	1
	5	★	**0760 U5 HAK**	42.0	53.4	91.4	1.4	8.0	1
	7	★	**0760 U7 HAK**	67.0	78.4	116.4	1.4	8.0	1
7.7	3	★	**SDP 0760 U3 HAK**	28.9	40.4	79.4	1.4	8.0	1
	5	★	**0760 U5 HAK**	41.9	53.4	91.4	1.4	8.0	1
	7	★	**0760 U7 HAK**	66.9	78.4	116.4	1.4	8.0	1
7.8	3	★	**SDP 0780 U3 HAK**	28.7	40.4	79.4	1.4	8.0	1
	5	★	**0780 U5 HAK**	41.7	53.4	91.4	1.4	8.0	1
	7	★	**0780 U7 HAK**	66.7	78.4	116.4	1.4	8.0	1
7.9	3	★	**SDP 0790 U3 HAK**	28.6	40.4	79.4	1.4	8.0	1
	5	★	**0790 U5 HAK**	41.6	53.4	91.4	1.4	8.0	1
	7	★	**0790 U7 HAK**	66.6	78.4	116.4	1.4	8.0	1
8.0	3	★	**SDP 0800 U3 HAK**	28.5	40.5	79.5	1.5	8.0	1
	5	★	**0800 U5 HAK**	41.5	53.5	91.5	1.5	8.0	1
	7	★	**0800 U7 HAK**	66.5	78.5	116.5	1.5	8.0	1
8.1	3	★	**SDP 0810 U3 HAK**	34.4	46.5	88.5	1.5	10.0	1
	5	★	**0810 U5 HAK**	48.4	60.5	102.5	1.5	10.0	1
	7	★	**0810 U7 HAK**	76.4	88.5	130.5	1.5	10.0	1
8.2	3	★	**SDP 0820 U3 HAK**	34.2	46.5	88.5	1.5	10.0	1
	5	★	**0820 U5 HAK**	48.2	60.5	102.5	1.5	10.0	1
	7	★	**0820 U7 HAK**	76.2	88.5	130.5	1.5	10.0	1
8.3	3	★	**SDP 0830 U3 HAK**	34.1	46.5	88.5	1.5	10.0	1
	5	★	**0830 U5 HAK**	48.1	60.5	102.5	1.5	10.0	1
	7		**0830 U7 HAK**	76.1	88.5	130.5	1.5	10.0	1

Grade: PCX70

Diameter ø8.4 to 10.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.4	3	★	**SDP 0840 U3 HAK**	33.9	46.5	88.5	1.5	10.0	1
	5	★	**0840 U5 HAK**	47.9	60.5	102.5	1.5	10.0	1
	7	★	**0840 U7 HAK**	75.9	88.5	130.5	1.5	10.0	1
8.5	3	★	**SDP 0850 U3 HAK**	33.8	46.5	88.5	1.5	10.0	1
	5	★	**0850 U5 HAK**	47.8	60.5	102.5	1.5	10.0	1
	7	★	**0850 U7 HAK**	75.8	88.5	130.5	1.5	10.0	1
8.6	3	★	**SDP 0860 U3 HAK**	33.7	46.6	88.6	1.6	10.0	1
	5	★	**0860 U5 HAK**	47.7	60.6	102.6	1.6	10.0	1
	7	★	**0860 U7 HAK**	75.7	88.6	130.6	1.6	10.0	1
8.7	3	★	**SDP 0870 U3 HAK**	33.6	46.6	88.6	1.6	10.0	1
	5	★	**0870 U5 HAK**	47.6	60.6	102.6	1.6	10.0	1
	7	★	**0870 U7 HAK**	75.6	88.6	130.6	1.6	10.0	1
8.8	3	★	**SDP 0880 U3 HAK**	33.4	46.6	88.6	1.6	10.0	1
	5	★	**0880 U5 HAK**	47.4	60.6	102.6	1.6	10.0	1
	7	★	**0880 U7 HAK**	75.4	88.6	130.6	1.6	10.0	1
8.9	3	★	**SDP 0890 U3 HAK**	33.3	46.6	88.6	1.6	10.0	1
	5	★	**0890 U5 HAK**	47.3	60.6	102.6	1.6	10.0	1
	7	★	**0890 U7 HAK**	75.3	88.6	130.6	1.6	10.0	1
9.0	3	★	**SDP 0900 U3 HAK**	33.1	46.6	88.6	1.6	10.0	1
	5	★	**0900 U5 HAK**	47.1	60.6	102.6	1.6	10.0	1
	7	★	**0900 U7 HAK**	75.1	88.6	130.6	1.6	10.0	1
9.1	3	★	**SDP 0910 U3 HAK**	33.1	46.7	88.7	1.7	10.0	1
	5	★	**0910 U5 HAK**	47.1	60.7	102.7	1.7	10.0	1
	7	★	**0910 U7 HAK**	83.1	96.7	138.7	1.7	10.0	1
9.2	3	★	**SDP 0920 U3 HAK**	32.9	46.7	88.7	1.7	10.0	1
	5	★	**0920 U5 HAK**	46.9	60.7	102.7	1.7	10.0	1
	7	★	**0920 U7 HAK**	82.9	96.7	138.7	1.7	10.0	1
9.25	3	★	**SDP 0925 U3 HAK**	32.8	46.7	88.7	1.7	10.0	1
	5	★	**0925 U5 HAK**	46.8	60.7	102.7	1.7	10.0	1
	7		**0925 U7 HAK**	82.8	96.7	138.7	1.7	10.0	1
9.3	3	★	**SDP 0930 U3 HAK**	32.8	46.7	88.7	1.7	10.0	1
	5	★	**0930 U5 HAK**	46.8	60.7	102.7	1.7	10.0	1
	7	★	**0930 U7 HAK**	82.8	96.7	138.7	1.7	10.0	1
9.4	3	★	**SDP 0940 U3 HAK**	32.6	46.7	88.7	1.7	10.0	1
	5	★	**0940 U5 HAK**	46.6	60.7	102.7	1.7	10.0	1
	7	★	**0940 U7 HAK**	82.6	96.7	138.7	1.7	10.0	1
9.5	3	★	**SDP 0950 U3 HAK**	32.5	46.7	88.7	1.7	10.0	1
	5	★	**0950 U5 HAK**	46.5	60.7	102.7	1.7	10.0	1
	7	★	**0950 U7 HAK**	82.5	96.7	138.7	1.7	10.0	1
9.6	3	★	**SDP 0960 U3 HAK**	32.3	46.7	88.7	1.7	10.0	1
	5	★	**0960 U5 HAK**	46.3	60.7	102.7	1.7	10.0	1
	7		**0960 U7 HAK**	82.3	96.7	138.7	1.7	10.0	1
9.7	3	★	**SDP 0970 U3 HAK**	32.3	46.8	88.8	1.8	10.0	1
	5	★	**0970 U5 HAK**	46.3	60.8	102.8	1.8	10.0	1
	7	★	**0970 U7 HAK**	82.3	96.8	138.8	1.8	10.0	1
9.8	3	★	**SDP 0980 U3 HAK**	32.1	46.8	88.8	1.8	10.0	1
	5	★	**0980 U5 HAK**	46.1	60.8	102.8	1.8	10.0	1
	7	★	**0980 U7 HAK**	82.1	96.8	138.8	1.8	10.0	1
9.9	3	★	**SDP 0980 U3 HAK**	32.0	46.8	88.8	1.8	10.0	1
	5	★	**0980 U5 HAK**	46.0	60.8	102.8	1.8	10.0	1
	7	★	**0980 U7 HAK**	82.0	96.8	138.8	1.8	10.0	1
10.0	3	★	**SDP 1000 U3 HAK**	31.8	46.8	88.8	1.8	10.0	1
	5	★	**1000 U5 HAK**	45.8	60.8	102.8	1.8	10.0	1
	7	★	**1000 U7 HAK**	81.8	96.8	138.8	1.8	10.0	1
10.1	3	★	**SDP 1010 U3 HAK**	39.7	54.8	101.8	1.8	12.0	1
	5	★	**1010 U5 HAK**	55.7	70.8	117.8	1.8	12.0	1
	7		**1010 U7 HAK**	92.7	107.8	154.8	1.8	12.0	1

Grade: PCX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

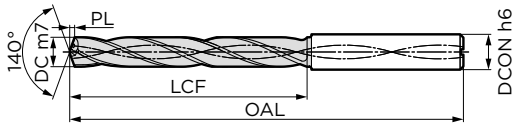
SDP series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø10.2 to 12.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.2	3	★	**SDP 1020 U3 HAK**	39.6	54.9	101.9	1.9	12.0	1
	5	★	**1020 U5 HAK**	55.6	70.9	117.9	1.9	12.0	1
	7	★	**1020 U7 HAK**	92.6	107.9	154.9	1.9	12.0	1
10.3	3	★	**SDP 1030 U3 HAK**	39.6	54.9	101.9	1.9	12.0	1
	5	★	**1030 U5 HAK**	55.6	70.9	117.9	1.9	12.0	1
	7		**1030 U7 HAK**	92.6	107.9	154.9	1.9	12.0	1
10.4	3	★	**SDP 1040 U3 HAK**	39.6	54.9	101.9	1.9	12.0	1
	5	★	**1040 U5 HAK**	55.6	70.9	117.9	1.9	12.0	1
	7		**1040 U7 HAK**	92.6	107.9	154.9	1.9	12.0	1
10.5	3	★	**SDP 1050 U3 HAK**	39.6	54.9	101.9	1.9	12.0	1
	5	★	**1050 U5 HAK**	55.6	70.9	117.9	1.9	12.0	1
	7	★	**1050 U7 HAK**	92.6	107.9	154.9	1.9	12.0	1
10.6	3	★	**SDP 1060 U3 HAK**	39.6	54.9	101.9	1.9	12.0	1
	5	★	**1060 U5 HAK**	55.6	70.9	117.9	1.9	12.0	1
	7		**1060 U7 HAK**	92.6	107.9	154.9	1.9	12.0	1
10.7	3	★	**SDP 1070 U3 HAK**	38.9	54.9	101.9	1.9	12.0	1
	5	★	**1070 U5 HAK**	54.9	70.9	117.9	1.9	12.0	1
	7		**1070 U7 HAK**	91.9	107.9	154.9	1.9	12.0	1
10.8	3	★	**SDP 1080 U3 HAK**	38.9	55.0	102.0	2.0	12.0	1
	5	★	**1080 U5 HAK**	54.8	71.0	118.0	2.0	12.0	1
	7	★	**1080 U7 HAK**	91.8	108.0	155.0	2.0	12.0	1
10.9	3	★	**SDP 1090 U3 HAK**	38.9	55.0	102.0	2.0	12.0	1
	5	★	**1090 U5 HAK**	54.8	71.0	118.0	2.0	12.0	1
	7		**1090 U7 HAK**	91.8	108.0	155.0	2.0	12.0	1
11.0	3	★	**SDP 1100 U3 HAK**	38.9	55.0	102.0	2.0	12.0	1
	5	★	**1100 U5 HAK**	54.8	71.0	118.0	2.0	12.0	1
	7	★	**1100 U7 HAK**	91.8	108.0	155.0	2.0	12.0	1
11.1	3	★	**SDP 1110 U3 HAK**	38.5	55.0	102.0	2.0	12.0	1
	5	★	**1110 U5 HAK**	54.5	71.0	118.0	2.0	12.0	1
	7		**1110 U7 HAK**	91.5	108.0	155.0	2.0	12.0	1
11.2	3	★	**SDP 1120 U3 HAK**	38.2	55.0	102.0	2.0	12.0	1
	5	★	**1120 U5 HAK**	54.2	71.0	118.0	2.0	12.0	1
	7	★	**1120 U7 HAK**	99.2	116.0	163.0	2.0	12.0	1
11.3	3	★	**SDP 1130 U3 HAK**	38.2	55.1	102.1	2.1	12.0	1
	5	★	**1130 U5 HAK**	54.2	71.1	118.1	2.1	12.0	1
	7		**1130 U7 HAK**	99.2	116.1	163.1	2.1	12.0	1
11.4	3	★	**SDP 1140 U3 HAK**	38.0	55.1	102.1	2.1	12.0	1
	5	★	**1140 U5 HAK**	54.0	71.1	118.1	2.1	12.0	1
	7		**1140 U7 HAK**	99.0	116.1	163.1	2.1	12.0	1
11.5	3	★	**SDP 1150 U3 HAK**	37.9	55.1	102.1	2.1	12.0	1
	5	★	**1150 U5 HAK**	53.9	71.1	118.1	2.1	12.0	1
	7	★	**1150 U7 HAK**	98.9	116.1	163.1	2.1	12.0	1
11.6	3	★	**SDP 1160 U3 HAK**	37.7	55.1	102.1	2.1	12.0	1
	5	★	**1160 U5 HAK**	53.7	71.1	118.1	2.1	12.0	1
	7		**1160 U7 HAK**	98.7	116.1	163.1	2.1	12.0	1
11.7	3	★	**SDP 1170 U3 HAK**	37.6	55.1	102.1	2.1	12.0	1
	5	★	**1170 U5 HAK**	53.6	71.1	118.1	2.1	12.0	1
	7		**1170 U7 HAK**	98.6	116.1	163.1	2.1	12.0	1
11.8	3	★	**SDP 1170 U3 HAK**	37.4	55.1	102.1	2.1	12.0	1
	5	★	**1170 U5 HAK**	53.4	71.1	118.1	2.1	12.0	1
	7	★	**1170 U7 HAK**	98.4	116.1	163.1	2.1	12.0	1
11.9	3	★	**SDP 1190 U3 HAK**	37.4	55.2	102.2	2.2	12.0	1
	5	★	**1190 U5 HAK**	53.4	71.2	118.2	2.2	12.0	1
	7		**1190 U7 HAK**	98.4	116.2	163.2	2.2	12.0	1
12.0	3	★	**SDP 1200 U3 HAK**	37.2	55.2	102.2	2.2	12.0	1
	5	★	**1200 U5 HAK**	53.2	71.2	118.2	2.2	12.0	1
	7	★	**1200 U7 HAK**	98.2	116.2	163.2	2.2	12.0	1

Grade: PCX70

Diameter ø12.1 to 13.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.1	3	★	**SDP 1210 U3 HAK**	42.1	60.2	107.2	2.2	14.0	1
	5	★	**1210 U5 HAK**	59.1	77.2	124.2	2.2	14.0	1
	7	★	**1210 U7 HAK**	117.1	135.2	182.2	2.2	14.0	1
12.2	3	★	**SDP 1220 U3 HAK**	41.9	60.2	107.2	2.2	14.0	1
	5	★	**1220 U5 HAK**	58.9	77.2	124.2	2.2	14.0	1
	7		**1220 U7 HAK**	116.9	135.2	182.2	2.2	14.0	1
12.3	3	★	**SDP 1230 U3 HAK**	41.8	60.2	107.2	2.2	14.0	1
	5	★	**1230 U5 HAK**	58.8	77.2	124.2	2.2	14.0	1
	7		**1230 U7 HAK**	116.8	135.2	182.2	2.2	14.0	1
12.4	3	★	**SDP 1240 U3 HAK**	41.7	60.3	107.3	2.3	14.0	1
	5	★	**1240 U5 HAK**	58.7	77.3	124.3	2.3	14.0	1
	7	★	**1240 U7 HAK**	116.7	135.3	182.3	2.3	14.0	1
12.5	3	★	**SDP 1250 U3 HAK**	41.6	60.3	107.3	2.3	14.0	1
	5	★	**1250 U5 HAK**	58.6	77.3	124.3	2.3	14.0	1
	7		**1250 U7 HAK**	116.6	135.3	182.3	2.3	14.0	1
12.6	3	★	**SDP 1260 U3 HAK**	41.4	60.3	107.3	2.3	14.0	1
	5	★	**1260 U5 HAK**	58.4	77.3	124.3	2.3	14.0	1
	7		**1260 U7 HAK**	116.4	135.3	182.3	2.3	14.0	1
12.7	3	★	**SDP 1270 U3 HAK**	41.3	60.3	107.3	2.3	14.0	1
	5	★	**1270 U5 HAK**	58.3	77.3	124.3	2.3	14.0	1
	7	★	**1270 U7 HAK**	116.3	135.3	182.3	2.3	14.0	1
12.8	3	★	**SDP 1280 U3 HAK**	41.1	60.3	107.3	2.3	14.0	1
	5	★	**1280 U5 HAK**	58.1	77.3	124.3	2.3	14.0	1
	7		**1280 U7 HAK**	116.3	135.3	182.3	2.3	14.0	1
12.9	3	★	**SDP 1290 U3 HAK**	41.0	60.3	107.3	2.3	14.0	1
	5	★	**1290 U5 HAK**	58.0	77.3	124.3	2.3	14.0	1
	7	★	**1290 U7 HAK**	116.0	135.3	182.3	2.3	14.0	1
13.0	3	★	**SDP 1300 U3 HAK**	40.9	60.4	107.4	2.4	14.0	1
	5	★	**1300 U5 HAK**	57.9	77.4	124.4	2.4	14.0	1
	7		**1300 U7 HAK**	115.9	135.4	182.4	2.4	14.0	1
13.1	3		**SDP 1310 U3 HAK**	40.8	60.4	107.4	2.4	14.0	1
	5	★	**1310 U5 HAK**	57.8	77.4	124.4	2.4	14.0	1
	7		**1310 U7 HAK**	115.8	135.4	182.4	2.4	14.0	1
13.2	3		**SDP 1320 U3 HAK**	40.6	60.4	107.4	2.4	14.0	1
	5	★	**1320 U5 HAK**	57.6	77.4	124.4	2.4	14.0	1
	7		**1320 U7 HAK**	115.6	135.4	182.4	2.4	14.0	1
13.3	3		**SDP 1330 U3 HAK**	40.5	60.4	107.4	2.4	14.0	1
	5	★	**1330 U5 HAK**	57.5	77.4	124.4	2.4	14.0	1
	7		**1330 U7 HAK**	115.5	135.4	182.4	2.4	14.0	1
13.4	3		**SDP 1340 U3 HAK**	40.3	60.4	107.4	2.4	14.0	1
	5	★	**1340 U5 HAK**	57.3	77.4	124.4	2.4	14.0	1
	7		**1340 U7 HAK**	115.3	135.4	182.4	2.4	14.0	1
13.5	3	★	**SDP 1350 U3 HAK**	40.3	60.5	107.5	2.5	14.0	1
	5	★	**1350 U5 HAK**	57.3	77.5	124.5	2.5	14.0	1
	7		**1350 U7 HAK**	115.3	135.5	182.5	2.5	14.0	1
13.6	3		**SDP 1360 U3 HAK**	40.1	60.5	107.5	2.5	14.0	1
	5	★	**1360 U5 HAK**	57.1	77.5	124.5	2.5	14.0	1
	7		**1360 U7 HAK**	115.1	135.5	182.5	2.5	14.0	1
13.7	3	★	**SDP 1370 U3 HAK**	40.0	60.5	107.5	2.5	14.0	1
	5	★	**1370 U5 HAK**	57.0	77.5	124.5	2.5	14.0	1
	7		**1370 U7 HAK**	115.0	135.5	182.5	2.5	14.0	1
13.8	3		**SDP 1380 U3 HAK**	39.8	60.5	107.5	2.5	14.0	1
	5	★	**1380 U5 HAK**	56.8	77.5	124.5	2.5	14.0	1
	7		**1380 U7 HAK**	114.8	135.5	182.5	2.5	14.0	1
13.9	3		**SDP 1390 U3 HAK**	39.7	60.5	107.5	2.5	14.0	1
	5	★	**1390 U5 HAK**	56.7	77.5	124.5	2.5	14.0	1
	7		**1390 U7 HAK**	114.7	135.5	182.5	2.5	14.0	1

Grade: PCX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

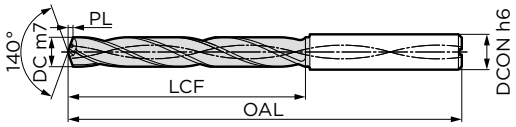
SDP series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø14.0 to 15.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
14.0	3	★	**SDP 1400 U3 HAK**	39.5	60.5	107.5	2.5	14.0	1
	5	★	**1400 U5 HAK**	56.5	77.5	124.5	2.5	14.0	1
	7		**1400 U7 HAK**	114.5	135.5	182.5	2.5	14.0	1
14.1	3		**SDP 1410 U3 HAK**	43.5	64.6	114.6	2.6	16.0	1
	5	★	**1410 U5 HAK**	61.5	82.6	132.6	2.6	16.0	1
	7		**1410 U7 HAK**	132.5	153.6	203.6	2.6	16.0	1
14.2	3	★	**SDP 1420 U3 HAK**	43.3	64.6	114.6	2.6	16.0	1
	5	★	**1420 U5 HAK**	61.3	82.6	132.6	2.6	16.0	1
	7		**1420 U7 HAK**	132.3	153.6	203.6	2.6	16.0	1
14.3	3		**SDP 1430 U3 HAK**	43.2	64.6	114.6	2.6	16.0	1
	5	★	**1430 U5 HAK**	61.2	82.6	132.6	2.6	16.0	1
	7		**1430 U7 HAK**	132.2	153.6	203.6	2.6	16.0	1
14.4	3		**SDP 1440 U3 HAK**	43.0	64.6	114.6	2.6	16.0	1
	5	★	**1440 U5 HAK**	61.0	82.6	132.6	2.6	16.0	1
	7		**1440 U7 HAK**	132.0	153.6	203.6	2.6	16.0	1
14.5	3	★	**SDP 1450 U3 HAK**	42.9	64.6	114.6	2.6	16.0	1
	5	★	**1450 U5 HAK**	60.9	82.6	132.6	2.6	16.0	1
	7		**1450 U7 HAK**	131.9	153.6	203.6	2.6	16.0	1
14.6	3		**SDP 1460 U3 HAK**	42.8	64.7	114.7	2.7	16.0	1
	5	★	**1460 U5 HAK**	60.8	82.7	132.7	2.7	16.0	1
	7		**1460 U7 HAK**	131.8	153.7	203.7	2.7	16.0	1
14.7	3	★	**SDP 1470 U3 HAK**	42.7	64.7	114.7	2.7	16.0	1
	5	★	**1470 U5 HAK**	60.7	82.7	132.7	2.7	16.0	1
	7		**1470 U7 HAK**	131.7	153.7	203.7	2.7	16.0	1
14.8	3		**SDP 1480 U3 HAK**	42.5	64.7	114.7	2.7	16.0	1
	5	★	**1480 U5 HAK**	60.5	82.7	132.7	2.7	16.0	1
	7		**1480 U7 HAK**	131.5	153.7	203.7	2.7	16.0	1
14.9	3		**SDP 1490 U3 HAK**	42.4	64.7	114.7	2.7	16.0	1
	5	★	**1490 U5 HAK**	60.4	82.7	132.7	2.7	16.0	1
	7		**1490 U7 HAK**	131.4	153.7	203.7	2.7	16.0	1
15.0	3	★	**SDP 1500 U3 HAK**	42.2	64.7	114.7	2.7	16.0	1
	5	★	**1500 U5 HAK**	60.2	82.7	132.7	2.7	16.0	1
	7		**1500 U7 HAK**	131.2	153.7	203.7	2.7	16.0	1
15.1	3		**SDP 1510 U3 HAK**	42.1	64.7	114.7	2.7	16.0	1
	5	★	**1510 U5 HAK**	60.1	82.7	132.7	2.7	16.0	1
	7		**1510 U7 HAK**	131.1	153.7	203.7	2.7	16.0	1
15.2	3	★	**SDP 1520 U3 HAK**	42.0	64.8	114.8	2.8	16.0	1
	5	★	**1520 U5 HAK**	60.0	82.8	132.8	2.8	16.0	1
	7		**1520 U7 HAK**	131.0	153.8	203.8	2.8	16.0	1
15.3	3		**SDP 1530 U3 HAK**	41.9	64.8	114.8	2.8	16.0	1
	5	★	**1530 U5 HAK**	59.9	82.8	132.8	2.8	16.0	1
	7		**1530 U7 HAK**	130.9	153.8	203.8	2.8	16.0	1
15.4	3		**SDP 1540 U3 HAK**	41.7	64.8	114.8	2.8	16.0	1
	5	★	**1540 U5 HAK**	59.7	82.8	132.8	2.8	16.0	1
	7		**1540 U7 HAK**	130.7	153.8	203.8	2.8	16.0	1
15.5	3	★	**SDP 1550 U3 HAK**	41.6	64.8	114.8	2.8	16.0	1
	5	★	**1550 U5 HAK**	59.6	82.8	132.8	2.8	16.0	1
	7		**1550 U7 HAK**	130.6	153.8	203.8	2.8	16.0	1
15.6	3		**SDP 1560 U3 HAK**	41.4	64.8	114.8	2.8	16.0	1
	5	★	**1560 U5 HAK**	59.4	82.8	132.8	2.8	16.0	1
	7		**1560 U7 HAK**	130.4	153.8	203.8	2.8	16.0	1

Grade: PCX70

Diameter ø15.7 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.7	3	★	**SDP 1570 U3 HAK**	41.4	64.9	114.9	2.9	16.0	1
	5	★	**1570 U5 HAK**	59.4	82.9	132.9	2.9	16.0	1
	7		**1570 U7 HAK**	130.4	153.9	203.9	2.9	16.0	1
15.8	3		**SDP 1580 U3 HAK**	41.2	64.9	114.9	2.9	16.0	1
	5	★	**1580 U5 HAK**	59.2	82.9	132.9	2.9	16.0	1
	7		**1580 U7 HAK**	130.2	153.9	203.9	2.9	16.0	1
15.9	3		**SDP 1590 U3 HAK**	41.1	64.9	114.9	2.9	16.0	1
	5	★	**1590 U5 HAK**	59.1	82.9	132.9	2.9	16.0	1
	7		**1590 U7 HAK**	130.1	153.9	203.9	2.9	16.0	1
16.0	3	★	**SDP 1600 U3 HAK**	40.9	64.9	114.9	2.9	16.0	1
	5	★	**1600 U5 HAK**	58.9	82.9	132.9	2.9	16.0	1
	7		**1600 U7 HAK**	129.9	153.9	203.9	2.9	16.0	1

Grade: PCX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDF series



■ General Features

The flat MULTIDRILL MDF series is a solid carbide drill that can be used for a variety of applications, including high-efficiency flat bottom drilling and drilling in inclined and curved surfaces.

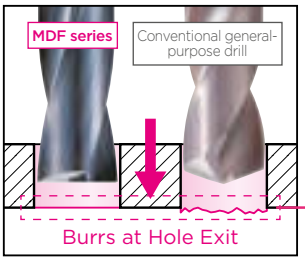


■ Features and Applications

- **180° point angle design supports a variety of drilling applications**
  Suitable for high-efficiency flat bottom drilling, drilling on non-flat surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.
- **Improves drilling stability**
  Achieves high rigidity by employing RS THINNING, which has a thick web.
- **Excellent chip evacuation**
  Achieves excellent chip evacuation thanks to the wide chip pocket and high-quality rake face shape.
- **Excellent cutting edge strength**
  Achieves excellent cutting edge strength through optimised cutting edge design.
- **Coolant can now be supplied internally**
  This enables deeper drilling.

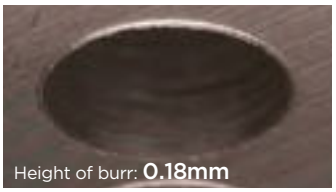


■ Reduction of Burrs at Hole Exit

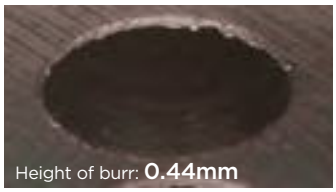


Work Material: 15CrMo5
Machine: BT40 Vertical Machining Centre
Tool: MDF 0500S2D (ø5.0mm x 2D)
Cutting Conditions: vc = 65m/min, f = 0.12mm/rev, H = 10mm, 150 holes, Wet

Reduces exit burrs to **half or less** compared with general-purpose drills

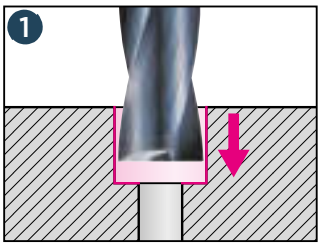


Flat MULTIDRILL MDF series

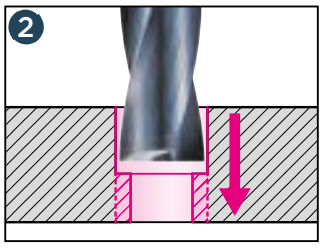


Conventional general-purpose drill

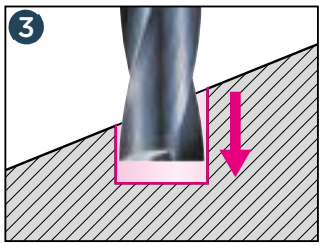
■ Drilling Applications



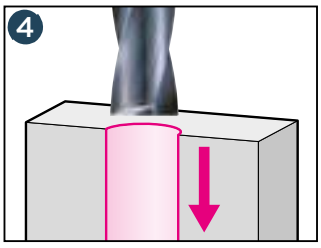
High-efficiency flat bottom drilling



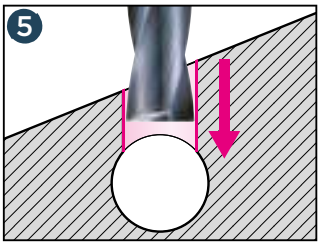
Hole expansion drilling



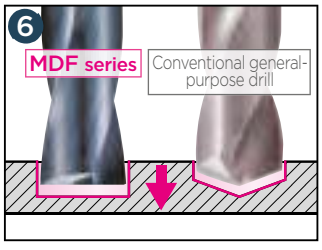
Drilling in non-horizontal surface (inclined surface, cylindrical surface, etc.)



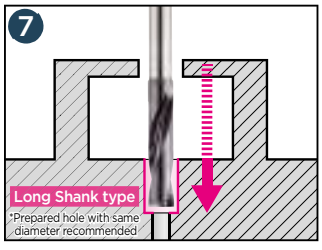
Interrupted drilling



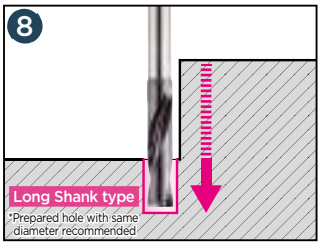
Cross drilling



Pre-tap hole drilling in thin plates



Deep reach flat bottom drilling



Avoids interference with work material

MDF series

Long shanked type (MDF-L type 2D) for flat bottom drilling, hole expansion and burr control in long overhang conditions

- For deep reach flat bottom drilling and to avoid interference with the work material.

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the long shank type.

DC < 6mm, stepped shank



DC ≥ 6mm, relief shank



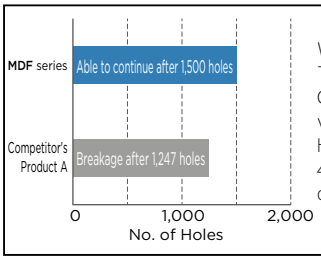
With Oil Hole (MDF-H type 3D/5D) for up to 5D deep hole applications



- Internal coolant supply enables deep flat bottom hole drilling.

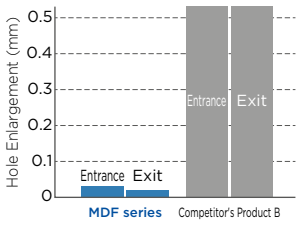
*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with an L/D=5 oil hole.

Deep Flat Bottom Drilling



Work Material: Cf53
Tool: MDF 0600H5D (ø6)
Cutting Conditions:
vc = 140m/min, f = 0.15mm/rev
H = 30mm (5D), Internal Coolant Supply
45mm overhang, prepared hole depth 3mm (ø6)

Long Overhang Flat Bottom Drilling



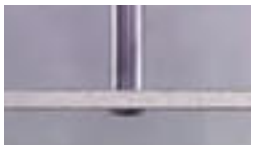
Work Material: Cf53
Tool: MDF 0600H3D (ø6)
Cutting Conditions:
vc = 90m/min, f = 0.1mm/rev
H = 18mm (3D), Internal Coolant Supply
Overhang 35mm

Drilling on slanted surfaces



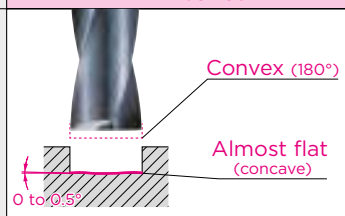
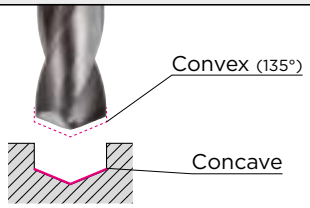
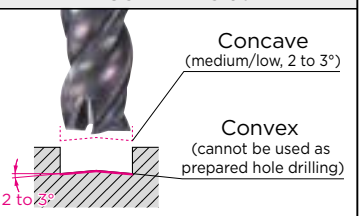
Work Material: 15CrMo5
Tool: MDF 0500S2D (ø5)
Cutting Conditions:
vc = 65m/min, f = 0.08mm/rev
H = 10mm, External MQL

Prevents burrs and conical remnants on tool withdrawal



Work Material: S235JR
Tool: MDF 1000S2D (ø10)
Cutting Conditions:
vc = 75m/min, f = 0.12mm/rev
H = 5mm, External MQL

■ Distinguishing Flat Drills, General-purpose Drills and Endmills

Tool	Flat Drill **MDF series**		General-purpose Drill GS/HGS series		Endmill for Flat Bottom Drilling GSXMILL Slot	
Shape of hole base						
Drilling in flat surfaces	○	Approx. 1/2 the feed of a general-purpose drill	◎	Best	△	Only for low feed 1D or smaller ≤1/5 the feed of a general-purpose drill
Drilling non-flat surfaces	◎	Ideal (2D or smaller recommended)	×	Not Applicable	○	Only for low feed 1D or smaller ≤1/2 the feed of a flat drill
Traverse Cutting	×	Not Applicable	×	Not Applicable	◎	Best

■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Description
External	MDF□□□□S2D	ø0.3 to 20.0	up to 2	188 items in stock
	MDF□□□□L2D	ø3.0 to 20.0	up to 2	115 items in stock
Internal	MDF□□□□H3D	ø3.0 to 16.0	up to 3	99 items in stock
	MDF□□□□H5D	ø3.0 to 16.0	up to 5	99 items in stock

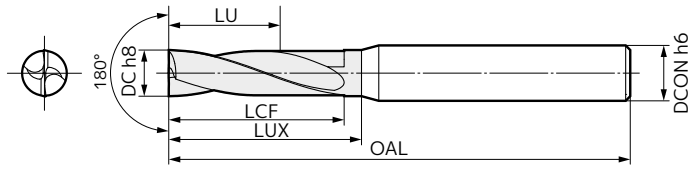
MDF-S type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 2D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø0.3 to 5.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
0.3*		★	MDF 0030S2D*	0.7	1.1	1.4	40	3.0	1
0.4*		★	0040S2D*	0.8	1.4	1.7	40	3.0	1
0.5		★	0050S2D	1.3	2.0	2.3	40	3.0	1
0.6	2	★	0060S2D	1.5	2.4	2.7	40	3.0	1
0.7		★	0070S2D	1.8	2.8	3.1	40	3.0	1
0.8		★	0080S2D	2.0	3.2	3.5	40	3.0	1
0.9		★	0090S2D	2.3	3.6	3.9	40	3.0	1
1.0		★	MDF 0100S2D	2.5	4.0	4.3	45	3.0	1
1.1		★	0110S2D	2.8	4.4	4.7	45	3.0	1
1.2		★	0120S2D	3.0	4.8	5.1	45	3.0	1
1.3		★	0130S2D	3.3	5.2	5.5	45	3.0	1
1.4	2	★	0140S2D	3.5	5.6	5.9	45	3.0	1
1.5		★	0150S2D	3.8	6.0	6.3	45	3.0	1
1.6		★	0160S2D	4.0	6.4	6.7	45	3.0	1
1.7		★	0170S2D	4.3	6.8	7.1	45	3.0	1
1.8		★	0180S2D	4.5	7.2	7.5	45	3.0	1
1.9		★	0190S2D	4.8	7.6	7.9	45	3.0	1
2.0		★	MDF 0200S2D	5.0	8.0	8.3	50	4.0	1
2.1		★	0210S2D	5.3	8.4	8.7	50	4.0	1
2.2		★	0220S2D	5.5	8.8	9.1	50	4.0	1
2.3		★	0230S2D	5.8	9.2	9.5	50	4.0	1
2.4		★	0240S2D	6.0	9.6	9.9	50	4.0	1
2.5		★	0250S2D	6.3	10.0	10.5	50	4.0	1
2.6		★	0260S2D	6.5	10.4	11.1	50	4.0	1
2.7		★	0270S2D	6.8	10.8	11.7	50	4.0	1
2.76		★	0276S2D	6.9	11.0	12.0	50	4.0	1
2.78		★	0278S2D	6.9	11.1	12.1	50	4.0	1
2.8		★	0280S2D	7.0	11.2	12.2	50	4.0	1
2.9		★	0290S2D	7.3	11.6	12.8	50	4.0	1
3.0	2	★	0300S2D	7.5	12.0	12.3	50	6.0	1
3.1		★	0310S2D	7.8	12.4	12.7	50	6.0	1
3.2		★	0320S2D	8.0	12.8	13.1	50	6.0	1
3.3		★	0330S2D	8.3	13.2	13.5	50	6.0	1
3.4		★	0340S2D	8.5	13.6	13.9	50	6.0	1
3.5		★	0350S2D	8.8	14.0	14.3	50	6.0	1
3.6		★	0360S2D	9.0	14.4	14.9	50	6.0	1
3.66		★	0366S2D	9.1	14.6	15.3	50	6.0	1
3.68		★	0368S2D	9.2	14.7	15.4	50	6.0	1
3.7		★	0370S2D	9.3	14.8	15.5	50	6.0	1
3.8		★	0380S2D	9.5	15.2	16.0	50	6.0	1
3.9		★	0390S2D	9.8	15.6	16.6	50	6.0	1
4.0		★	0400S2D	10.0	16.0	17.2	50	6.0	1
4.1		★	MDF 0410S2D	10.3	16.4	17.8	60	6.0	1
4.2		★	0420S2D	10.5	16.8	18.4	60	6.0	1
4.3		★	0430S2D	10.8	17.2	18.9	60	6.0	1
4.4		★	0440S2D	11.0	17.6	19.5	60	6.0	1
4.5		★	0450S2D	11.3	18.0	20.1	60	6.0	1
4.6		★	0460S2D	11.5	18.4	20.7	60	6.0	1
4.62	2	★	0462S2D	11.6	18.5	20.9	60	6.0	1
4.64		★	0464S2D	11.6	18.6	21.0	60	6.0	1
4.7		★	0470S2D	11.8	18.8	21.3	60	6.0	1
4.8		★	0480S2D	12.0	19.2	21.8	60	6.0	1
4.9		★	0490S2D	12.3	19.6	22.4	60	6.0	1
5.0		★	0500S2D	12.5	20.0	23.0	60	6.0	1
5.1		★	0510S2D	12.8	20.4	23.6	60	6.0	1

*RS thinning is used for ø0.5mm and larger sizes.
Grade: ACF75

Diameter ø5.2 to 9.52mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
5.2		★	MDF 0520S2D	13.0	20.8	24.2	60	6.0	1
5.3		★	0530S2D	13.3	21.2	24.7	60	6.0	1
5.4		★	0540S2D	13.5	21.6	25.3	60	6.0	1
5.5		★	0550S2D	13.8	22.0	25.9	60	6.0	1
5.52		★	0552S2D	13.8	22.1	26.1	60	6.0	1
5.54	2	★	0554S2D	13.9	22.2	26.2	60	6.0	1
5.6		★	0560S2D	14.0	22.4	26.5	60	6.0	1
5.7		★	0570S2D	14.3	22.8	27.1	60	6.0	1
5.8		★	0580S2D	14.5	23.2	27.6	60	6.0	1
5.9		★	0590S2D	14.8	23.6	28.2	60	6.0	1
6.0		★	MDF 0600S2D	15.0	24.0	28.8	60	6.0	1
6.1		★	0610S2D	15.3	24.4	27.4	70	8.0	1
6.2		★	0620S2D	15.5	24.8	28.0	70	8.0	1
6.3		★	0630S2D	15.8	25.2	28.5	70	8.0	1
6.4		★	0640S2D	16.0	25.6	29.1	70	8.0	1
6.5		★	0650S2D	16.3	26.0	29.7	70	8.0	1
6.6		★	0660S2D	16.5	26.4	30.3	70	8.0	1
6.7		★	0670S2D	16.8	26.8	30.9	70	8.0	1
6.8		★	0680S2D	17.0	27.2	31.4	70	8.0	1
6.9		★	0690S2D	17.3	27.6	32.0	70	8.0	1
7.0		★	0700S2D	17.5	28.0	32.6	70	8.0	1
7.1		★	0710S2D	17.8	28.4	33.2	70	8.0	1
7.2	2	★	0720S2D	18.0	28.8	33.8	70	8.0	1
7.3		★	0730S2D	18.3	29.2	34.3	70	8.0	1
7.36		★	0736S2D	18.4	29.4	34.7	70	8.0	1
7.38		★	0738S2D	18.4	29.5	34.8	70	8.0	1
7.4		★	0740S2D	18.5	29.6	34.9	70	8.0	1
7.5		★	0750S2D	18.8	30.0	35.5	70	8.0	1
7.52		★	0752S2D	18.8	30.1	35.7	70	8.0	1
7.54		★	0754S2D	18.9	30.2	35.8	70	8.0	1
7.6		★	0760S2D	19.0	30.4	36.1	70	8.0	1
7.7		★	0770S2D	19.3	30.8	36.7	70	8.0	1
7.8		★	0780S2D	19.5	31.2	37.2	70	8.0	1
7.9		★	0790S2D	19.8	31.6	37.8	70	8.0	1
8.0		★	0800S2D	20.0	32.0	38.4	70	8.0	1
8.1		★	MDF 0810S2D	20.3	32.4	37.0	80	10.0	1
8.2		★	0820S2D	20.5	32.8	37.6	80	10.0	1
8.3		★	0830S2D	20.8	33.2	38.1	80	10.0	1
8.4		★	0840S2D	21.0	33.6	38.7	80	10.0	1
8.5		★	0850S2D	21.3	34.0	39.3	80	10.0	1
8.6		★	0860S2D	21.5	34.4	39.9	80	10.0	1
8.7		★	0870S2D	21.8	34.8	40.5	80	10.0	1
8.8		★	0880S2D	22.0	35.2	41.0	80	10.0	1
8.9		★	0890S2D	22.3	35.6	41.6	80	10.0	1
9.0	2	★	0900S2D	22.5	36.0	42.2	80	10.0	1
9.1		★	0910S2D	22.8	36.4	42.8	80	10.0	1
9.2		★	0920S2D	23.0	36.8	43.4	80	10.0	1
9.24		★	0924S2D	23.1	37.0	43.6	80	10.0	1
9.26		★	0926S2D	23.1	37.0	43.7	80	10.0	1
9.3		★	0930S2D	23.3	37.2	43.9	80	10.0	1
9.36		★	0936S2D	23.4	37.4	44.3	80	10.0	1
9.38		★	0938S2D	23.4	37.5	44.4	80	10.0	1
9.4		★	0940S2D	23.5	37.6	44.5	80	10.0	1
9.5		★	0950S2D	23.8	38.0	45.1	80	10.0	1
9.52		★	0952S2D	23.8	38.1	45.3	80	10.0	1

Grade: ACF75

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

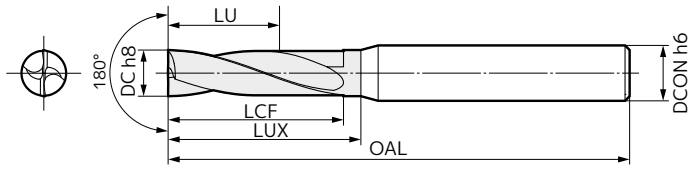
MDF-S type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 2D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø9.54 to 14.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
9.54	2	★	MDF 0954S2D	23.9	38.2	45.4	80	10.0	1
9.6		★	0960S2D	24.0	38.4	45.7	80	10.0	1
9.7		★	0970S2D	24.3	38.8	46.3	80	10.0	1
9.8		★	0980S2D	24.5	39.2	46.8	80	10.0	1
9.9		★	0990S2D	24.8	39.6	47.4	80	10.0	1
10.0		★	1000S2D	25.0	40.0	48.0	80	10.0	1
10.1	2	★	MDF 1010S2D	25.3	40.4	46.6	90	12.0	1
10.2		★	1020S2D	25.5	40.8	47.2	90	12.0	1
10.3		★	1030S2D	25.8	41.2	47.7	90	12.0	1
10.4		★	1040S2D	26.0	41.6	48.3	90	12.0	1
10.5		★	1050S2D	26.3	42.0	48.9	90	12.0	1
10.6		★	1060S2D	26.5	42.4	49.5	90	12.0	1
10.7		★	1070S2D	26.8	42.8	50.1	90	12.0	1
10.8		★	1080S2D	27.0	43.2	50.6	90	12.0	1
10.9		★	1090S2D	27.3	43.6	51.2	90	12.0	1
11.0		★	1100S2D	27.5	44.0	51.8	90	12.0	1
11.1		★	1110S2D	27.8	44.4	52.4	90	12.0	1
11.2		★	1120S2D	28.0	44.8	53.0	90	12.0	1
11.22		★	1122S2D	28.1	44.9	53.1	90	12.0	1
11.24		★	1124S2D	28.1	45.0	53.2	90	12.0	1
11.3		★	1130S2D	28.3	45.2	53.5	90	12.0	1
11.36		★	1136S2D	28.4	45.4	53.9	90	12.0	1
11.38		★	1138S2D	28.4	45.5	54.0	90	12.0	1
11.4		★	1140S2D	28.5	45.6	54.1	90	12.0	1
11.5		★	1150S2D	28.8	46.0	54.7	90	12.0	1
11.6		★	1160S2D	29.0	46.4	55.3	90	12.0	1
11.7		★	1170S2D	29.3	46.8	55.9	90	12.0	1
11.8		★	1180S2D	29.5	47.2	56.4	90	12.0	1
11.9		★	1190S2D	29.8	47.6	57.0	90	12.0	1
12.0		★	1200S2D	30.0	48.0	57.6	90	12.0	1
12.1	2	★	MDF 1210S2D	30.3	48.4	52.3	100	14.0	1
12.2		★	1220S2D	30.5	48.8	52.7	100	14.0	1
12.3		★	1230S2D	30.8	49.2	53.1	100	14.0	1
12.4		★	1240S2D	31.0	49.6	53.6	100	14.0	1
12.5		★	1250S2D	31.3	50.0	54.0	100	14.0	1
12.6		★	1260S2D	31.5	50.4	55.1	100	14.0	1
12.7		★	1270S2D	31.8	50.8	55.5	100	14.0	1
12.8		★	1280S2D	32.0	51.2	55.9	100	14.0	1
12.9		★	1290S2D	32.3	51.6	56.4	100	14.0	1
13.0		★	1300S2D	32.5	52.0	56.8	100	14.0	1
13.1		★	1310S2D	32.8	52.4	57.8	110	14.0	1
13.2		★	1320S2D	33.0	52.8	58.3	110	14.0	1
13.3		★	1330S2D	33.3	53.2	58.7	110	14.0	1
13.4		★	1340S2D	33.5	53.6	59.2	110	14.0	1
13.5		★	1350S2D	33.8	54.0	59.6	110	14.0	1
13.6		★	1360S2D	34.0	54.4	60.6	110	14.0	1
13.7		★	1370S2D	34.3	54.8	61.1	110	14.0	1
13.8		★	1380S2D	34.5	55.2	61.5	110	14.0	1
13.9		★	1390S2D	34.8	55.6	62.0	110	14.0	1
14.0		★	1400S2D	35.0	56.0	62.4	110	14.0	1
14.1		★	1410S2D	35.3	56.4	63.4	110	16.0	1
14.2		★	1420S2D	35.5	56.8	63.9	110	16.0	1
14.3		★	1430S2D	35.8	57.2	64.3	110	16.0	1
14.4		★	1440S2D	36.0	57.6	64.8	110	16.0	1
14.5		★	1450S2D	36.3	58.0	65.2	110	16.0	1

Grade: ACF75

Diameter ø14.6 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
14.6	2	★	MDF 1460S2D	36.5	58.4	66.2	110	16.0	1
14.7		★	1470S2D	36.8	58.8	66.6	110	16.0	1
14.8		★	1480S2D	37.0	59.2	67.1	110	16.0	1
14.9		★	1490S2D	37.3	59.6	67.5	110	16.0	1
15.0		★	1500S2D	37.5	60.0	68.0	110	16.0	1
15.1	2	★	MDF 1510S2D	37.8	60.4	69.0	115	16.0	1
15.2		★	1520S2D	38.0	60.8	69.4	115	16.0	1
15.3		★	1530S2D	38.3	61.2	69.9	115	16.0	1
15.4		★	1540S2D	38.5	61.6	70.3	115	16.0	1
15.5		★	1550S2D	38.8	62.0	70.8	115	16.0	1
15.6		★	1560S2D	39.0	62.4	71.8	115	16.0	1
15.7		★	1570S2D	39.3	62.8	72.2	115	16.0	1
15.8		★	1580S2D	39.5	63.2	72.7	115	16.0	1
15.9		★	1590S2D	39.8	63.6	73.1	115	16.0	1
16.0		★	1600S2D	40.0	64.0	73.6	115	16.0	1
16.5	2	★	MDF 1650S2D	41.3	66.0	72.4	125	18.0	1
17.0		★	1700S2D	42.5	68.0	75.2	125	18.0	1
17.5	2	★	MDF 1750S2D	43.8	70.0	78.0	130	18.0	1
18.0		★	1800S2D	45.0	72.0	80.8	130	18.0	1
18.5	2	★	MDF 1850S2D	46.3	74.0	83.6	140	20.0	1
19.0		★	1900S2D	47.5	76.0	86.4	140	20.0	1
19.5		★	1950S2D	48.8	78.0	89.2	140	20.0	1
20.0		★	2000S2D	50.0	80.0	92.0	140	20.0	1

Grade: ACF75

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDF-S type (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

1. The recommended hole depth is 2 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3	Aluminum Alloy
ø0.5	n	25,500	22,300	12,700	12,700	25,500	19,000	51,000
	vc	30 - **40** - 50	30 - **35** - 40	15 - **20** - 25	15 - **20** - 25	30 - **40** - 50	20 - **30** - 40	60 - **80** - 100
	f	0.004 - **0.005** - 0.006	0.004 - **0.005** - 0.006	0.001 - **0.002** - 0.003	0.003 - **0.004** - 0.005	0.004 - **0.005** - 0.006	0.001 - **0.003** - 0.005	0.003 - **0.005** - 0.007
ø1.0	n	17,500	14,300	9,500	8,000	17,500	12,700	32,000
	vc	45 - **55** - 65	35 - **45** - 55	20 - **30** - 40	20 - **25** - 30	45 - **55** - 65	30 - **40** - 50	80 - **100** - 120
	f	0.01 - **0.03** - 0.05	0.01 - **0.03** - 0.05	0.002 - **0.006** - 0.01	0.005 - **0.007** - 0.01	0.01 - **0.03** - 0.05	0.005 - **0.01** - 0.015	0.01 - **0.02** - 0.03
ø2.0	n	9,500	8,000	4,800	4,800	9,500	8,800	17,500
	vc	50 - **60** - 70	40 - **50** - 60	20 - **30** - 40	20 - **30** - 40	50 - **60** - 70	45 - **55** - 65	90 - **110** - 130
	f	0.02 - **0.04** - 0.06	0.02 - **0.04** - 0.06	0.01 - **0.018** - 0.025	0.01 - **0.015** - 0.02	0.02 - **0.04** - 0.06	0.015 - **0.03** - 0.045	0.03 - **0.05** - 0.07
ø4.0	n	6,000	5,200	3,400	2,400	6,000	5,200	8,800
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 40	60 - **75** - 90	55 - **65** - 75	90 - **110** - 130
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	n	4,000	3,400	1,600	1,600	4,000	3,700	5,800
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	n	3,000	2,600	1,200	1,200	3,000	2,800	4,400
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	n	2,400	2,100	950	950	2,400	2,200	3,500
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.12 - **0.17** - 0.22	0.12 - **0.17** - 0.22	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.12 - **0.17** - 0.22	0.12 - **0.15** - 0.18	0.12 - **0.17** - 0.22
ø12.0	n	2,000	1,700	800	800	2,000	1,900	2,900
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.15 - **0.20** - 0.25	0.15 - **0.18** - 0.20	0.15 - **0.20** - 0.25
ø16.0	n	1,500	1,300	600	600	1,500	1,400	2,200
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø20.0	n	1,200	1,000	480	480	1,200	1,100	1,750
	vc	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.16 - **0.19** - 0.22	0.15 - **0.20** - 0.25	0.25 - **0.30** - 0.35	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35

* If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, the tool life may be shortened.

Min. - **Optimum** - Max.

MEMO

MDF-L type Long Shank (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 2D

*For tolerances, refer to Chapter N - References.

Fig 1 (DC ≤ DCON)

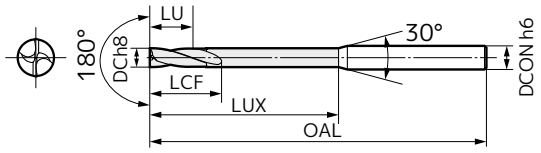
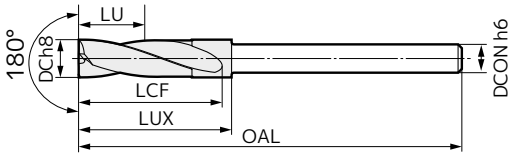


Fig 2 (DC > DCON)



Diameter ø3.0 to 8.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
3.0		★	MDF 0300L2D	9.0	13.5	30.0	100	6.0	1
3.1		★	0310L2D	9.4	14.0	31.0	100	6.0	1
3.2		★	0320L2D	9.6	14.4	32.0	100	6.0	1
3.3		★	0330L2D	10.0	14.9	33.0	100	6.0	1
3.4		★	0340L2D	10.2	15.3	34.0	100	6.0	1
3.5		★	0350L2D	10.6	15.8	35.0	100	6.0	1
3.6		★	0360L2D	10.8	16.2	36.0	100	6.0	1
3.7		★	0370L2D	11.2	16.7	37.0	100	6.0	1
3.8		★	0380L2D	11.4	17.1	38.0	100	6.0	1
3.9		★	0390L2D	11.8	17.6	39.0	100	6.0	1
4.0	2	★	0400L2D	12.0	18.0	40.0	100	6.0	1
4.1		★	0410L2D	12.4	18.5	41.0	100	6.0	1
4.2		★	0420L2D	12.6	18.9	42.0	100	6.0	1
4.3		★	0430L2D	13.0	19.4	43.0	100	6.0	1
4.4		★	0440L2D	13.2	19.8	44.0	100	6.0	1
4.5		★	0450L2D	13.6	20.3	45.0	100	6.0	1
4.6		★	0460L2D	13.8	20.7	46.0	100	6.0	1
4.7		★	0470L2D	14.2	21.2	47.0	100	6.0	1
4.8		★	0480L2D	14.4	21.6	48.0	100	6.0	1
4.9		★	0490L2D	14.8	22.1	49.0	100	6.0	1
5.0		★	0500L2D	15.0	22.5	50.0	100	6.0	1
5.1		★	MDF 0510L2D	15.4	23.0	51.0	110	6.0	1
5.2		★	0520L2D	15.6	23.4	52.0	110	6.0	1
5.3		★	0530L2D	16.0	23.9	53.0	110	6.0	1
5.4		★	0540L2D	16.2	24.3	54.0	110	6.0	1
5.5	2	★	0550L2D	16.6	24.8	55.0	110	6.0	1
5.6		★	0560L2D	16.8	25.2	56.0	110	6.0	1
5.7		★	0570L2D	17.2	25.7	57.0	110	6.0	1
5.8		★	0580L2D	17.4	26.1	58.0	110	6.0	1
5.9		★	0590L2D	17.8	26.6	59.0	110	6.0	1
6.0	2	★	MDF 0600L2D-S5	18.0	27.0	30.0	110	5.0	1
6.0	2	★	MDF 0600L2D	18.0	27.0	60.0	110	6.0	1
6.1		★	MDF 0610L2D	18.4	27.5	30.5	120	6.0	2
6.2		★	0620L2D	18.6	27.9	30.9	120	6.0	2
6.3		★	0630L2D	19.0	28.4	31.4	120	6.0	2
6.4		★	0640L2D	19.2	28.8	31.8	120	6.0	2
6.5	2	★	0650L2D	19.6	29.3	32.3	120	6.0	2
6.6		★	0660L2D	19.8	29.7	32.7	120	6.0	2
6.7		★	0670L2D	20.2	30.2	33.2	120	6.0	2
6.8		★	0680L2D	20.4	30.6	33.6	120	6.0	2
6.9		★	0690L2D	20.8	31.1	34.1	120	6.0	2
7.0		★	0700L2D	21.0	31.5	34.5	120	6.0	2
7.1		★	MDF 0710L2D	21.4	32.0	35.0	130	6.0	2
7.2		★	0720L2D	21.6	32.4	35.4	130	6.0	2
7.3		★	0730L2D	22.0	32.9	35.9	130	6.0	2
7.4		★	0740L2D	22.2	33.3	36.3	130	6.0	2
7.5	2	★	0750L2D	22.6	33.8	36.8	130	6.0	2
7.6		★	0760L2D	22.8	34.2	37.2	130	6.0	2
7.7		★	0770L2D	23.2	34.7	37.7	130	6.0	2
7.8		★	0780L2D	23.4	35.1	38.1	130	6.0	2
7.9		★	0790L2D	23.8	35.6	38.6	130	6.0	2
8.0		★	0800L2D-S6	24.0	36.0	39.0	130	6.0	2
8.0	2	★	MDF 0800L2D	24.0	36.0	80.0	130	8.0	1
8.1		★	MDF 0810L2D	24.4	36.5	39.5	140	8.0	2
8.2		★	0820L2D	24.6	36.9	39.9	140	8.0	2
8.3	2	★	0830L2D	25.0	37.4	40.4	140	8.0	2
8.4		★	0840L2D	25.2	37.8	40.8	140	8.0	2
8.5		★	0850L2D	25.6	38.3	41.3	140	8.0	2

Grade: ACF75

Diameter ø8.6 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
8.6		★	MDF 0860L2D	25.8	38.7	41.7	140	8.0	2
8.7		★	0870L2D	26.2	39.2	42.2	140	8.0	2
8.8	2	★	0880L2D	26.4	39.6	42.6	140	8.0	2
8.9		★	0890L2D	26.8	40.1	43.1	140	8.0	2
9.0		★	0900L2D	27.0	40.5	43.5	140	8.0	2
9.1		★	MDF 0910L2D	27.4	41.0	44.0	150	8.0	2
9.2		★	0920L2D	27.6	41.4	44.4	150	8.0	2
9.3		★	0930L2D	28.0	41.9	44.9	150	8.0	2
9.4		★	0940L2D	28.2	42.3	45.3	150	8.0	2
9.5	2	★	0950L2D	28.6	42.8	45.8	150	8.0	2
9.6		★	0960L2D	28.8	43.2	46.2	150	8.0	2
9.7		★	0970L2D	29.2	43.7	46.7	150	8.0	2
9.8		★	0980L2D	29.4	44.1	47.1	150	8.0	2
9.9		★	0990L2D	29.8	44.6	47.6	150	8.0	2
10.0		★	1000L2D-S8	30.0	45.0	48.0	150	8.0	2
10.0	2	★	MDF 1000L2D	30.0	45.0	100.0	150	10.0	1
10.1		★	MDF 1010L2D	30.4	45.5	48.5	160	10.0	2
10.2		★	1020L2D	30.6	45.9	48.9	160	10.0	2
10.3		★	1030L2D	31.0	46.4	49.4	160	10.0	2
10.4		★	1040L2D	31.2	46.8	49.8	160	10.0	2
10.5	2	★	1050L2D	31.6	47.3	50.3	160	10.0	2
10.6		★	1060L2D	31.8	47.7	50.7	160	10.0	2
10.7		★	1070L2D	32.2	48.2	51.2	160	10.0	2
10.8		★	1080L2D	32.4	48.6	51.6	160	10.0	2
10.9		★	1090L2D	32.8	49.1	52.1	160	10.0	2
11.0		★	1100L2D	33.0	49.5	52.5	160	10.0	2
11.1		★	MDF 1110L2D	33.4	50.0	53.0	170	10.0	2
11.2		★	1120L2D	33.6	50.4	53.4	160	10.0	2
11.3		★	1130L2D	34.0	50.9	53.9	160	10.0	2
11.4		★	1140L2D	34.2	51.3	54.3	160	10.0	2
11.5	2	★	1150L2D	34.6	51.8	54.8	160	10.0	2
11.6		★	1160L2D	34.8	52.2	55.2	160	10.0	2
11.7		★	1170L2D	35.2	52.7	55.7	160	10.0	2
11.8		★	1180L2D	35.4	53.1	56.1	160	10.0	2
11.9		★	1190L2D	35.8	53.6	56.6	160	10.0	2
12.0		★	1200L2D-S10	36.0	54.0	57.0	160	10.0	2
12.0	2	★	MDF 1200L2D	36.0	54.0	120.0	170	12.0	1
12.5	2	★	MDF 1250L2D	37.6	56.3	59.3	180	12.0	2
13.0		★	1300L2D	39.0	58.5	61.5	180	12.0	2
13.5	2	★	MDF 1350L2D	40.6	60.8	63.8	190	12.0	2
14.0		★	1400L2D-S12	42.0	63.0	66.0	190	12.0	2
14.0	2	★	MDF 1400L2D	42.0	63.0	140.0	190	14.0	2
14.5	2	★	MDF 1450L2D	43.6	65.3	68.3	200	14.0	2
15.0		★	1500L2D	45.0	67.5	70.5	200	14.0	2
15.5	2	★	MDF 1550L2D	46.6	69.8	72.8	210	14.0	2
16.0		★	1600L2D-S14	48.0	72.0	75.0	210	14.0	2
16.0	2	★	MDF 1600L2D	48.0	72.0	160.0	210	16.0	1
16.5	2	★	MDF 1650L2D	49.6	74.3	77.3	220	16.0	2
17.0		★	1700L2D	51.0	76.5	79.5	220	16.0	2
17.5	2	★	MDF 1750L2D	52.6	78.8	81.8	230	16.0	2
18.0		★	1800L2D-S16	54.0	81.0	84.0	230	16.0	2
18.0	2	★	MDF 1800L2D	54.0	81.0	180.0	230	18.0	1
18.5	2	★	MDF 1850L2D	55.6	83.3	86.3	240	18.0	2
19.0		★	1900L2D	57.0	85.5	88.5	240	18.0	2
19.5	2	★	MDF 1950L2D	58.6	87.8	90.8	250	18.0	2
20.0		★	2000L2D-S18	60.0	90.0	93.0	250	18.0	2
20.0	2	★	MDF 2000L2D	60.0	90.0	200.0	250	20.0	1

Grade: ACF75

A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed.

MDF-L type Long Shank (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. The cutting conditions are recommended when there is a prepared hole with the same diameter.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3	Aluminum Alloy
ø4.0	n	6,400	5,600	3,400	2,400	6,800	6,000	8,800
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 40	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	n	4,200	3,700	1,600	1,600	4,500	4,000	5,800
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	n	3,200	2,800	1,200	1,200	3,400	3,000	4,400
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	n	2,500	2,200	950	950	2,700	2,400	3,500
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12.0	n	2,100	1,900	800	800	2,300	2,000	2,900
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø16.0	n	1,600	1,400	600	600	1,700	1,500	2,200
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35
ø20.0	n	1,300	1,100	480	480	1,300	1,200	1,750
	vc	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.16 - **0.19** - 0.22	0.15 - **0.20** - 0.25	0.30 - **0.35** - 0.40	0.25 - **0.30** - 0.35	0.35 - **0.40** - 0.45

Min. - **Optimum** - Max.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDF-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1 (3D single margin)

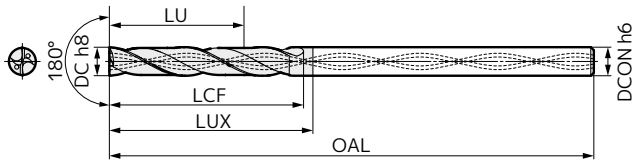
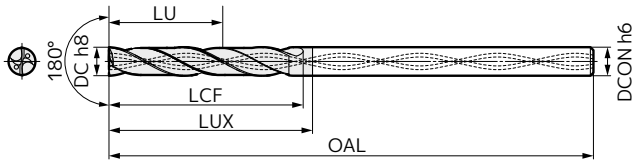


Fig 2 (5D double margin)



Diameter ø3.0 to 5.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
3.0	3	★	MDF 0300H3D	9.0	13.5	16.5	68	3.0	1
	5	★	0300H5D	15.6	20.1	23.1	78	3.0	2
3.1	3	★	MDF 0310H3D	9.4	14.0	17.0	72	4.0	1
	5	★	0310H5D	16.2	20.8	23.8	86	4.0	2
3.2	3	★	MDF 0320H3D	9.6	14.4	17.4	72	4.0	1
	5	★	0320H5D	16.6	21.4	24.4	86	4.0	2
3.3	3	★	MDF 0330H3D	10.0	14.9	17.9	72	4.0	1
	5	★	0330H5D	17.2	22.1	25.1	86	4.0	2
3.4	3	★	MDF 0340H3D	10.2	15.3	18.3	72	4.0	1
	5	★	0340H5D	17.7	22.8	25.8	86	4.0	2
3.5	3	★	MDF 0350H3D	10.6	15.8	18.8	72	4.0	1
	5	★	0350H5D	18.3	23.5	26.5	86	4.0	2
3.6	3	★	MDF 0360H3D	10.8	16.2	19.2	72	4.0	1
	5	★	0360H5D	18.7	24.1	27.1	86	4.0	2
3.7	3	★	MDF 0370H3D	11.2	16.7	19.7	72	4.0	1
	5	★	0370H5D	19.3	24.8	27.8	86	4.0	2
3.8	3	★	MDF 0380H3D	11.4	17.1	20.1	72	4.0	1
	5	★	0380H5D	19.8	25.5	28.5	86	4.0	2
3.9	3	★	MDF 0390H3D	11.8	17.6	20.6	72	4.0	1
	5	★	0390H5D	20.3	26.1	29.1	86	4.0	2
4.0	3	★	MDF 0400H3D	12.0	18.0	21.0	72	4.0	1
	5	★	0400H5D	20.8	26.8	29.8	86	4.0	2
4.1	3	★	MDF 0410H3D	12.4	18.5	21.5	80	5.0	1
	5	★	0410H5D	21.4	27.5	30.5	98	5.0	2
4.2	3	★	MDF 0420H3D	12.6	18.9	21.9	80	5.0	1
	5	★	0420H5D	21.8	28.1	31.1	98	5.0	2
4.3	3	★	MDF 0430H3D	13.0	19.4	22.4	80	5.0	1
	5	★	0430H5D	22.4	28.8	31.8	98	5.0	2
4.4	3	★	MDF 0440H3D	13.2	19.8	22.8	80	5.0	1
	5	★	0440H5D	22.9	29.5	32.5	98	5.0	2
4.5	3	★	MDF 0450H3D	13.6	20.3	23.3	80	5.0	1
	5	★	0450H5D	23.5	30.2	33.2	98	5.0	2
4.6	3	★	MDF 0460H3D	13.8	20.7	23.7	80	5.0	1
	5	★	0460H5D	23.9	30.8	33.8	98	5.0	2
4.7	3	★	MDF 0470H3D	14.2	21.2	24.2	80	5.0	1
	5	★	0470H5D	24.5	31.5	34.5	98	5.0	2
4.8	3	★	MDF 0480H3D	14.4	21.6	24.6	80	5.0	1
	5	★	0480H5D	25.0	32.2	35.2	98	5.0	2
4.9	3	★	MDF 0490H3D	14.8	22.1	25.1	80	5.0	1
	5	★	0490H5D	25.5	32.8	35.8	98	5.0	2
5.0	3	★	MDF 0500H3D	15.0	22.5	25.5	80	5.0	1
	5	★	0500H5D	26.0	33.5	36.5	98	5.0	2
5.1	3	★	MDF 0510H3D	15.4	23.0	26.0	82	6.0	1
	5	★	0510H5D	26.6	34.2	37.2	100	6.0	2
5.2	3	★	MDF 0520H3D	15.6	23.4	26.4	82	6.0	1
	5	★	0520H5D	27.0	34.8	37.8	100	6.0	2
5.3	3	★	MDF 0530H3D	16.0	23.9	26.9	82	6.0	1
	5	★	0530H5D	27.6	35.5	38.5	100	6.0	2
5.4	3	★	MDF 0540H3D	16.2	24.3	27.3	82	6.0	1
	5	★	0540H5D	28.1	36.2	39.2	100	6.0	2
5.5	3	★	MDF 0550H3D	16.6	24.8	27.8	82	6.0	1
	5	★	0550H5D	28.7	36.9	39.9	100	6.0	2
5.6	3	★	MDF 0560H3D	16.8	25.2	28.2	82	6.0	1
	5	★	0560H5D	29.1	37.5	40.5	100	6.0	2
5.7	3	★	MDF 0570H3D	17.2	25.7	28.7	82	6.0	1
	5	★	0570H5D	29.7	38.2	41.2	100	6.0	2

Grade: ACF75

Diameter ø5.8 to 8.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
5.8	3	★	MDF 0580H3D	17.4	26.1	29.1	82	6.0	1
	5	★	0580H5D	30.2	38.9	41.9	100	6.0	2
5.9	3	★	MDF 0590H3D	17.8	26.6	29.6	82	6.0	1
	5	★	0590H5D	30.7	39.5	42.5	100	6.0	2
6.0	3	★	MDF 0600H3D	18.0	27.0	30.0	82	6.0	1
	5	★	0600H5D	31.2	40.2	43.2	100	6.0	2
6.1	3	★	MDF 0610H3D	18.4	27.5	30.5	88	7.0	1
	5	★	0610H5D	31.8	40.9	43.9	109	7.0	2
6.2	3	★	MDF 0620H3D	18.6	27.9	30.9	88	7.0	1
	5	★	0620H5D	32.2	41.5	44.5	109	7.0	2
6.3	3	★	MDF 0630H3D	19.0	28.4	31.4	88	7.0	1
	5	★	0630H5D	32.8	42.2	45.2	109	7.0	2
6.4	3	★	MDF 0640H3D	19.2	28.8	31.8	88	7.0	1
	5	★	0640H5D	33.3	42.9	45.9	109	7.0	2
6.5	3	★	MDF 0650H3D	19.6	29.3	32.3	88	7.0	1
	5	★	0650H5D	33.9	43.6	46.6	109	7.0	2
6.6	3	★	MDF 0660H3D	19.8	29.7	32.7	88	7.0	1
	5	★	0660H5D	34.3	44.2	47.2	109	7.0	2
6.7	3	★	MDF 0670H3D	20.2	30.2	33.2	88	7.0	1
	5	★	0670H5D	34.9	44.9	47.9	109	7.0	2
6.8	3	★	MDF 0680H3D	20.4	30.6	33.6	88	7.0	1
	5	★	0680H5D	35.4	45.6	48.6	109	7.0	2
6.9	3	★	MDF 0690H3D	20.8	31.1	34.1	88	7.0	1
	5	★	0690H5D	35.9	46.2	49.2	109	7.0	2
7.0	3	★	MDF 0700H3D	21.0	31.5	34.5	88	7.0	1
	5	★	0700H5D	36.4	46.9	49.9	109	7.0	2
7.1	3	★	MDF 0710H3D	21.4	32.0	35.0	94	8.0	1
	5	★	0710H5D	37.0	47.6	50.6	118	8.0	2
7.2	3	★	MDF 0720H3D	21.6	32.4	35.4	94	8.0	1
	5	★	0720H5D	37.4	48.2	51.2	118	8.0	2
7.3	3	★	MDF 0730H3D	22.0	32.9	35.9	94	8.0	1
	5	★	0730H5D	38.0	48.9	51.9	118	8.0	2
7.4	3	★	MDF 0740H3D	22.2	33.3	36.3	94	8.0	1
	5	★	0740H5D	38.5	49.6	52.6	118	8.0	2
7.5	3	★	MDF 0750H3D	22.6	33.8	36.8	94	8.0	1
	5	★	0750H5D	39.1	50.3	53.3	118	8.0	2
7.6	3	★	MDF 0760H3D	22.8	34.2	37.2	94	8.0	1
	5	★	0760H5D	39.5	50.9	53.9	118	8.0	2
7.7	3	★	MDF 0770H3D	23.2	34.7	37.7	94	8.0	1
	5	★	0770H5D	40.1	51.6	54.6	118	8.0	2
7.8	3	★	MDF 0780H3D	23.4	35.1	38.1	94	8.0	1
	5	★	0780H5D	40.6	52.3	55.3	118	8.0	2
7.9	3	★	MDF 0790H3D	23.8	35.6	38.6	94	8.0	1
	5	★	0790H5D	41.1	52.9	55.9	118	8.0	2
8.0	3	★	MDF 0800H3D	24.0	36.0	39.0	94	8.0	1
	5	★	0800H5D	41.6	53.6	56.6	118	8.0	2
8.1	3	★	MDF 0810H3D	24.4	36.5	39.5	100	9.0	1
	5	★	0810H5D	42.2	54.3	57.3	127	9.0	2
8.2	3	★	MDF 0820H3D	24.6	36.9	39.9	100	9.0	1
	5	★	0820H5D	42.6	54.9	57.9	127	9.0	2
8.3	3	★	MDF 0830H3D	25.0	37.4	40.4	100	9.0	1
	5	★	0830H5D	43.2	55.6	58.6	127	9.0	2
8.4	3	★	MDF 0840H3D	25.2	37.8	40.8	100	9.0	1
	5	★	0840H5D	43.7	56.3	59.3	127	9.0	2
8.5	3	★	MDF 0850H3D	25.6	38.3	41.3	100	9.0	1
	5	★	0850H5D	44.3	57.0	60.0	127	9.0	2

Grade: ACF75

A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

MDF-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1 (3D single margin)

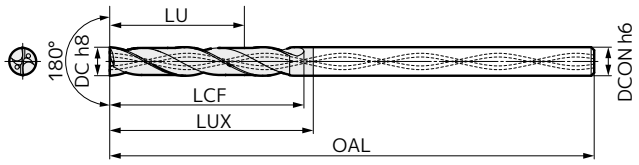
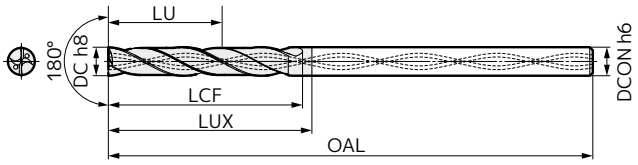


Fig 2 (5D double margin)



Diameter ø8.6 to 11.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
8.6	3	★	MDF 0860H3D	25.8	38.7	41.7	100	9.0	1
	5	★	0860H5D	44.7	57.6	60.6	127	9.0	2
8.7	3	★	MDF 0870H3D	26.2	39.2	42.2	100	9.0	1
	5	★	0870H5D	45.3	58.3	61.3	127	9.0	2
8.8	3	★	MDF 0880H3D	26.4	39.6	42.6	100	9.0	1
	5	★	0880H5D	45.8	59.0	62.0	127	9.0	2
8.9	3	★	MDF 0890H3D	26.8	40.1	43.1	100	9.0	1
	5	★	0890H5D	46.3	59.6	62.6	127	9.0	2
9.0	3	★	MDF 0900H3D	27.0	40.5	43.5	100	9.0	1
	5	★	0900H5D	46.8	60.3	63.3	127	9.0	2
9.1	3	★	MDF 0910H3D	27.4	41.0	44.0	106	10.0	1
	5	★	0910H5D	47.4	61.0	64.0	136	10.0	2
9.2	3	★	MDF 0920H3D	27.6	41.4	44.4	106	10.0	1
	5	★	0920H5D	47.8	61.6	64.6	136	10.0	2
9.3	3	★	MDF 0930H3D	28.0	41.9	44.9	106	10.0	1
	5	★	0930H5D	48.4	62.3	65.3	136	10.0	2
9.4	3	★	MDF 0940H3D	28.2	42.3	45.3	106	10.0	1
	5	★	0940H5D	48.9	63.0	66.0	136	10.0	2
9.5	3	★	MDF 0950H3D	28.6	42.8	45.8	106	10.0	1
	5	★	0950H5D	49.5	63.7	66.7	136	10.0	2
9.6	3	★	MDF 0960H3D	28.8	43.2	46.2	106	10.0	1
	5	★	0960H5D	49.9	64.3	67.3	136	10.0	2
9.7	3	★	MDF 0970H3D	29.2	43.7	46.7	106	10.0	1
	5	★	0970H5D	50.5	65.0	68.0	136	10.0	2
9.8	3	★	MDF 0980H3D	29.4	44.1	47.1	106	10.0	1
	5	★	0980H5D	51.0	65.7	68.7	136	10.0	2
9.9	3	★	MDF 0990H3D	29.8	44.6	47.6	106	10.0	1
	5	★	0990H5D	51.5	66.3	69.3	136	10.0	2
10.0	3	★	MDF 1000H3D	30.0	45.0	48.0	106	10.0	1
	5	★	1000H5D	52.0	67.0	70.0	136	10.0	2
10.1	3	★	MDF 1010H3D	30.4	45.5	48.5	116	11.0	1
	5	★	1010H5D	52.6	67.7	70.7	149	11.0	2
10.2	3	★	MDF 1020H3D	30.6	45.9	48.9	116	11.0	1
	5	★	1020H5D	53.0	68.3	71.3	149	11.0	2
10.3	3	★	MDF 1030H3D	31.0	46.4	49.4	116	11.0	1
	5	★	1030H5D	53.6	69.0	72.0	149	11.0	2
10.4	3	★	MDF 1040H3D	31.2	46.8	49.8	116	11.0	1
	5	★	1040H5D	54.1	69.7	72.7	149	11.0	2
10.5	3	★	MDF 1050H3D	31.6	47.3	50.3	116	11.0	1
	5	★	1050H5D	54.7	70.4	73.4	149	11.0	2
10.6	3	★	MDF 1060H3D	31.8	47.7	50.7	116	11.0	1
	5	★	1060H5D	55.1	71.0	74.0	149	11.0	2
10.7	3	★	MDF 1070H3D	32.2	48.2	51.2	116	11.0	1
	5	★	1070H5D	55.7	71.7	74.7	149	11.0	2
10.8	3	★	MDF 1080H3D	32.4	48.6	51.6	116	11.0	1
	5	★	1080H5D	56.2	72.4	75.4	149	11.0	2
10.9	3	★	MDF 1090H3D	32.8	49.1	52.1	116	11.0	1
	5	★	1090H5D	56.7	73.0	76.0	149	11.0	2
11.0	3	★	MDF 1100H3D	33.0	49.5	52.5	116	11.0	1
	5	★	1100H5D	57.2	73.7	76.7	149	11.0	2
11.1	3	★	MDF 1110H3D	33.4	50.0	53.0	122	12.0	1
	5	★	1110H5D	57.8	74.4	77.4	158	12.0	2
11.2	3	★	MDF 1120H3D	33.6	50.4	53.4	122	12.0	1
	5	★	1120H5D	58.2	75.0	78.0	158	12.0	2
11.3	3	★	MDF 1130H3D	34.0	50.9	53.9	122	12.0	1
	5	★	1130H5D	58.8	75.7	78.7	158	12.0	2

Grade: ACF75

Diameter ø11.4 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
11.4	3	★	MDF 1140H3D	34.2	51.3	54.3	122	12.0	1
	5	★	1140H5D	59.3	76.4	79.4	158	12.0	2
11.5	3	★	MDF 1150H3D	34.6	51.8	54.8	122	12.0	1
	5	★	1150H5D	59.9	77.1	80.1	158	12.0	2
11.6	3	★	MDF 1160H3D	34.8	52.2	55.2	122	12.0	1
	5	★	1160H5D	60.3	77.7	80.7	158	12.0	2
11.7	3	★	MDF 1170H3D	35.2	52.7	55.7	122	12.0	1
	5	★	1170H5D	60.9	78.4	81.4	158	12.0	2
11.8	3	★	MDF 1180H3D	35.4	53.1	56.1	122	12.0	1
	5	★	1180H5D	61.4	79.1	82.1	158	12.0	2
11.9	3	★	MDF 1190H3D	35.8	53.6	56.6	122	12.0	1
	5	★	1190H5D	61.9	79.7	82.7	158	12.0	2
12.0	3	★	MDF 1200H3D	36.0	54.0	57.0	122	12.0	1
	5	★	1200H5D	62.4	80.4	83.4	158	12.0	2
12.5	3	★	MDF 1250H3D	37.6	56.3	59.3	128	13.0	1
	5	★	1250H5D	65.1	83.8	86.8	167	13.0	2
13.0	3	★	MDF 1300H3D	39.0	58.5	61.5	128	13.0	1
	5	★	1300H5D	67.6	87.1	90.1	167	13.0	2
13.5	3	★	MDF 1350H3D	40.6	60.8	63.8	134	14.0	1
	5	★	1350H5D	70.3	90.5	93.5	176	14.0	2
14.0	3	★	MDF 1400H3D	42.0	63.0	66.0	134	14.0	1
	5	★	1400H5D	72.8	93.8	96.8	176	14.0	2
14.5	3	★	MDF 1450H3D	43.6	65.3	68.3	140	15.0	1
	5	★	1450H5D	75.5	97.2	100.2	185	15.0	2
15.0	3	★	MDF 1500H3D	45.0	67.5	70.5	140	15.0	1
	5	★	1500H5D	78.0	100.5	103.5	185	15.0	2
15.5	3	★	MDF 1550H3D	46.6	69.8	72.8	146	16.0	1
	5	★	1550H5D	80.7	103.9	106.9	194	16.0	2
16.0	3	★	MDF 1600H3D	48.0	72.0	75.0	146	16.0	1
	5	★	1600H5D	83.2	107.2	110.2	194	16.0	2

Grade: ACF75

A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

MDF-H type (Internal Coolant Supply)

Recommended Cutting Conditions (for 3D)

1. The recommended hole depth is 3 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.
7. A prepared hole with the same diameter is recommended for drilling of stainless steel.

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3	Aluminum Alloy
Up to ø4.0	n	6,800	5,600	3,200	2,800	6,800	6,000	9,500
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	n	4,500	3,700	2,100	1,900	4,500	4,200	6,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	n	3,400	2,800	1,600	1,400	3,400	3,200	4,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	n	2,700	2,200	1,300	1,100	2,700	2,500	3,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.12 - **0.17** - 0.22	0.12 - **0.17** - 0.22	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.12 - **0.17** - 0.22	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12.0	n	2,300	1,900	1,100	900	2,300	2,100	3,200
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.15 - **0.20** - 0.25	0.15 - **0.18** - 0.20	0.20 - **0.25** - 0.30
ø16.0	n	1,700	1,400	600	700	1,700	1,600	2,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.10 - **0.15** - 0.20	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.25 - **0.30** - 0.40

Min. - **Optimum** - Max.

Recommended Cutting Conditions (for 5D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. The cutting conditions are recommended when there is a prepared hole with the same diameter.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3	Aluminum Alloy
Up to ø4.0	n	6,800	5,600	3,200	2,800	6,800	6,000	9,500
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	n	4,500	3,700	2,100	1,900	4,500	4,000	6,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	n	3,400	2,800	1,600	1,400	3,400	3,000	4,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	n	2,700	2,200	1,300	1,100	2,700	2,400	3,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12.0	n	2,300	1,900	1,100	900	2,300	2,000	3,200
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø16.0	n	1,700	1,400	600	700	1,700	1,500	2,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35

Min. - **Optimum** - Max.

MEMO

SDPX series

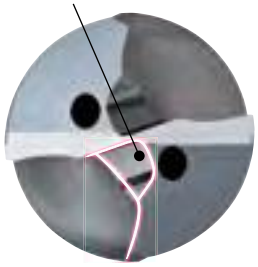
New



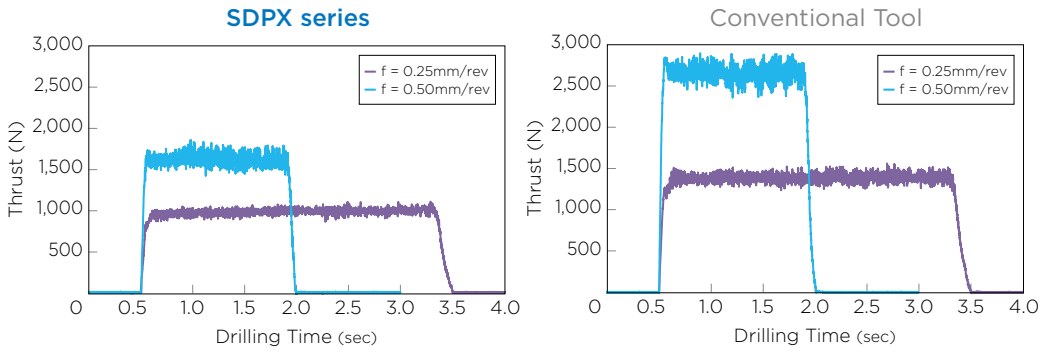
■ Features

- The use of RP thinning with extremely low resistance achieves stable high-efficiency drilling.
- HF Coat realises superb wear resistance and thermal resistance.

RP THINNING



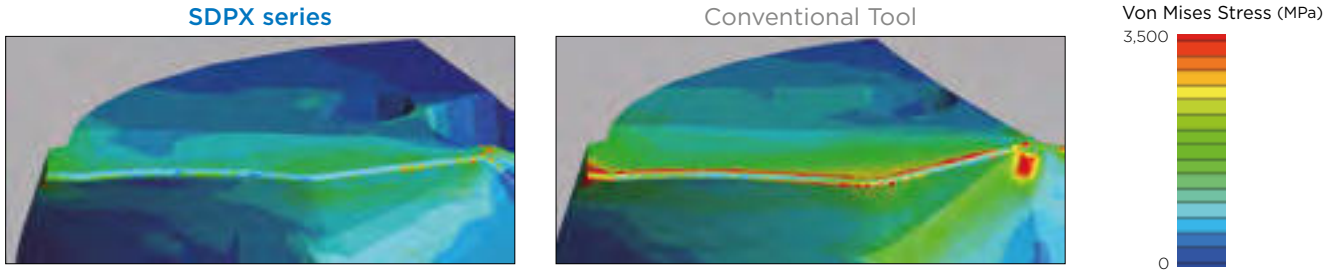
- Wide chip pocket enables smooth chip evacuation and reduced cutting resistance, ensuring stable drilling even in high-efficiency conditions.

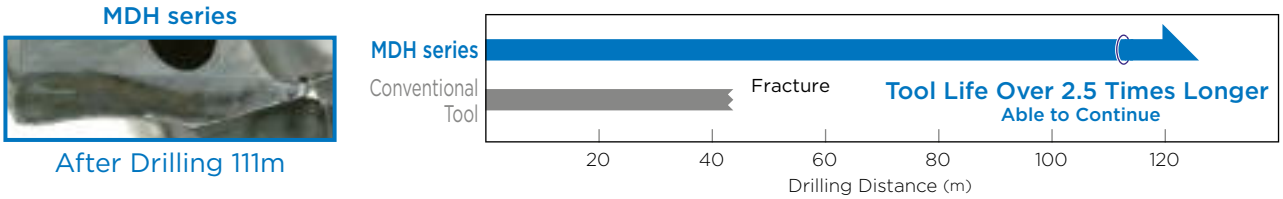


Work Material: Cf53, Tool: SDPX 0800S08H05 Cutting Conditions: vc = 80m/min H = 38mm (Through) Wet (Water-soluble, Internal Coolant Supply)

New Cutting Edge Shape

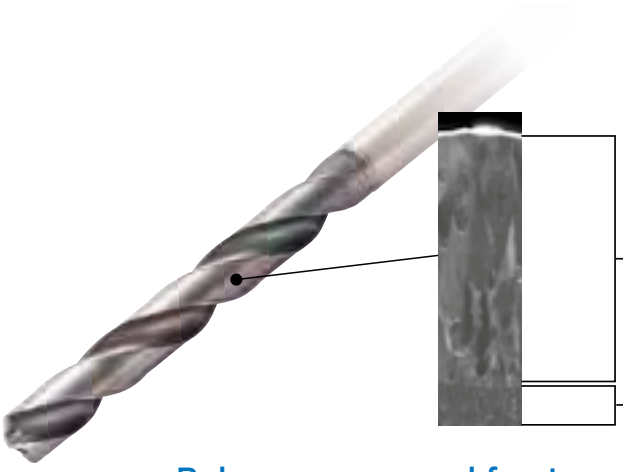
- Optimised cutting edge shape suppresses stress concentration and prevents chipping even in high-efficiency drilling with high cutting edge load.





Work Material: Cf53, Tool: SDPX 0800S08H05 Cutting Conditions: vc = 140m/min f = 0.40mm/rev H = 38mm (Through) Wet (Water-soluble, Internal Coolant Supply)

New Grade PCH70 HF Coat

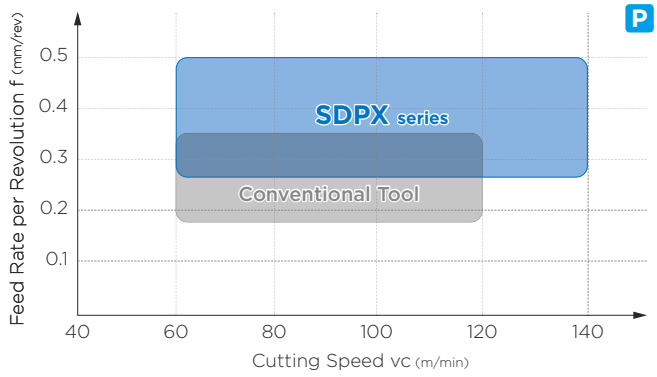


- TiAlCrSi-based super multi-layered coating realises excellent wear resistance and thermal resistance
  Tough TiAlB-based coating is utilised on the carbide substrate to improve coating strength and fracture resistance

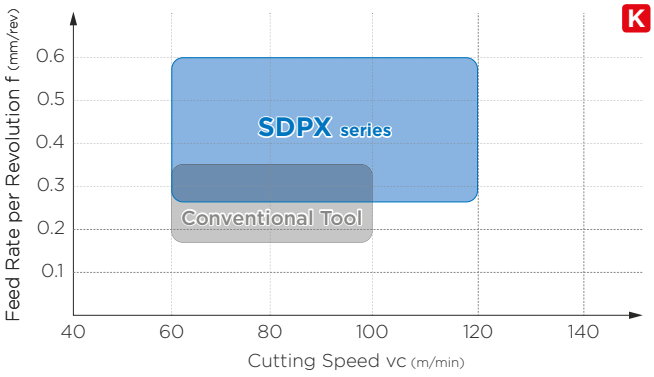
Balances wear and fracture resistance

- High-efficiency drilling realises increased production capacity and yield

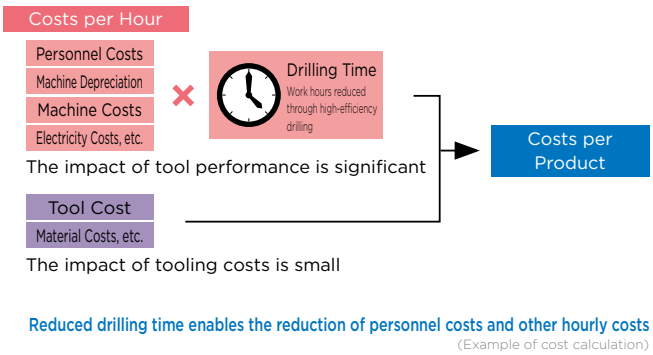
Efficiency Comparison in Steel Drilling (Diameter: ø8mm)



Efficiency Comparison in Cast Iron Drilling (Diameter: ø8mm)

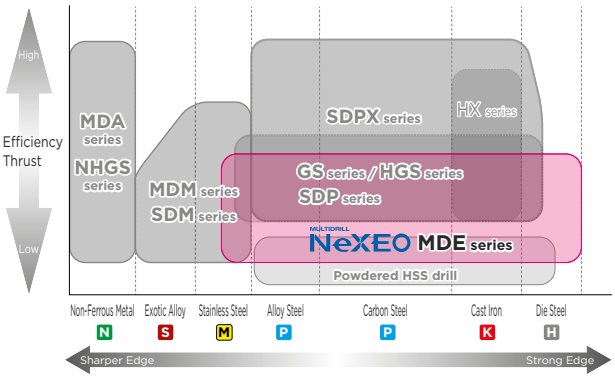


- Contributes to reduced costs through high-efficiency drilling



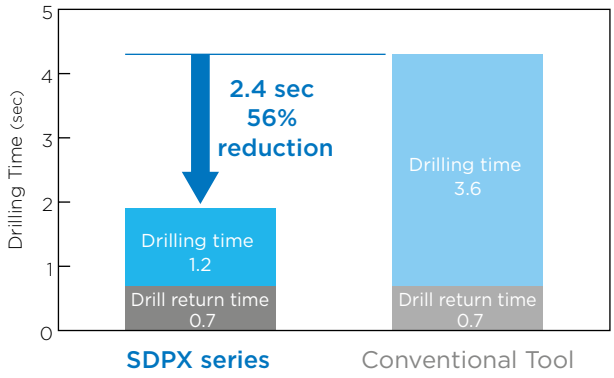
Reduced drilling time enables the reduction of personnel costs and other hourly costs
(Example of cost calculation)

- Solid carbide drill lineup by work material



High-efficiency Drilling Performance 1 Reduced Cycle Time (Cylinder Component)





SDPX series



After Drilling 1,500 pcs

Conventional Tool



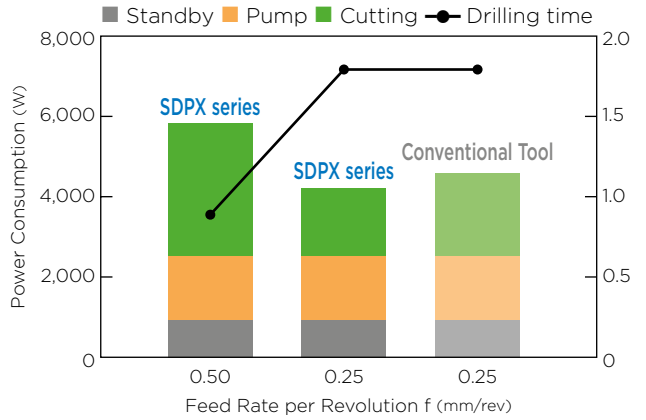
After Drilling 500 pcs

Work Material: 42CrM04, Tool: SDPX 0600S06H05					
Cutting Conditions: MDH series	vc = **80**m/min	f = **0.35**mm/rev	H = 25mm (Blind)	Wet (Water-soluble, Internal Coolant Supply)	
Conventional Tool	vc = 51m/min	f = 0.19mm/rev	H = 25mm (Blind)	Wet (Water-soluble, Internal Coolant Supply)	

Approx. 3 times the drilling efficiency and 3 times longer tool life

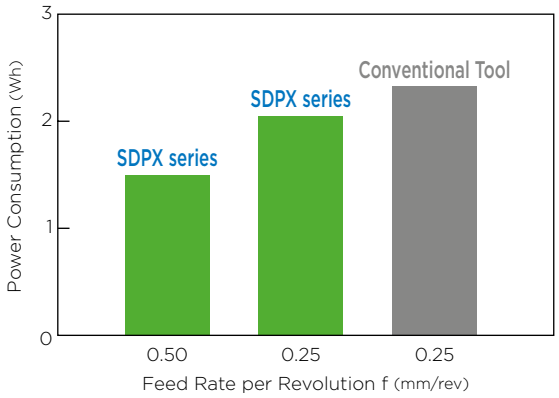
High-efficiency Drilling Performance 2 Power Saving GX

Power Consumption and Drilling Time per Hole



Power consumption x Drilling time

Power Consumption per Hole

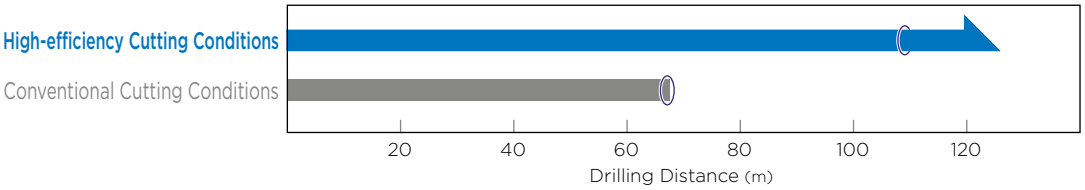


Work Material: Cf53, Tool: SDPX 0800S08H05 Cutting Conditions: vc = 80m/min H = 38mm (Through) Wet (Water-soluble, Internal Coolant Supply)

*Power consumption is based on calculations made at Sumitomo-owned facilities and may vary with operating environment.

High-efficiency drilling dramatically reduces drilling power consumption

High-efficiency Drilling Performance 3 Longer Tool Life



SDPX series



High-efficiency Cutting Conditions
After Drilling 111m

SDPX series

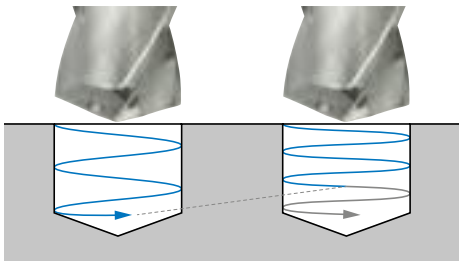


Conventional Cutting Conditions
After Drilling 67m

*Tool life varies based on the workpiece and operating environment. The above does not guarantee that tool life will be extended.

High-efficiency Cutting Conditions
f = 0.40mm/rev

Conventional Cutting Conditions
f = 0.25mm/rev



Reduced peripheral abrasion distance suppresses wear

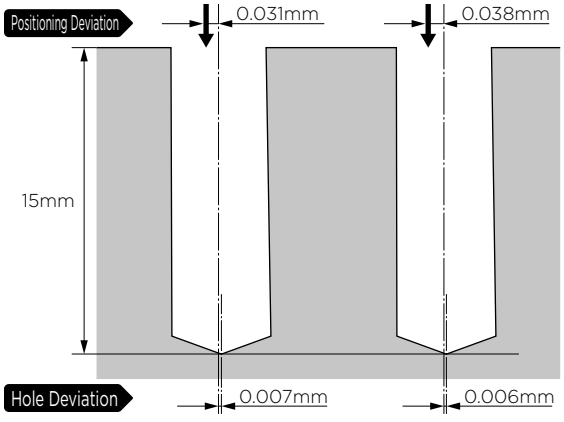
Work Material: Cf53, Tool: SDPX 0800S08H05				
High-efficiency Cutting Conditions:	vc = **140**m/min	f = **0.40**mm/rev	H = 38mm (Through)	Wet (Water-soluble, Internal Coolant Supply)
Conventional Cutting Conditions:	vc = 80m/min	f = 0.25mm/rev	H = 38mm (Through)	Wet (Water-soluble, Internal Coolant Supply)

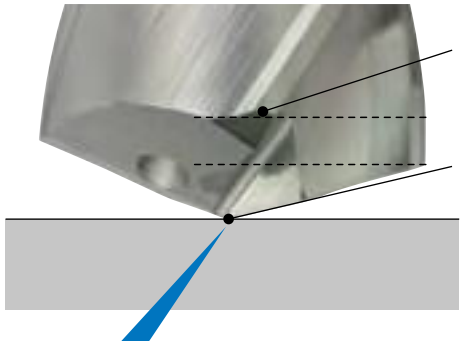
2.8 times the drilling efficiency and 1.3 times longer tool life

High-efficiency Drilling Performance 4 Hole Accuracy Comparison

SDPX series
f = **0.50**mm/rev
Drilling reference

Conventional Tool
f=0.25mm/rev
Drilling reference



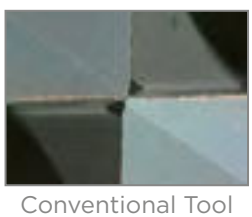


Effective use of submargin at entry

Wide chisel edge engages firmly to prevent drilling deviation



SDPX series



Conventional Tool

Work Material: Cf53, Tool: SDPX 0800S08H05 Cutting Conditions: vc = 100m/min Wet (Water-soluble, Internal Coolant Supply)

Hole position precision and deviation equivalent to conventional cutting conditions, even at twice the drilling efficiency

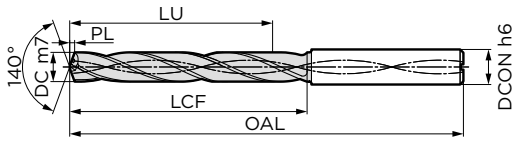
SDPX series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Cast Iron | Ductile Cast Iron

New HF Coat 3D 5D 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø3.0 to 4.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3,0	3	★	SDPX 0300S06H03	15,0	19,5	61,5	0,5	6.0	1
	5	★	SDPX 0300S06H05	22,0	26,5	65,5	0,5	6.0	1
	7	★	SDPX 0300S06H07	26,0	30,5	69,5	0,5	6.0	1
3,1	3	★	SDPX 0310S06H03	15,0	19,6	61,6	0,6	6.0	1
	5	★	SDPX 0310S06H05	22,0	26,6	65,6	0,6	6.0	1
	7	★	SDPX 0310S06H07	26,0	30,6	69,6	0,6	6.0	1
3,2	3	★	SDPX 0320S06H03	14,8	19,6	61,6	0,6	6.0	1
	5	★	SDPX 0320S06H05	21,8	26,6	65,6	0,6	6.0	1
	7	★	SDPX 0320S06H07	25,8	30,6	69,6	0,6	6.0	1
3,3	3	★	SDPX 0330S06H03	14,7	19,6	61,6	0,6	6.0	1
	5	★	SDPX 0330S06H05	21,7	26,6	65,6	0,6	6.0	1
	7	★	SDPX 0330S06H07	25,7	30,6	69,6	0,6	6.0	1
3,4	3	★	SDPX 0340S06H03	14,5	19,6	61,6	0,6	6.0	1
	5	★	SDPX 0340S06H05	21,5	26,6	65,6	0,6	6.0	1
	7	★	SDPX 0340S06H07	31,0	36,1	74,6	0,6	6.0	1
3,5	3	★	SDPX 0350S06H03	14,4	19,6	61,6	0,6	6.0	1
	5	★	SDPX 0350S06H05	21,4	26,6	65,6	0,6	6.0	1
	7	★	SDPX 0350S06H07	30,9	36,1	74,6	0,6	6.0	1
3,6	3		SDPX 0360S06H03	14,3	19,7	61,7	0,7	6.0	1
	5		SDPX 0360S06H05	21,3	26,7	65,7	0,7	6.0	1
	7		SDPX 0360S06H07	30,8	36,2	74,7	0,7	6.0	1
3,7	3	★	SDPX 0370S06H03	14,2	19,7	61,7	0,7	6.0	1
	5	★	SDPX 0370S06H05	21,2	26,7	65,7	0,7	6.0	1
	7	★	SDPX 0370S06H07	30,7	36,2	74,7	0,7	6.0	1
3,8	3	★	SDPX 0380S06H03	18,0	23,7	65,7	0,7	6.0	1
	5	★	SDPX 0380S06H05	30,0	35,7	73,7	0,7	6.0	1
	7	★	SDPX 0380S06H07	32,5	38,2	74,7	0,7	6.0	1
3,9	3		SDPX 0390S06H03	17,9	23,7	65,7	0,7	6.0	1
	5	★	SDPX 0390S06H05	29,9	35,7	73,7	0,7	6.0	1
	7		SDPX 0390S06H07	32,4	38,2	74,7	0,7	6.0	1
4,0	3	★	SDPX 0400S06H03	17,7	23,7	65,7	0,7	6.0	1
	5	★	SDPX 0400S06H05	29,7	35,7	73,7	0,7	6.0	1
	7	★	SDPX 0400S06H07	32,2	38,2	74,7	0,7	6.0	1
4,1	3	★	SDPX 0410S06H03	17,6	23,7	65,7	0,7	6.0	1
	5	★	SDPX 0410S06H05	29,6	35,7	73,7	0,7	6.0	1
	7	★	SDPX 0410S06H07	32,1	38,2	74,7	0,7	6.0	1
4,2	3	★	SDPX 0420S06H03	17,5	23,8	65,8	0,8	6.0	1
	5	★	SDPX 0420S06H05	29,5	35,8	73,8	0,8	6.0	1
	7	★	SDPX 0420S06H07	32,0	38,3	74,8	0,8	6.0	1
4,3	3	★	SDPX 0430S06H03	17,4	23,8	65,8	0,8	6.0	1
	5	★	SDPX 0430S06H05	29,4	35,8	73,8	0,8	6.0	1
	7	★	SDPX 0430S06H07	40,4	46,8	84,8	0,8	6.0	1

Grade: PCH70

Diameter ø4.4 to 5.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4,4	3		SDPX 0440S06H03	17,2	23,8	65,8	0,8	6.0	1
	5	★	SDPX 0440S06H05	29,2	35,8	73,8	0,8	6.0	1
	7		SDPX 0440S06H07	40,2	46,8	84,8	0,8	6.0	1
4,5	3	★	SDPX 0450S06H03	17,1	23,8	65,8	0,8	6.0	1
	5	★	SDPX 0450S06H05	29,1	35,8	73,8	0,8	6.0	1
	7	★	SDPX 0450S06H07	40,1	46,8	84,8	0,8	6.0	1
4,6	3	★	SDPX0460S06H03	16,9	23,8	65,8	0,8	6.0	1
	5	★	SDPX 0460S06H05	28,9	35,8	73,8	0,8	6.0	1
	7	★	SDPX 0460S06H07	39,9	46,8	84,8	0,8	6.0	1
4,65	3		SDPX 0465S06H03	16,8	23,8	65,8	0,8	6.0	1
	5	★	SDPX 0465S06H05	28,8	35,8	73,8	0,8	6.0	1
	7	★	SDPX 0465S06H07	39,8	46,8	84,8	0,8	6.0	1
4,7	3		SDPX 0470S06H03	16,9	23,9	65,9	0,9	6.0	1
	5	★	SDPX 0470S06H05	28,9	35,9	73,9	0,9	6.0	1
	7		SDPX 0470S06H07	39,9	46,9	84,9	0,9	6.0	1
4,8	3	★	SDPX 0480S06H03	20,7	27,9	65,9	0,9	6.0	1
	5	★	SDPX 0480S06H05	36,7	43,9	81,9	0,9	6.0	1
	7	★	SDPX 0480S06H07	44,7	51,9	89,9	0,9	6.0	1
4,9	3	★	SDPX 0490S06H03	20,6	27,9	65,9	0,9	6.0	1
	5	★	SDPX 0490S06H05	36,6	43,9	81,9	0,9	6.0	1
	7		SDPX 0490S06H07	44,6	51,9	89,9	0,9	6.0	1
5,0	3	★	SDPX 0500S06H03	20,4	27,9	65,9	0,9	6.0	1
	5	★	SDPX 0500S06H05	36,4	43,9	81,9	0,9	6.0	1
	7	★	SDPX 0500S06H07	44,4	51,9	89,9	0,9	6.0	1
5,1	3	★	SDPX 0510S06H03	20,3	27,9	65,9	0,9	6.0	1
	5	★	SDPX 0510S06H05	36,3	43,9	81,9	0,9	6.0	1
	7	★	SDPX 0510S06H07	44,3	51,9	89,9	0,9	6.0	1
5,2	3	★	SDPX 0520S06H03	20,1	27,9	65,9	0,9	6.0	1
	5	★	SDPX 0520S06H05	36,1	43,9	81,9	0,9	6.0	1
	7	★	SDPX 0520S06H07	44,1	51,9	89,9	0,9	6.0	1
5,3	3	★	SDPX 0530S06H03	20,1	28,0	66,0	1,0	6.0	1
	5	★	SDPX 0530S06H05	36,1	44,0	82,0	1,0	6.0	1
	7	★	SDPX 0530S06H07	44,1	52,0	90,0	1,0	6.0	1
5,4	3		SDPX 0540S06H03	19,9	28,0	66,0	1,0	6.0	1
	5	★	SDPX 0540S06H05	35,9	44,0	82,0	1,0	6.0	1
	7		SDPX 0540S06H07	50,9	59,0	97,0	1,0	6.0	1
5,5	3	★	SDPX 0550S06H03	19,8	28,0	66,0	1,0	6.0	1
	5	★	SDPX 0550S06H05	35,8	44,0	82,0	1,0	6.0	1
	7	★	SDPX 0550S06H07	50,8	59,0	97,0	1,0	6.0	1
5,55	3	★	SDPX 0555S06H03	19,7	28,0	66,0	1,0	6.0	1
	5	★	SDPX 0555S06H05	35,7	44,0	82,0	1,0	6.0	1
	7	★	SDPX 0555S06H07	50,7	59,0	97,0	1,0	6.0	1
5,6	3	★	SDPX 0560S06H03	19,6	28,0	66,0	1,0	6.0	1
	5	★	SDPX 0560S06H05	35,6	44,0	82,0	1,0	6.0	1
	7	★	SDPX 0560S06H07	50,6	59,0	97,0	1,0	6.0	1
5,7	3	★	SDPX 0570S06H03	19,5	28,0	66,0	1,0	6.0	1
	5	★	SDPX 0570S06H05	35,5	44,0	82,0	1,0	6.0	1
	7	★	SDPX 0570S06H07	50,5	59,0	97,0	1,0	6.0	1

Grade: PCH70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

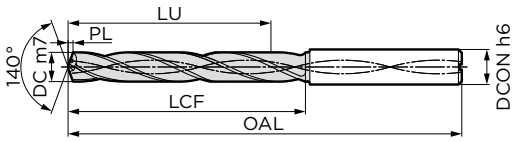
SDPX series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Cast Iron | Ductile Cast Iron

New HF Coat 3D 5D 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø5.8 to 7.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.8	3	★	SDPX 0580S06H03	19,4	28,1	66,1	1.1	6.0	1
	5	★	SDPX 0580S06H05	35,4	44,1	82,1	1.1	6.0	1
	7	★	SDPX 0580S06H07	50,4	59,1	97,1	1.1	6.0	1
5.9	3		SDPX 0590S06H03	19,3	28,1	66,1	1.1	6.0	1
	5	★	SDPX 0590S06H05	35,3	44,1	82,1	1.1	6.0	1
	7		SDPX 0590S06H07	50,3	59,1	97,1	1.1	6.0	1
6.0	3	★	SDPX 0600S06H03	19,1	28,1	66,1	1.1	6.0	1
	5	★	SDPX 0600S06H05	35,1	44,1	82,1	1.1	6.0	1
	7	★	SDPX 0600S06H07	50,1	59,1	97,1	1.1	6.0	1
6.1	3	★	SDPX 0610S08H03	25,0	34,1	79,1	1.2	8.0	1
	5	★	SDPX 0610S08H05	44,0	53,1	91,1	1.2	8.0	1
	7		SDPX 0610S08H07	59,0	68,1	106,1	1.2	8.0	1
6.2	3	★	SDPX 0620S08H03	24,8	34,1	79,1	1.2	8.0	1
	5	★	SDPX 0620S08H05	43,8	53,1	91,1	1.2	8.0	1
	7	★	SDPX 0620S08H07	58,8	68,1	106,1	1.2	8.0	1
6.3	3	★	SDPX 0630S08H03	24,7	34,1	79,1	1.2	8.0	1
	5	★	SDPX 0630S08H05	43,7	53,1	91,1	1.2	8.0	1
	7		SDPX 0630S08H07	58,7	68,1	106,1	1.2	8.0	1
6.4	3	★	SDPX 0640S08H03	24,6	34,2	79,2	1.2	8.0	1
	5	★	SDPX 0640S08H05	43,6	53,2	91,2	1.2	8.0	1
	7	★	SDPX 0640S08H07	58,6	68,2	106,2	1.2	8.0	1
6.5	3	★	SDPX 0650S08H03	24,5	34,2	79,2	1.2	8.0	1
	5	★	SDPX 0650S08H05	43,5	53,2	91,2	1.2	8.0	1
	7	★	SDPX 0650S08H07	58,5	68,2	106,2	1.2	8.0	1
6.6	3	★	SDPX 0660S08H03	24,3	34,2	79,2	1.2	8.0	1
	5	★	SDPX 0660S08H05	43,3	53,2	91,2	1.2	8.0	1
	7	★	SDPX 0660S08H07	58,3	68,2	106,2	1.2	8.0	1
6.7	3		SDPX 0670S08H03	24,2	34,2	79,2	1.2	8.0	1
	5	★	SDPX 0670S08H05	43,2	53,2	91,2	1.2	8.0	1
	7	★	SDPX 0670S08H07	58,2	68,2	106,2	1.2	8.0	1
6.8	3	★	SDPX 0680S08H03	24,0	34,2	79,2	1.2	8.0	1
	5	★	SDPX 0680S08H05	43,0	53,2	91,2	1.2	8.0	1
	7	★	SDPX 0680S08H07	58,0	68,2	106,2	1.2	8.0	1
6.9	3	★	SDPX 0690S08H03	24,0	34,3	79,3	1.3	8.0	1
	5	★	SDPX 0690S08H05	43,0	53,3	91,3	1.3	8.0	1
	7	★	SDPX 0690S08H07	68,0	78,3	116,3	1.3	8.0	1
7.0	3	★	SDPX 0700S08H03	23,8	34,3	79,3	1.3	8.0	1
	5	★	SDPX 0700S08H05	42,8	53,3	91,3	1.3	8.0	1
	7	★	SDPX 0700S08H07	67,8	78,3	116,3	1.3	8.0	1
7.1	3	★	SDPX 0710S08H03	29,7	40,3	79,3	1.3	8.0	1
	5	★	SDPX 0710S08H05	42,7	53,3	91,3	1.3	8.0	1
	7	★	SDPX 0710S08H07	67,7	78,3	116,3	1.3	8.0	1

Grade: PCH70

Diameter ø7.2 to 8.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.2	3	★	SDPX 0720S08H03	29,5	40,3	79,3	1.3	8.0	1
	5	★	SDPX 0720S08H05	42,5	53,3	91,3	1.3	8.0	1
	7		SDPX 0720S08H07	67,5	78,3	116,3	1.3	8.0	1
7.3	3	★	SDPX 0730S08H03	29,4	40,3	79,3	1.3	8.0	1
	5	★	SDPX 0730S08H05	42,4	53,3	91,3	1.3	8.0	1
	7	★	SDPX 0730S08H07	67,4	78,3	116,3	1.3	8.0	1
7.4	3	★	SDPX 0740S08H03	29,2	40,3	79,3	1.3	8.0	1
	5	★	SDPX 0740S08H05	42,2	53,3	91,3	1.3	8.0	1
	7	★	SDPX 0740S08H07	67,2	78,3	116,3	1.3	8.0	1
7.5	3	★	SDPX 0750S08H03	29,2	40,4	79,4	1.4	8.0	1
	5	★	SDPX 0750S08H05	42,2	53,4	91,4	1.4	8.0	1
	7	★	SDPX 0750S08H07	67,2	78,4	116,4	1.4	8.0	1
7.6	3	★	SDPX 0760S08H03	29,0	40,4	79,4	1.4	8.0	1
	5	★	SDPX 0760S08H05	42,0	53,4	91,4	1.4	8.0	1
	7		SDPX 0760S08H07	67,0	78,4	116,4	1.4	8.0	1
7.7	3	★	SDPX 0770S08H03	28,9	40,4	79,4	1.4	8.0	1
	5	★	SDPX 0770S08H05	41,9	53,4	91,4	1.4	8.0	1
	7	★	SDPX 0770S08H07	66,9	78,4	116,4	1.4	8.0	1
7.8	3	★	SDPX 0780S08H03	28,7	40,4	79,4	1.4	8.0	1
	5	★	SDPX 0780S08H05	41,7	53,4	91,4	1.4	8.0	1
	7	★	SDPX 0780S08H07	66,7	78,4	116,4	1.4	8.0	1
7.9	3	★	SDPX 0790S08H03	28,6	40,4	79,4	1.4	8.0	1
	5	★	SDPX 0790S08H05	41,6	53,4	91,4	1.4	8.0	1
	7		SDPX 0790S08H07	66,6	78,4	116,4	1.4	8.0	1
8.0	3	★	SDPX 0800S08H03	28,5	40,5	79,5	1.5	8.0	1
	5	★	SDPX 0800S08H05	41,5	53,5	91,5	1.5	8.0	1
	7	★	SDPX 0800S08H07	66,5	78,5	116,5	1.5	8.0	1
8.1	3	★	SDPX 0810S10H03	34,4	46,5	88,5	1.5	10.0	1
	5	★	SDPX 0810S10H05	48,4	60,5	102,5	1.5	10.0	1
	7	★	SDPX 0810S10H07	76,4	88,5	130,5	1.5	10.0	1
8.2	3	★	SDPX 0820S10H03	34,2	46,5	88,5	1.5	10.0	1
	5	★	SDPX 0820S10H05	48,2	60,5	102,5	1.5	10.0	1
	7	★	SDPX 0820S10H07	76,2	88,5	130,5	1.5	10.0	1
8.3	3	★	SDPX 0830S10H03	34,1	46,5	88,5	1.5	10.0	1
	5	★	SDPX 0830S10H05	48,1	60,5	102,5	1.5	10.0	1
	7		SDPX 0830S10H07	76,1	88,5	130,5	1.5	10.0	1
8.4	3	★	SDPX 0840S10H03	33,9	46,5	88,5	1.5	10.0	1
	5	★	SDPX 0840S10H05	47,9	60,5	102,5	1.5	10.0	1
	7	★	SDPX 0840S10H07	75,9	88,5	130,5	1.5	10.0	1
8.5	3	★	SDPX 0850S10H03	33,8	46,5	88,5	1.5	10.0	1
	5	★	SDPX 0850S10H05	47,8	60,5	102,5	1.5	10.0	1
	7	★	SDPX 0850S10H07	75,8	88,5	130,5	1.5	10.0	1

Grade: PCH70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

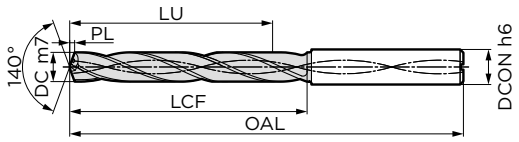
SDPX series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Cast Iron | Ductile Cast Iron

New HF Coat 3D 5D 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø8.6 to 9.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.6	3	★	SDPX 0860S10H03	33,7	46,6	88,6	1.6	10.0	1
	5	★	SDPX 0860S10H05	47,7	60,6	102,6	1.6	10.0	1
	7	★	SDPX 0860S10H07	75,7	88,6	130,6	1.6	10.0	1
8.7	3	★	SDPX 0870S10H03	33,6	46,6	88,6	1.6	10.0	1
	5	★	SDPX 0870S10H05	47,6	60,6	102,6	1.6	10.0	1
	7	★	SDPX 0870S10H07	75,6	88,6	130,6	1.6	10.0	1
8.8	3	★	SDPX 0880S10H03	33,4	46,6	88,6	1.6	10.0	1
	5	★	SDPX 0880S10H05	47,4	60,6	102,6	1.6	10.0	1
	7	★	SDPX 0880S10H07	75,4	88,6	130,6	1.6	10.0	1
8.9	3	★	SDPX 0890S10H03	33,3	46,6	88,6	1.6	10.0	1
	5	★	SDPX 0890S10H05	47,3	60,6	102,6	1.6	10.0	1
	7		SDPX 0890S10H07	75,3	88,6	130,6	1.6	10.0	1
9.0	3	★	SDPX 0900S10H03	33,1	46,6	88,6	1.6	10.0	1
	5	★	SDPX 0900S10H05	47,1	60,6	102,6	1.6	10.0	1
	7	★	SDPX 0900S10H07	75,1	88,6	130,6	1.6	10.0	1
9.1	3	★	SDPX 0910S10H03	33,1	46,7	88,7	1.7	10.0	1
	5	★	SDPX 0910S10H05	47,1	60,7	102,7	1.7	10.0	1
	7	★	SDPX 0910S10H07	83,1	96,7	138,7	1.7	10.0	1
9.2	3		SDPX 0920S10H03	32,9	46,7	88,7	1.7	10.0	1
	5	★	SDPX 0920S10H05	46,9	60,7	102,7	1.7	10.0	1
	7	★	SDPX 0920S10H07	82,9	96,7	138,7	1.7	10.0	1
9.3	3	★	SDPX 0930S10H03	32,8	46,7	88,7	1.7	10.0	1
	5	★	SDPX 0930S10H05	46,8	60,7	102,7	1.7	10.0	1
	7	★	SDPX 0930S10H07	82,8	96,7	138,7	1.7	10.0	1
9.4	3	★	SDPX 0940S10H03	32,6	46,7	88,7	1.7	10.0	1
	5	★	SDPX 0940S10H05	46,6	60,7	102,7	1.7	10.0	1
	7	★	SDPX 0940S10H07	82,6	96,7	138,7	1.7	10.0	1
9.5	3	★	SDPX 0950S10H03	32,5	46,7	88,7	1.7	10.0	1
	5	★	SDPX 0950S10H05	46,5	60,7	102,7	1.7	10.0	1
	7	★	SDPX 0950S10H07	82,5	96,7	138,7	1.7	10.0	1
9.6	3	★	SDPX 0960S10H03	32,3	46,7	88,7	1.7	10.0	1
	5	★	SDPX 0960S10H05	46,3	60,7	102,7	1.7	10.0	1
	7		SDPX 0960S10H07	82,3	96,7	138,7	1.7	10.0	1
9.7	3	★	SDPX 0970S10H03	32,3	46,8	88,8	1.8	10.0	1
	5	★	SDPX 0970S10H05	46,3	60,8	102,8	1.8	10.0	1
	7	★	SDPX 0970S10H07	82,3	96,8	138,8	1.8	10.0	1
9.8	3	★	SDPX 0980S10H03	32,1	46,8	88,8	1.8	10.0	1
	5	★	SDPX 0980S10H05	46,1	60,8	102,8	1.8	10.0	1
	7	★	SDPX 0980S10H07	82,1	96,8	138,8	1.8	10.0	1
9.9	3	★	SDPX 0990S10H03	32,0	46,8	88,8	1.8	10.0	1
	5	★	SDPX 0990S10H05	46,0	60,8	102,8	1.8	10.0	1
	7	★	SDPX 0990S10H07	82,0	96,8	138,8	1.8	10.0	1

Grade: PCH70

Diameter ø10.0 to 11.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.0	3	★	SDPX 1000S10H03	31,8	46,8	88,8	1.8	10.0	1
	5	★	SDPX 1000S10H05	45,8	60,8	102,8	1.8	10.0	1
	7	★	SDPX 1000S10H07	81,8	96,8	138,8	1.8	10.0	1
10.1	3	★	SDPX 1010S12H03	39,7	54,8	101,8	1.8	12.0	1
	5	★	SDPX 1010S12H05	55,7	70,8	117,8	1.8	12.0	1
	7	★	SDPX 1010S12H07	92,7	107,8	154,8	1.8	12.0	1
10.2	3	★	SDPX 1020S12H03	39,6	54,9	101,9	1.9	12.0	1
	5	★	SDPX 1020S12H05	55,6	70,9	117,9	1.9	12.0	1
	7	★	SDPX 1020S12H07	92,6	107,9	154,9	1.9	12.0	1
10.3	3	★	SDPX 1030S12H03	39,5	54,9	101,9	1.9	12.0	1
	5	★	SDPX 1030S12H05	55,5	70,9	117,9	1.9	12.0	1
	7		SDPX 1030S12H07	92,5	107,9	154,9	1.9	12.0	1
10.4	3	★	SDPX 1040S12H03	39,3	54,9	101,9	1.9	12.0	1
	5	★	SDPX 1040S12H05	55,3	70,9	117,9	1.9	12.0	1
	7	★	SDPX 1040S12H07	92,3	107,9	154,9	1.9	12.0	1
10.5	3	★	SDPX 1050S12H03	39,2	54,9	101,9	1.9	12.0	1
	5	★	SDPX 1050S12H05	55,2	70,9	117,9	1.9	12.0	1
	7	★	SDPX 1050S12H07	92,2	107,9	154,9	1.9	12.0	1
10.6	3	★	SDPX 1060S12H03	39,0	54,9	101,9	1.9	12.0	1
	5	★	SDPX 1060S12H05	55,0	70,9	117,9	1.9	12.0	1
	7		SDPX 1060S12H07	92,0	107,9	154,9	1.9	12.0	1
10.7	3		SDPX 1070S12H03	38,9	54,9	101,9	1.9	12.0	1
	5	★	SDPX 1070S12H05	54,9	70,9	117,9	1.9	12.0	1
	7		SDPX 1070S12H07	91,9	107,9	154,9	1.9	12.0	1
10.8	3	★	SDPX 1080S12H03	38,8	55,0	102,0	2.0	12.0	1
	5	★	SDPX 1080S12H05	54,8	71,0	118,0	2.0	12.0	1
	7	★	SDPX 1080S12H07	91,8	108,0	155,0	2.0	12.0	1
10.9	3		SDPX 1090S12H03	38,7	55,0	102,0	2.0	12.0	1
	5		SDPX 1090S12H05	54,7	71,0	118,0	2.0	12.0	1
	7		SDPX 1090S12H07	91,7	108,0	155,0	2.0	12.0	1
11.0	3	★	SDPX 1100S12H03	38,5	55,0	102,0	2.0	12.0	1
	5	★	SDPX 1100S12H05	54,5	71,0	118,0	2.0	12.0	1
	7	★	SDPX 1100S12H07	91,5	108,0	155,0	2.0	12.0	1
11.1	3	★	SDPX 1110S12H03	38,4	55,0	102,0	2.0	12.0	1
	5	★	SDPX 1110S12H05	54,4	71,0	118,0	2.0	12.0	1
	7		SDPX 1110S12H07	99,4	116,0	163,0	2.0	12.0	1
11.2	3	★	SDPX 1120S12H03	38,2	55,0	102,0	2.0	12.0	1
	5	★	SDPX 1120S12H05	54,2	71,0	118,0	2.0	12.0	1
	7	★	SDPX 1120S12H07	99,2	116,0	163,0	2.0	12.0	1
11.3	3		SDPX 1130S12H03	38,2	55,1	102,1	2.1	12.0	1
	5	★	SDPX 1130S12H05	54,2	71,1	118,1	2.1	12.0	1
	7	★	SDPX 1130S12H07	99,2	116,1	163,1	2.1	12.0	1

Grade: PCH70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

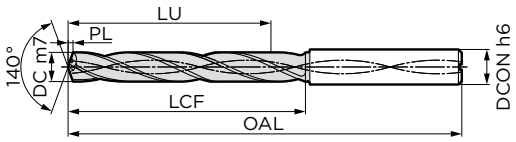
SDPX series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.28% | Tempered Steel | Cast Iron | Ductile Cast Iron

New HF Coat 3D 5D 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø11.4 to 12.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.4	3	★	**SDPX 1140S12H03**	38,0	55,1	102,1	2.1	12.0	1
	5	★	**SDPX 1140S12H05**	54,0	71,1	118,1	2.1	12.0	1
	7		**SDPX 1140S12H07**	99,0	116,1	163,1	2.1	12.0	1
11.5	3	★	**SDPX 1150S12H03**	37,9	55,1	102,1	2.1	12.0	1
	5	★	**SDPX 1150S12H05**	53,9	71,1	118,1	2.1	12.0	1
	7	★	**SDPX 1150S12H07**	98,9	116,1	163,1	2.1	12.0	1
11.6	3		**SDPX 1160S12H03**	37,7	55,1	102,1	2.1	12.0	1
	5		**SDPX 1160S12H05**	53,7	71,1	118,1	2.1	12.0	1
	7	★	**SDPX 1160S12H07**	98,7	116,1	163,1	2.1	12.0	1
11.7	3	★	**SDPX 1170S12H03**	37,6	55,1	102,1	2.1	12.0	1
	5	★	**SDPX 1170S12H05**	53,6	71,1	118,1	2.1	12.0	1
	7	★	**SDPX 1170S12H07**	98,6	116,1	163,1	2.1	12.0	1
11.8	3	★	**SDPX 1180S12H03**	37,4	55,1	102,1	2.1	12.0	1
	5	★	**SDPX 1180S12H05**	53,4	71,1	118,1	2.1	12.0	1
	7	★	**SDPX 1180S12H07**	98,4	116,1	163,1	2.1	12.0	1
11.9	3		**SDPX 1190S12H03**	37,4	55,2	102,2	2.2	12.0	1
	5		**SDPX 1190S12H05**	53,4	71,2	118,2	2.2	12.0	1
	7		**SDPX 1190S12H07**	98,4	116,2	163,2	2.2	12.0	1
12.0	3	★	**SDPX 1200S12H03**	37,2	55,2	102,2	2.2	12.0	1
	5	★	**SDPX 1200S12H05**	53,2	71,2	118,2	2.2	12.0	1
	7	★	**SDPX1200S12H07**	98,2	116,2	163,2	2.2	12.0	1
12.1	3		**SDPX 1210S14H03**	42,1	60,2	107,2	2.2	14.0	1
	5	★	**SDPX 1210S14H05**	59,1	77,2	124,2	2.2	14.0	1
	7		**SDPX 1210S14H07**	117,1	135,2	182,2	2.2	14.0	1
12.2	3	★	**SDPX 1220S14H03**	41,9	60,2	107,2	2.3	14.0	1
	5	★	**SDPX 1220S14H05**	58,9	77,2	124,2	2.2	14.0	1
	7		**SDPX 1220S14H07**	116,9	135,2	182,2	2.2	14.0	1
12.3	3		**SDPX 1230S14H03**	41,8	60,2	107,2	2.2	14.0	1
	5	★	**SDPX 1230S14H05**	58,8	77,2	124,2	2.2	14.0	1
	7		**SDPX 1230S14H07**	116,8	135,2	182,2	2.2	14.0	1
12.4	3		**SDPX 1240S14H03**	41,7	60,3	107,3	2.3	14.0	1
	5	★	**SDPX 1240S14H05**	58,7	77,3	124,3	2.3	14.0	1
	7		**SDPX 1240S14H07**	116,7	135,3	182,3	2.3	14.0	1
12.5	3	★	**SDPX 1250S14H03**	41,6	60,3	107,3	2.3	14.0	1
	5	★	**SDPX 1250S14H05**	58,6	77,3	124,3	2.3	14.0	1
	7	★	**SDPX 1250S14H07**	116,6	135,3	182,3	2.3	14.0	1
12.6	3		**SDPX 1260S14H03**	41,4	60,3	107,3	2.3	14.0	1
	5	★	**SDPX 1260S14H05**	58,4	77,3	124,3	2.3	14.0	1
	7		**SDPX 1260S14H07**	116,4	135,3	182,3	2.3	14.0	1
12.7	3		**SDPX 1270S14H03**	41,3	60,3	107,3	2.3	14.0	1
	5	★	**SDPX 1270S14H05**	58,3	77,3	124,3	2.3	14.0	1
	7		**SDPX 1270S14H07**	116,3	135,3	182,3	2.3	14.0	1

Grade: PCH70

Diameter ø12.8 to 14.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.8	3		**SDPX 1280S14H03**	41,1	60,3	107,3	2.4	14.0	1
	5	★	**SDPX 1280S14H05**	58,1	77,3	124,3	2.4	14.0	1
	7		**SDPX 1280S14H07**	116,1	135,3	182,3	2.4	14.0	1
12.9	3		**SDPX 1290S14H03**	41,0	60,3	107,3	2.4	14.0	1
	5		**SDPX 1290S14H05**	58,0	77,3	124,3	2.4	14.0	1
	7		**SDPX 1290S14H07**	116,0	135,3	182,3	2.4	14.0	1
13.0	3	★	**SDPX 1300S14H03**	40,9	60,4	107,4	2.4	14.0	1
	5	★	**SDPX 1300S14H05**	57,9	77,4	124,4	2.4	14.0	1
	7	★	**SDPX 1300S14H07**	115,9	135,4	182,4	2.4	14.0	1
13.1	3		**SDPX 1310S14H03**	40,8	60,4	107,4	2.5	14.0	1
	5	★	**SDPX 1310S14H05**	57,8	77,4	124,4	2.5	14.0	1
	7		**SDPX 1310S14H07**	115,8	135,4	182,4	2.5	14.0	1
13.2	3		**SDPX 1320S14H03**	40,6	60,4	107,4	2.5	14.0	1
	5	★	**SDPX 1320S14H05**	57,6	77,4	124,4	2.5	14.0	1
	7		**SDPX 1320S14H07**	115,6	135,4	182,4	2.5	14.0	1
13.3	3		**SDPX 1330S14H03**	40,5	60,4	107,4	2.5	14.0	1
	5		**SDPX 1330S14H05**	57,5	77,4	124,4	2.5	14.0	1
	7		**SDPX 1330S14H07**	115,5	135,4	182,4	2.5	14.0	1
13.4	3		**SDPX 1340S14H03**	40,3	60,4	107,4	2.5	14.0	1
	5	★	**SDPX 1340S14H05**	57,3	77,4	124,4	2.5	14.0	1
	7		**SDPX 1340S14H07**	115,3	135,4	182,4	2.5	14.0	1
13.5	3	★	**SDPX 1350S14H03**	40,3	60,5	107,5	2.5	14.0	1
	5	★	**SDPX 1350S14H05**	57,3	77,5	124,5	2.5	14.0	1
	7	★	**SDPX 1350S14H07**	115,3	135,5	182,5	2.5	14.0	1
13.6	3		**SDPX 1360S14H03**	40,1	60,5	107,5	2.5	14.0	1
	5		**SDPX 1360S14H05**	57,1	77,5	124,5	2.5	14.0	1
	7		**SDPX 1360S14H07**	115,1	135,5	182,5	2.5	14.0	1
13.7	3		**SDPX 1370S14H03**	40,0	60,5	107,5	2.5	14.0	1
	5	★	**SDPX 1370S14H05**	57,0	77,5	124,5	2.5	14.0	1
	7		**SDPX 1370S14H07**	115,0	135,5	182,5	2.5	14.0	1
13.8	3		**SDPX 1380S14H03**	39,8	60,5	107,5	2.5	14.0	1
	5	★	**SDPX 1380S14H05**	56,8	77,5	124,5	2.5	14.0	1
	7		**SDPX 1380S14H07**	114,8	135,5	182,5	2.5	14.0	1
13.9	3		**SDPX 1390S14H03**	39,7	60,5	107,5	2.5	14.0	1
	5	★	**SDPX 1390S14H05**	56,7	77,5	124,5	2.5	14.0	1
	7		**SDPX 1390S14H07**	114,7	135,5	182,5	2.5	14.0	1
14.0	3	★	**SDPX 1400S14H03**	39,5	60,5	107,5	2.5	14.0	1
	5	★	**SDPX 1400S14H05**	56,5	77,5	124,5	2.5	14.0	1
	7	★	**SDPX 1400S14H07**	114,5	135,5	182,5	2.5	14.0	1

Grade: ACH70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

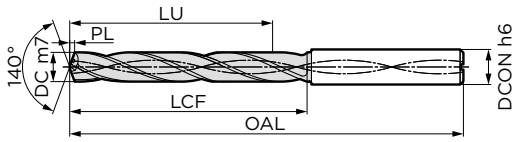
SDPX series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Cast Iron | Ductile Cast Iron

New HF Coat 3D 5D 7D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø14.1 to 15.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**SDPX 1410S16H03**	31.7	44.6	101.6	2.6	16.0	1
14,1	5		**SDPX 1410S16H05**	58.7	71.6	128.6	2.6	16.0	1
	7		**SDPX 1410S16H07**	85.7	98.6	155.6	2.6	16.0	1
	3		**SDPX 1420S16H03**	31.6	44.6	101.6	2.6	16.0	1
14,2	5		**SDPX 1420S16H05**	58.6	71.6	128.6	2.6	16.0	1
	7		**SDPX 1420S16H07**	85.6	98.6	155.6	2.6	16.0	1
	3		**SDPX 1430S16H03**	31.4	44.6	101.6	2.6	16.0	1
14,3	5		**SDPX 1430S16H05**	58.4	71.6	128.6	2.6	16.0	1
	7		**SDPX 1430S16H07**	85.4	98.6	155.6	2.6	16.0	1
	3		**SDPX 1440S16H03**	31.3	44.6	101.6	2.6	16.0	1
14,4	5		**SDPX 1440S16H05**	58.3	71.6	128.6	2.6	16.0	1
	7		**SDPX 1440S16H07**	85.3	98.6	155.6	2.6	16.0	1
	3	★	**SDPX 1450S16H03**	31.1	44.6	101.6	2.6	16.0	1
14,5	5	★	**SDPX 1450S16H05**	58.1	71.6	128.6	2.6	16.0	1
	7		**SDPX 1450S16H07**	85.1	98.6	155.6	2.6	16.0	1
	3		**SDPX 1460S16H03**	35.6	49.2	107.7	2.7	16.0	1
14,6	5		**SDPX 1460S16H05**	64.1	77.7	137.7	2.7	16.0	1
	7		**SDPX 1460S16H07**	91.1	104.7	167.7	2.7	16.0	1
	3		**SDPX 1470S16H03**	35.4	49.2	107.7	2.7	16.0	1
14,7	5		**SDPX 1470S16H05**	63.9	77.7	137.7	2.7	16.0	1
	7		**SDPX 1470S16H07**	90.9	104.7	167.7	2.7	16.0	1
	3		**SDPX 1480S16H03**	35.3	49.2	107.7	2.7	16.0	1
14,8	5		**SDPX 1480S16H05**	63.8	77.7	137.7	2.7	16.0	1
	7		**SDPX 1480S16H07**	90.8	104.7	167.7	2.7	16.0	1
	3		**SDPX 1490S16H03**	35.1	49.2	107.7	2.7	16.0	1
14,9	5		**SDPX 1490S16H05**	63.6	77.7	137.7	2.7	16.0	1
	7		**SDPX 1490S16H07**	90.6	104.7	167.7	2.7	16.0	1
	3	★	**SDPX 1500S16H03**	35.0	49.2	107.7	2.7	16.0	1
15,0	5	★	**SDPX 1500S16H05**	63.5	77.7	137.7	2.7	16.0	1
	7		**SDPX 1500S16H07**	90.5	104.7	167.7	2.7	16.0	1
	3		**SDPX 1510S16H03**	37.4	51.8	107.8	2.7	16.0	1
15,1	5		**SDPX 1510S16H05**	67.4	81.8	137.8	2.7	16.0	1
	7		**SDPX 1510S16H07**	97.4	111.8	167.8	2.7	16.0	1
	3		**SDPX 1520S16H03**	37.3	51.8	107.8	2.8	16.0	1
15,2	5		**SDPX 1520S16H05**	67.3	81.8	137.8	2.8	16.0	1
	7		**SDPX 1520S16H07**	97.3	111.8	167.8	2.8	16.0	1
	3		**SDPX 1530S16H03**	37.1	51.8	107.8	2.8	16.0	1
15,3	5		**SDPX 1530S16H05**	67.1	81.8	137.8	2.8	16.0	1
	7		**SDPX 1530S16H07**	97.1	111.8	167.8	2.8	16.0	1

Grade: PCH70

Diameter ø15.4 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**SDPX 1540S16H03**	41,7	64,8	114,8	2.8	16.0	1
15,4	5		**SDPX 1540S16H05**	59,7	82,8	132,8	2.8	16.0	1
	7		**SDPX 1540S16H07**	130,7	153,8	203,8	2.8	16.0	1
15,5	3	★	**SDPX 1550S16H03**	41,6	64,8	114,8	2.8	16.0	1
15,5	5	★	**SDPX 1550S16H05**	59,6	82,8	132,8	2.8	16.0	1
15,5	7		**SDPX 1550S16H07**	130,6	153,8	203,8	2.8	16.0	1
15,6	3		**SDPX 1560S16H03**	41,4	64,8	114,8	2.8	16.0	1
15,6	5		**SDPX 1560S16H05**	59,4	82,8	132,8	2.8	16.0	1
15,6	7		**SDPX 1560S16H07**	130,4	153,8	203,8	2.8	16.0	1
15,7	3		**SDPX 1570S16H03**	41,4	64,9	114,9	2.9	16.0	1
15,7	5		**SDPX 1570S16H05**	59,4	82,9	132,9	2.9	16.0	1
15,7	7		**SDPX 1570S16H07**	130,4	153,9	203,9	2.9	16.0	1
15,8	3		**SDPX 1580S16H03**	41,2	64,9	114,9	2.9	16.0	1
15,8	5		**SDPX 1580S16H05**	59,2	82,9	132,9	2.9	16.0	1
15,8	7		**SDPX 1580S16H07**	130,2	153,9	203,9	2.9	16.0	1
15,9	3		**SDPX 1590S16H03**	41,1	64,9	114,9	2.9	16.0	1
15,9	5		**SDPX 1590S16H05**	59,1	82,9	132,9	2.9	16.0	1
15,9	7		**SDPX 1590S16H07**	130,1	153,9	203,9	2.9	16.0	1
16,0	3	★	**SDPX 1600S16H03**	40,9	64,9	114,9	2.9	16.0	1
16,0	5	★	**SDPX 1600S16H05**	58,9	82,9	132,9	2.9	16.0	1
16,0	7		**SDPX 1600S16H07**	129,9	153,9	203,9	2.9	16.0	1

Grade: PCH70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

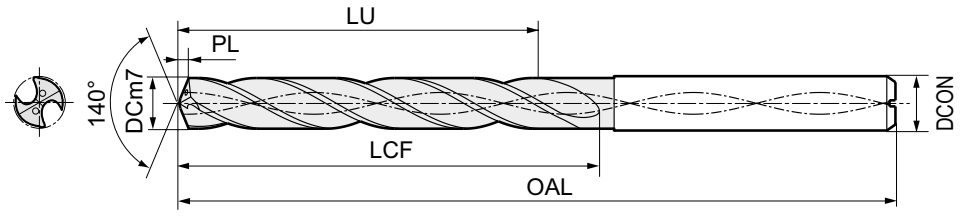
Recommended Cutting Conditions

Material Group						SDPX ____S__H0_ PCH70						
ISO 513	Material	Type/Structure	R_m N/mm²	Hard-ness HB30	Eignung	Vc=m/min	Ø 3.0-4.0mm Feed rate (mm/U)	Ø 4.1-6.0 mm Feed rate (mm/U)	Ø 6.1-8.0 mm Feed rate (mm/U)	Ø 8.1-10.0 mm Feed rate (mm/U)	Ø 10.1-13.0 mm Feed rate (mm/U)	Ø 13.1-16.0 mm Feed rate (mm/U)
P	Carbon steel Cast steel	free cutting steel			◉	60-**80**-140	0.15-**0.24**-0.35	0.15-**0.30**-0.35	0.20-**0.40**-0.50	0.20-**0.45**-0.50	0.25-**0.45**-0.55	0.25-**0.50**-0.60
		construction steel	400		◉	60-**80**-140	0.15-**0.24**-0.35	0.15-**0.30**-0.35	0.20-**0.40**-0.50	0.20-**0.45**-0.50	0.25-**0.45**-0.55	0.25-**0.50**-0.60
		case-hardened steel			◉	60-**80**-140	0.15-**0.24**-0.35	0.15-**0.30**-0.35	0.20-**0.40**-0.50	0.20-**0.45**-0.50	0.25-**0.45**-0.55	0.25-**0.50**-0.60
		heat-treatable steel	700	235	◉	60-**80**-140	0.15-**0.24**-0.35	0.15-**0.30**-0.35	0.20-0.40-0.50	0.20-**0.45**-0.50	0.25-**0.45**-0.55	0.25-**0.50**-0.60
		spring steel		300	◉	30-**40**-50	0.05-**0.07**-0.11	0.07-**0.09**-0.13	0.08-**0.12**-0.16	0.09-**0.15**-0.20	0.10-**0.18**-0.22	0.10-**0.20**-0.25
	Low alloy steel Cast steel	case-hardened steel			◉	60-**80**-100	0.12-**0.24**-0.30	0.15-**0.28**-0.35	0.20-**0.36**-0.45	0.20-**0.40**-0.45	0.22-**0.43**-0.50	0.22-**0.45**-0.55
		heat -treatable steel	600	180	◉	60-**80**-100	0.12-**0.24**-0.30	0.15-**0.28**-0.35	0.20-**0.36**-0.45	0.20-**0.40**-0.45	0.22-**0.43**-0.50	0.22-**0.45**-0.55
		bearing steel	<850	200	◉	60-**80**-100	0.12-**0.24**-0.30	0.15-**0.28**-0.35	0.20-**0.36**-0.45	0.20-**0.40**-0.45	0.22-**0.43**-0.50	0.22-**0.45**-0.55
		nitriding steel	<1000	275	◉	50-**70**-90	0.12-**0.24**-0.28	0.15-**0.28**-0.32	0.20-**0.36**-0.40	0.20-**0.40**-0.42	0.22-**0.43**-0.47	0.22-**0.45**-0.50
	High alloy steel	Tool steel			◎	30-**50**-60	0.08-**0.10**-0.15	0.10-**0.13**-0.24	0.12-**0.20**-0.28	0.15-**0.23**-0.30	0.18-**0.25**-0.35	0.20-**0.28**-0.40
		hot work steel			◎	30-**50**-60	0.08-**0.10**-0.15	0.10-**0.13**-0.24	0.12-**0.20**-0.28	0.15-**0.23**-0.30	0.18-**0.25**-0.35	0.20-**0.28**-0.40
K	Cast iron GG	pearlitic	>250		◉	60-**90**-120	0.15-**0.28**-0.35	0.18-**0.35**-0.50	0.20-**0.50**-0.60	0.22-**0.55**-0.65	0.25-**0.60**-0.70	0.25-**0.60**-0.75
	Cast iron GGG		>450		◉	60-**80**-100	0.15-**0.25**-0.30	0.18-**0.33**-0.40	0.20-**0.40**-0.50	0.22-**0.45**-0.55	0.25-**0.50**-0.60	0.25-**0.55**-0.65
N	Aluminum Al-wrought alloys	pure aluminum										
		wrought alloys										
	Aluminum Cast alloys	Si<=12%										
		Si>12%			○	80-**110**-140	0.15-**0.18**-0.20	0.15-**0.20**-0.25	0.20-**0.25**-0.30	0.20-**0.30**-0.35	0.25-**0.30**-0.38	0.25-**0.30**-0.40
		Al - Mg alloys										
	Zinc die-cast	Zn alloys										
	Copper alloys	Copper										
		Brass			◎	80-**100**-180	0.15-**0.18**-0.20	0.15-**0.20**-0.25	0.20-**0.25**-0.30	0.20-**0.30**-0.35	0.25-**0.30**-0.38	0.25-**0.30**-0.40
		Bronze										
H	Hardened steel	45 HRC			◎	30-**40**-50	0.08-**0.10**-0.15	0.10-**0.15**-0.18	0.12-**0.20**-0.25	0.15-**0.20**-0.25	0.15-**0.22**-0.28	0.15-**0.25**-0.30
		55 HRC										
		60 HRC										
		>60 HRC										

1. The recommended cutting conditions above are for cases where internal supply of a water-soluble coolant is used.
2. Can also be used for MQL drilling.
3. If using non-water-soluble coolant, reduce the cutting speed and feed rate by 20-30% and ensure that sufficient coolant is supplied.
4. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
5. Make sure the flute does not enter the collet.
6. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
*If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
7. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.
8. If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.

◉ Preferred choice ◎ Suitable ○ Possible

MULTIDRILL SDPX series Made-to-Order Request Sheet



■ Equipment Information

Manufacturer :

Type : ☐ Vertical Machining Centre ☐ Horizontal Machining Centre ☐ Lathe

Spindle :

Coolant : ☐ Water-soluble ☐ Oil-based ☐ MQL

Coolant Supply : ☐ Internal Coolant Supply ☐ External Coolant Supply

■ Workpiece Information

Part Name :

Work Material :

Work Material Hardness :

Hole type : ☐ Through Hole ☐ Blind Hole

Interrupted Drilling : ☐ Yes ☐ No

Hole Depth :

Distance of Collision Point :

■ Workpiece Shape

■ Required Precision

Hole Dia. Tolerance :

Surface Roughness :

Hole Positioning Accuracy :

Other :

■ Current Tool

Cutting Conditions : vc = m/min f = mm/rev

Tool Life:

Tool Life Criteria:

Chamfered Cutting Edge:

After filling in the required dimensions and other information, contact our nearest sales office or distributor.

Feel free to contact us with other requests as well.

Company Name/Contact

■ Remarks

MEMO

GS series/HGS series



■ General Features

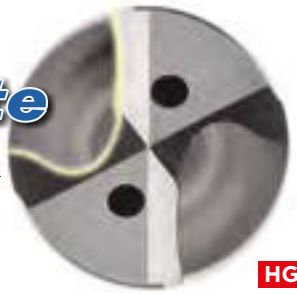
Super MULTIDRILL GS and HGS series are solid carbide drills that employ a proprietary J-flute design and wide chip pockets to achieve excellent chip control and evacuation. In addition, DEX Coat enables long and stable tool life over a wide application range for a variety of work materials.

■ Features and Applications

- **Long tool life**
  J-flute and special DEX Coat provide long tool life for a wide variety of work materials.
- **Stable chip evacuation**
  J-flute shape significantly improves chip control and evacuation.
- **Quiet drilling and stable drilling force**
  Stable drilling with minimal drill deflection even in small machine applications.
- **Environmentally friendly**
  Also compatible with the MQL (Minimum Quantity Lubrication) system.

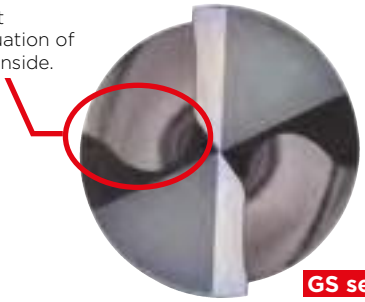
J flute

*"J flute" is a registered trademark.



HGS series

Wide chip pocket for smooth evacuation of chips generated inside.



GS series

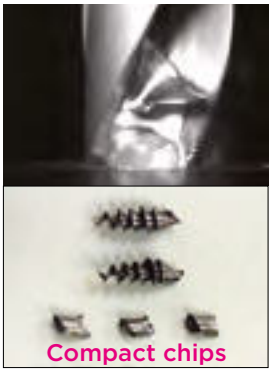
■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
External (GS series)	MDW□□□□GS2	ø1.0 to ø20.0	up to 2
	MDW□□□□GS4		up to 4
Internal (HGS series)	MDW□□□□HGS3	ø1.5 to ø20.0	up to 3
	MDW□□□□HGS5		up to 5
	MDW□□□□HGS8	ø1.5 to ø16.0	up to 8

■ Performance

Chip Control

GS series



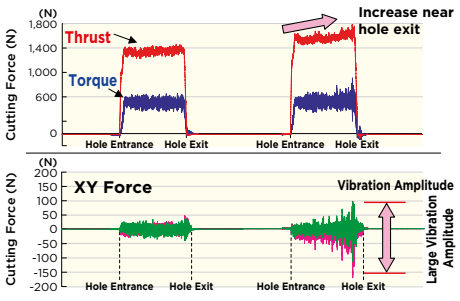
Compact chips

Conventional Tool



Comparison of Cutting Force

GS series Conventional Tool



GS series provides stable drill behaviour throughout the drilling process

Tool : MDW 0800GS4
Work Material : Cf53 (200HB)
Cutting Conditions : vc = 80m/min, f = 0.25mm/rev, H = 24mm,
External Coolant Supply (Water-soluble)

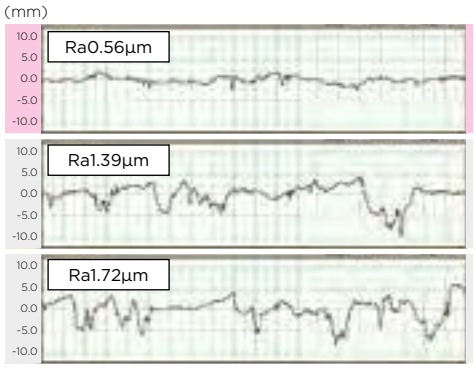
GS series/HGS series

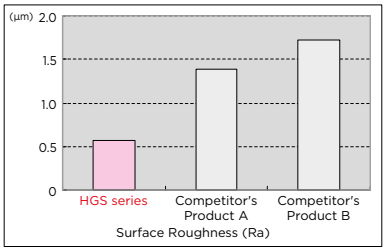
■ Uses Double Margin (HGS series) (excluding ø1.5 to ø2.4mm sizes)

The HGS series uses a double margin for greater stability and hole precision in deep hole drilling



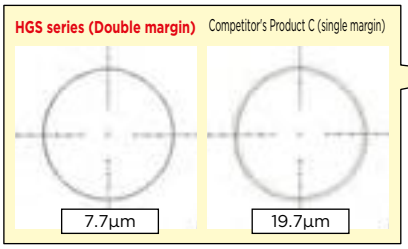
● Surface Roughness Comparison

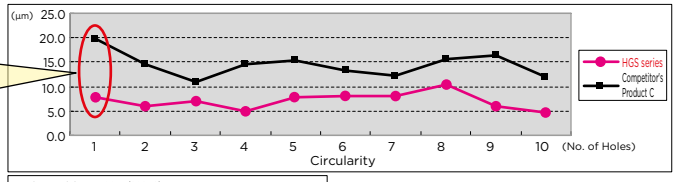




Work Material : SCr440H (120HB)
Tool : MDW0800HGS5
Cutting Conditions : vc = 80m/min, f = 0.25mm/rev, H = 38mm
Internal Coolant Supply (Water-soluble)

● Circularity Comparison



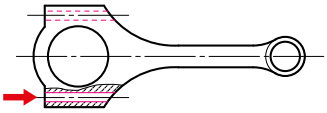


Work Material : Cf53 (200HB)
Tool : MDW 0800HGS8
Cutting Conditions : vc = 80m/min, f = 0.25mm/rev
H = 64mm, Internal Coolant Supply (Water-soluble)

4-point guide design of the double margin reduces runout for improved stability. Good surface roughness and circularity.

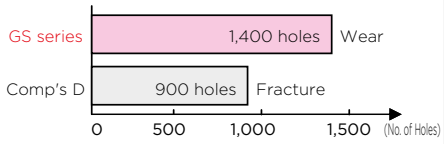
■ Application Examples (Super MULTIDRILL GS series)

● SUJ2 (250HB) Automotive Component

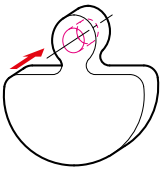


·Tool : MDW 0970GS4
·Cutting Conditions : vc = 80m/min, f = 0.25mm/rev
H = 25mm, External Coolant Supply (Water-soluble)

Achieves 1.5 times longer tool life!
Reduces wear on peripheral cutting edge

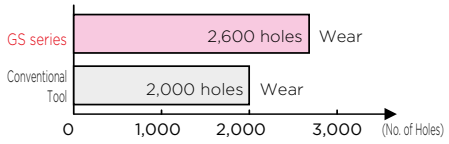


● Boron Steel (30HRC) Machine Component

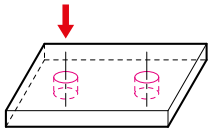


·Tool : MDW 0980GS2
·Cutting Conditions : vc = 70m/min, f = 0.15mm/rev
H = 7mm, External Coolant Supply (Water-soluble)

1.3 times longer tool life than conventional drills
Good circularity and cylindricity

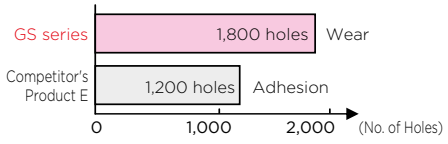


●SCM415 Machine Component



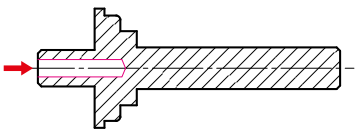
·Tool : MDW 1050GS4
·Cutting Conditions : vc = 150m/min, f = 0.3mm/rev
H = 12mm, External Coolant Supply (Water-soluble)

Achieves 1.5 times longer tool life!
Good chip control



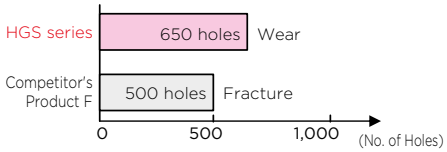
■ Application Examples (Super MULTIDRILL HGS series)

● SCr440H Automotive Component

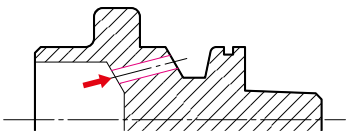


·Tool : MDW 0600HGS8
·Cutting Conditions : vc = 80m/min, f = 0.25mm/rev
H = 48mm, Internal Coolant Supply (Oil-based)

Achieves 1.3 times longer tool life!

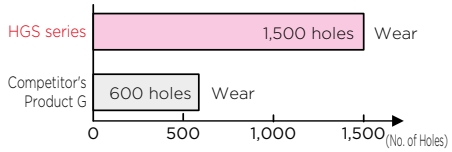


● SUJ2 Automotive Component

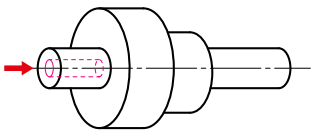


·Tool : MDW 0570HGS5
·Cutting Conditions : vc = 80m/min, f = 0.1mm/rev
H = 35mm, Internal Coolant Supply (Water-soluble)

Achieves 2.5 times longer tool life!

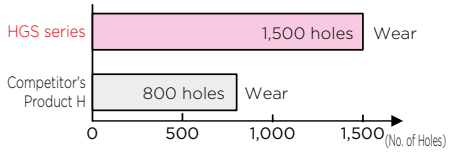


● SCM415 Machine Component



·Tool : MDW 0860HGS3
·Cutting Conditions : vc = 52m/min, f = 0.2mm/rev
H = 25mm, Internal Coolant Supply (Water-soluble)

Achieves 1.8 times longer tool life!



GS series (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DEX Coat | 2D | 4D

*For tolerances, refer to Chapter N - References.

Fig 1

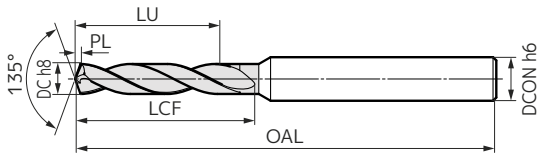
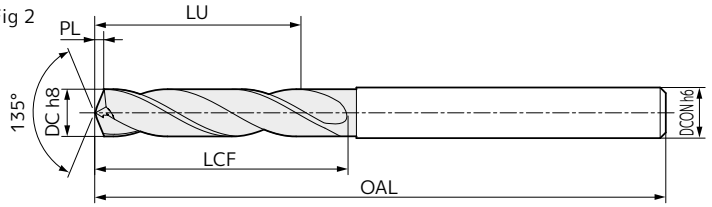


Fig 2



Diameter ø1.0 to 3.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	2	★	MDW 0100GS2	4.7	6.2	45.2	0.2	3.0	1
	4	★	0100GS4	10.7	12.2	49.2	0.2	3.0	1
1.1	2	★	MDW 0110GS2	4.6	6.2	45.2	0.2	3.0	1
	4	★	0110GS4	10.6	12.2	49.2	0.2	3.0	1
1.2	2	★	MDW 0120GS2	4.4	6.2	45.2	0.2	3.0	1
	4	★	0120GS4	10.4	12.2	49.2	0.2	3.0	1
1.3	2	★	MDW 0130GS2	4.4	6.3	45.3	0.3	3.0	1
	4	★	0130GS4	10.4	12.3	49.3	0.3	3.0	1
1.4	2	★	MDW 0140GS2	4.2	6.3	45.3	0.3	3.0	1
	4	★	0140GS4	10.2	12.3	49.3	0.3	3.0	1
1.5	2	★	MDW 0150GS2	4.1	6.3	45.3	0.3	3.0	1
	4	★	0150GS4	10.1	12.3	49.3	0.3	3.0	1
1.6	2	★	MDW 0160GS2	5.9	8.3	45.3	0.3	3.0	1
	4	★	0160GS4	12.9	15.3	49.3	0.3	3.0	1
1.7	2	★	MDW 0170GS2	5.9	8.4	45.4	0.4	3.0	1
	4	★	0170GS4	12.9	15.4	49.4	0.4	3.0	1
1.8	2	★	MDW 0180GS2	5.7	8.4	45.4	0.4	3.0	1
	4	★	0180GS4	12.7	15.4	49.4	0.4	3.0	1
1.9	2	★	MDW 0190GS2	5.6	8.4	45.4	0.4	3.0	1
	4	★	0190GS4	12.6	15.4	49.4	0.4	3.0	1
2.0	2	★	MDW 0200GS2	5.4	8.4	45.4	0.4	3.0	1
	4	★	0200GS4	12.4	15.4	49.4	0.4	3.0	1
2.1	2	★	MDW 0210GS2	7.3	10.4	45.4	0.4	3.0	1
	4	★	0210GS4	14.3	17.4	49.4	0.4	3.0	1
2.2	2	★	MDW 0220GS2	7.2	10.5	45.5	0.5	3.0	1
	4	★	0220GS4	14.2	17.5	49.5	0.5	3.0	1
2.3	2	★	MDW 0230GS2	7.1	10.5	45.5	0.5	3.0	1
	4	★	0230GS4	14.1	17.5	49.5	0.5	3.0	1
2.4	2	★	MDW 0240GS2	6.9	10.5	45.5	0.5	3.0	2
	4	★	0240GS4	13.9	17.5	49.5	0.5	3.0	2
2.5	2	★	MDW 0250GS2	6.8	10.5	45.5	0.5	3.0	2
	4	★	0250GS4	13.8	17.5	49.5	0.5	3.0	2
2.6	2	★	MDW 0260GS2	9.6	13.5	45.5	0.5	3.0	2
	4	★	0260GS4	15.6	19.5	49.5	0.5	3.0	2
2.7	2	★	MDW 0270GS2	9.6	13.6	45.6	0.6	3.0	2
	4	★	0270GS4	15.6	19.6	49.6	0.6	3.0	2
2.8	2	★	MDW 0280GS2	9.4	13.6	45.6	0.6	3.0	2
	4	★	0280GS4	15.4	19.6	49.6	0.6	3.0	2
2.9	2	★	MDW 0290GS2	9.3	13.6	45.6	0.6	3.0	2
	4	★	0290GS4	15.3	19.6	49.6	0.6	3.0	2
3.0	2	★	MDW 0300GS2	9.1	13.6	45.6	0.6	3.0	2
	4	★	0300GS4	15.1	19.6	49.6	0.6	3.0	2
3.1	2	★	MDW 0310GS2	15.0	19.6	54.6	0.6	4.0	2
	4	★	0310GS4	20.0	24.6	60.6	0.6	4.0	2
3.2	2	★	MDW 0320GS2	14.9	19.7	54.7	0.7	4.0	2
	4	★	0320GS4	19.9	24.7	60.7	0.7	4.0	2
3.3	2	★	MDW 0330GS2	14.8	19.7	54.7	0.7	4.0	2
	4	★	0330GS4	19.8	24.7	60.7	0.7	4.0	2
3.4	2	★	MDW 0340GS2	14.6	19.7	54.7	0.7	4.0	2
	4	★	0340GS4	19.6	24.7	60.7	0.7	4.0	2
3.5	2	★	MDW 0350GS2	14.5	19.7	54.7	0.7	4.0	2
	4	★	0350GS4	19.5	24.7	60.7	0.7	4.0	2
3.6	2	★	MDW 0360GS2	16.3	21.7	54.7	0.7	4.0	2
	4	★	0360GS4	22.3	27.7	60.7	0.7	4.0	2
3.7	2	★	MDW 0370GS2	16.3	21.8	54.8	0.8	4.0	2
	4	★	0370GS4	22.3	27.8	60.8	0.8	4.0	2

Grade: ACX70

Diameter ø3.8 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.8	2	★	MDW 0380GS2	16.1	21.8	54.8	0.8	4.0	2
	4	★	0380GS4	22.1	27.8	60.8	0.8	4.0	2
3.9	2	★	MDW 0390GS2	16.0	21.8	54.8	0.8	4.0	2
	4	★	0390GS4	22.0	27.8	60.8	0.8	4.0	2
4.0	2	★	MDW 0400GS2	15.8	21.8	54.8	0.8	4.0	2
	4	★	0400GS4	21.8	27.8	60.8	0.8	4.0	2
4.1	2	★	MDW 0410GS2	17.7	23.8	61.8	0.8	5.0	2
	4	★	0410GS4	25.7	31.8	76.8	0.8	5.0	2
4.2	2	★	MDW 0420GS2	17.6	23.9	61.9	0.9	5.0	2
	4	★	0420GS4	25.6	31.9	76.9	0.9	5.0	2
4.3	2	★	MDW 0430GS2	17.5	23.9	61.9	0.9	5.0	2
	4	★	0430GS4	25.5	31.9	76.9	0.9	5.0	2
4.4	2	★	MDW 0440GS2	17.3	23.9	61.9	0.9	5.0	2
	4	★	0440GS4	25.3	31.9	76.9	0.9	5.0	2
4.5	2	★	MDW 0450GS2	17.2	23.9	61.9	0.9	5.0	2
	4	★	0450GS4	25.2	31.9	76.9	0.9	5.0	2
4.6	2	★	MDW 0460GS2	19.1	26.0	62.0	1.0	5.0	2
	4	★	0460GS4	32.1	39.0	77.0	1.0	5.0	2
4.7	2	★	MDW 0470GS2	19.0	26.0	62.0	1.0	5.0	2
	4	★	0470GS4	32.0	39.0	77.0	1.0	5.0	2
4.8	2	★	MDW 0480GS2	18.8	26.0	62.0	1.0	5.0	2
	4	★	0480GS4	31.8	39.0	77.0	1.0	5.0	2
4.9	2	★	MDW 0490GS2	18.7	26.0	62.0	1.0	5.0	2
	4	★	0490GS4	31.7	39.0	77.0	1.0	5.0	2
5.0	2	★	MDW 0500GS2	18.5	26.0	62.0	1.0	5.0	2
	4	★	0500GS4	31.5	39.0	77.0	1.0	5.0	2
5.1	2	★	MDW 0510GS2	18.5	26.1	66.1	1.1	6.0	2
	4	★	0510GS4	32.5	40.1	82.1	1.1	6.0	2
5.2	2	★	MDW 0520GS2	18.3	26.1	66.1	1.1	6.0	2
	4	★	0520GS4	32.3	40.1	82.1	1.1	6.0	2
5.3	2	★	MDW 0530GS2	18.2	26.1	66.1	1.1	6.0	2
	4	★	0530GS4	32.2	40.1	82.1	1.1	6.0	2
5.4	2	★	MDW 0540GS2	18.0	26.1	66.1	1.1	6.0	2
	4	★	0540GS4	32.0	40.1	82.1	1.1	6.0	2
5.5	2	★	MDW 0550GS2	17.9	26.1	66.1	1.1	6.0	2
	4	★	0550GS4	31.9	40.1	82.1	1.1	6.0	2
5.6	2	★	MDW 0560GS2	19.8	28.2	66.2	1.2	6.0	2
	4	★	0560GS4	33.8	42.2	82.2	1.2	6.0	2
5.7	2	★	MDW 0570GS2	19.7	28.2	66.2	1.2	6.0	2
	4	★	0570GS4	33.7	42.2	82.2	1.2	6.0	2
5.8	2	★	MDW 0580GS2	19.5	28.2	66.2	1.2	6.0	2
	4	★	0580GS4	33.5	42.2	82.2	1.2	6.0	2
5.9	2	★	MDW 0590GS2	19.4	28.2	66.2	1.2	6.0	2
	4	★	0590GS4	33.4	42.2	82.2	1.2	6.0	2
6.0	2	★	MDW 0600GS2	19.2	28.2	66.2	1.2	6.0	2
	4	★	0600GS4	33.2	42.2	82.2	1.2	6.0	2
6.1	2	★	MDW 0610GS2	23.2	32.3	74.3	1.3	7.0	2
	4	★	0610GS4	34.2	43.3	84.3	1.3	7.0	2
6.2	2	★	MDW 0620GS2	23.0	32.3	74.3	1.3	7.0	2
	4	★	0620GS4	34.0	43.3	84.3	1.3	7.0	2
6.3	2	★	MDW 0630GS2	22.9	32.3	74.3	1.3	7.0	2
	4	★	0630GS4	33.9	43.3	84.3	1.3	7.0	2
6.4	2	★	MDW 0640GS2	22.7	32.3	74.3	1.3	7.0	2
	4	★	0640GS4	33.7	43.3	84.3	1.3	7.0	2
6.5	2	★	MDW 0650GS2	22.6	32.3	74.3	1.3	7.0	2
	4	★	0650GS4	33.6	43.3	84.3	1.3	7.0	2

Grade: ACX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

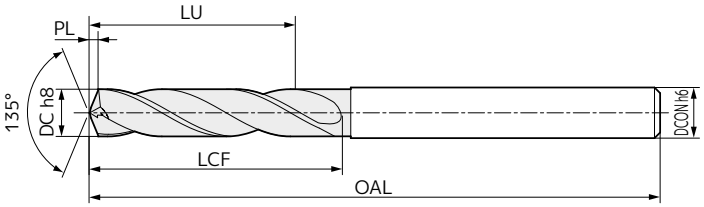
GS series (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DEX Coat 2D 4D

*For tolerances, refer to Chapter N - References.

Fig 2



Diameter ø6.6 to 9.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	2	★	MDW 0660GS2	24.5	34.4	74.4	1.4	7.0	2
	4	★	0660GS4	34.5	44.4	84.4	1.4	7.0	2
6.7	2	★	MDW 0670GS2	24.4	34.4	74.4	1.4	7.0	2
	4	★	0670GS4	34.4	44.4	84.4	1.4	7.0	2
6.8	2	★	MDW 0680GS2	24.2	34.4	74.4	1.4	7.0	2
	4	★	0680GS4	34.2	44.4	84.4	1.4	7.0	2
6.9	2	★	MDW 0690GS2	24.1	34.4	74.4	1.4	7.0	2
	4	★	0690GS4	34.1	44.4	84.4	1.4	7.0	2
7.0	2	★	MDW 0700GS2	23.9	34.4	74.4	1.4	7.0	2
	4	★	0700GS4	33.9	44.4	84.4	1.4	7.0	2
7.1	2	★	MDW 0710GS2	23.9	34.5	79.5	1.5	8.0	2
	4	★	0710GS4	35.9	46.5	91.5	1.5	8.0	2
7.2	2	★	MDW 0720GS2	23.7	34.5	79.5	1.5	8.0	2
	4	★	0720GS4	35.7	46.5	91.5	1.5	8.0	2
7.3	2	★	MDW 0730GS2	23.6	34.5	79.5	1.5	8.0	2
	4	★	0730GS4	35.6	46.5	91.5	1.5	8.0	2
7.4	2	★	MDW 0740GS2	23.4	34.5	79.5	1.5	8.0	2
	4	★	0740GS4	35.4	46.5	91.5	1.5	8.0	2
7.5	2	★	MDW 0750GS2	23.4	34.6	79.6	1.6	8.0	2
	4	★	0750GS4	35.4	46.6	91.6	1.6	8.0	2
7.6	2	★	MDW 0760GS2	26.2	37.6	79.6	1.6	8.0	2
	4	★	0760GS4	38.2	49.6	91.6	1.6	8.0	2
7.7	2	★	MDW 0770GS2	26.1	37.6	79.6	1.6	8.0	2
	4	★	0770GS4	38.1	49.6	91.6	1.6	8.0	2
7.8	2	★	MDW 0780GS2	25.9	37.6	79.6	1.6	8.0	2
	4	★	0780GS4	37.9	49.6	91.6	1.6	8.0	2
7.9	2	★	MDW 0790GS2	25.8	37.6	79.6	1.6	8.0	2
	4	★	0790GS4	37.8	49.6	91.6	1.6	8.0	2
8.0	2	★	MDW 0800GS2	25.7	37.7	79.7	1.7	8.0	2
	4	★	0800GS4	37.7	49.7	91.7	1.7	8.0	2
8.1	2	★	MDW 0810GS2	25.6	37.7	83.7	1.7	9.0	2
	4	★	0810GS4	42.6	54.7	99.7	1.7	9.0	2
8.2	2	★	MDW 0820GS2	25.4	37.7	83.7	1.7	9.0	2
	4	★	0820GS4	42.4	54.7	99.7	1.7	9.0	2
8.3	2	★	MDW 0830GS2	25.3	37.7	83.7	1.7	9.0	2
	4	★	0830GS4	42.3	54.7	99.7	1.7	9.0	2
8.4	2	★	MDW 0840GS2	25.1	37.7	83.7	1.7	9.0	2
	4	★	0840GS4	42.1	54.7	99.7	1.7	9.0	2
8.5	2	★	MDW 0850GS2	25.1	37.8	83.8	1.8	9.0	2
	4	★	0850GS4	42.1	54.8	99.8	1.8	9.0	2
8.6	2	★	MDW 0860GS2	26.9	39.8	83.8	1.8	9.0	2
	4	★	0860GS4	43.9	56.8	99.8	1.8	9.0	2
8.7	2	★	MDW 0870GS2	26.8	39.8	83.8	1.8	9.0	2
	4	★	0870GS4	43.8	56.8	99.8	1.8	9.0	2
8.8	2	★	MDW 0880GS2	26.6	39.8	83.8	1.8	9.0	2
	4	★	0880GS4	43.6	56.8	99.8	1.8	9.0	2
8.9	2	★	MDW 0890GS2	26.5	39.8	83.8	1.8	9.0	2
	4	★	0890GS4	43.5	56.8	99.8	1.8	9.0	2
9.0	2	★	MDW 0900GS2	26.4	39.9	83.9	1.9	9.0	2
	4	★	0900GS4	43.4	56.9	99.9	1.9	9.0	2
9.1	2	★	MDW 0910GS2	26.3	39.9	88.9	1.9	10.0	2
	4	★	0910GS4	46.3	59.9	106.9	1.9	10.0	2
9.2	2	★	MDW 0920GS2	26.1	39.9	88.9	1.9	10.0	2
	4	★	0920GS4	46.1	59.9	106.9	1.9	10.0	2
9.3	2	★	MDW 0930GS2	26.0	39.9	88.9	1.9	10.0	2
	4	★	0930GS4	46.0	59.9	106.9	1.9	10.0	2

Grade: ACX70

Diameter ø9.4 to 12.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.4	2	★	MDW 0940GS2	25.8	39.9	88.9	1.9	10.0	2
	4	★	0940GS4	45.8	59.9	106.9	1.9	10.0	2
9.5	2	★	MDW 0950GS2	25.8	40.0	89.0	2.0	10.0	2
	4	★	0950GS4	45.8	60.0	107.0	2.0	10.0	2
9.6	2	★	MDW 0960GS2	28.6	43.0	89.0	2.0	10.0	2
	4	★	0960GS4	47.6	62.0	107.0	2.0	10.0	2
9.7	2	★	MDW 0970GS2	28.5	43.0	89.0	2.0	10.0	2
	4	★	0970GS4	47.5	62.0	107.0	2.0	10.0	2
9.8	2	★	MDW 0980GS2	28.3	43.0	89.0	2.0	10.0	2
	4	★	0980GS4	47.3	62.0	107.0	2.0	10.0	2
9.9	2	★	MDW 0990GS2	28.2	43.0	89.0	2.0	10.0	2
	4	★	0990GS4	47.2	62.0	107.0	2.0	10.0	2
10.0	2	★	MDW 1000GS2	28.1	43.1	89.1	2.1	10.0	2
	4	★	1000GS4	47.1	62.1	107.1	2.1	10.0	2
10.1	2	★	MDW 1010GS2	28.0	43.1	95.1	2.1	11.0	2
	4	★	1010GS4	53.0	68.1	116.1	2.1	11.0	2
10.2	2	★	MDW 1020GS2	27.8	43.1	95.1	2.1	11.0	2
	4	★	1020GS4	52.8	68.1	116.1	2.1	11.0	2
10.3	2	★	MDW 1030GS2	27.7	43.1	95.1	2.1	11.0	2
	4	★	1030GS4	52.7	68.1	116.1	2.1	11.0	2
10.4	2	★	MDW 1040GS2	27.6	43.2	95.2	2.2	11.0	2
	4	★	1040GS4	52.6	68.2	116.2	2.2	11.0	2
10.5	2	★	MDW 1050GS2	27.5	43.2	95.2	2.2	11.0	2
	4	★	1050GS4	52.5	68.2	116.2	2.2	11.0	2
10.6	2	★	MDW 1060GS2	31.3	47.2	95.2	2.2	11.0	2
	4	★	1060GS4	54.3	70.2	116.2	2.2	11.0	2
10.7	2	★	MDW 1070GS2	31.2	47.2	95.2	2.2	11.0	2
	4	★	1070GS4	54.2	70.2	116.2	2.2	11.0	2
10.8	2	★	MDW 1080GS2	31.0	47.2	95.2	2.2	11.0	2
	4	★	1080GS4	54.0	70.2	116.2	2.2	11.0	2
10.9	2	★	MDW 1090GS2	31.0	47.3	95.3	2.3	11.0	2
	4	★	1090GS4	54.0	70.3	116.3	2.3	11.0	2
11.0	2	★	MDW 1100GS2	30.8	47.3	95.3	2.3	11.0	2
	4	★	1100GS4	53.8	70.3	116.3	2.3	11.0	2
11.1	2	★	MDW 1110GS2	30.7	47.3	102.3	2.3	12.0	2
	4	★	1110GS4	56.7	73.3	123.3	2.3	12.0	2
11.2	2	★	MDW 1120GS2	30.5	47.3	102.3	2.3	12.0	2
	4	★	1120GS4	56.5	73.3	123.3	2.3	12.0	2
11.3	2	★	MDW 1130GS2	30.4	47.3	102.3	2.3	12.0	2
	4	★	1130GS4	56.4	73.3	123.3	2.3	12.0	2
11.4	2	★	MDW 1140GS2	30.3	47.4	102.4	2.4	12.0	2
	4	★	1140GS4	56.3	73.4	123.4	2.4	12.0	2
11.5	2	★	MDW 1150GS2	30.2	47.4	102.4	2.4	12.0	2
	4	★	1150GS4	56.2	73.4	123.4	2.4	12.0	2
11.6	2	★	MDW 1160GS2	32.0	49.4	102.4	2.4	12.0	2
	4	★	1160GS4	58.0	75.4	123.4	2.4	12.0	2
11.7	2	★	MDW 1170GS2	31.9	49.4	102.4	2.4	12.0	2
	4	★	1170GS4	57.9	75.4	123.4	2.4	12.0	2
11.8	2	★	MDW 1180GS2	31.7	49.4	102.4	2.4	12.0	2
	4	★	1180GS4	57.7	75.4	123.4	2.4	12.0	2
11.9	2	★	MDW 1190GS2	31.7	49.5	102.5	2.5	12.0	2
	4	★	1190GS4	57.7	75.5	123.5	2.5	12.0	2
12.0	2	★	MDW 1200GS2	31.5	49.5	102.5	2.5	12.0	2
	4	★	1200GS4	57.5	75.5	123.5	2.5	12.0	2
12.1	2		MDW 1210GS2	31.4	49.5	102.5	2.5	13.0	2
	4		1210GS4	60.4	78.5	139.5	2.5	13.0	2

Grade: ACX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

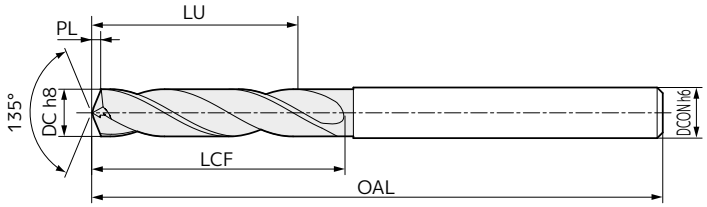
GS series (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DEX Coat | 2D | 4D

*For tolerances, refer to Chapter N - References.

Fig 2



Diameter ø12.2 to 14.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.2	2		**MDW 1220GS2**	31.2	49.5	102.5	2.5	13.0	2
	4		**1220GS4**	60.2	78.5	139.5	2.5	13.0	2
12.3	2		**MDW 1230GS2**	31.1	49.5	102.5	2.5	13.0	2
	4		**1230GS4**	60.1	78.5	139.5	2.5	13.0	2
12.4	2		**MDW 1240GS2**	31.0	49.6	102.6	2.6	13.0	2
	4		**1240GS4**	60.0	78.6	139.6	2.5	13.0	2
12.5	2		**MDW 1250GS2**	30.9	49.6	102.6	2.6	13.0	2
	4		**1250GS4**	59.9	78.6	139.6	2.6	13.0	2
12.6	2		**MDW 1260GS2**	32.7	51.6	102.6	2.6	13.0	2
	4		**1260GS4**	61.7	80.6	139.6	2.6	13.0	2
12.7	2		**MDW 1270GS2**	32.6	51.6	102.6	2.6	13.0	2
	4		**1270GS4**	61.6	80.6	139.6	2.6	13.0	2
12.8	2		**MDW 1280GS2**	32.4	51.6	102.6	2.6	13.0	2
	4		**1280GS4**	61.4	80.6	139.6	2.6	13.0	2
12.9	2		**MDW 1290GS2**	32.4	51.7	102.7	2.7	13.0	2
	4		**1290GS4**	61.4	80.7	139.7	2.7	13.0	2
13.0	2		**MDW 1300GS2**	32.2	51.7	102.7	2.7	13.0	2
	4		**1300GS4**	61.2	80.7	139.7	2.7	13.0	2
13.1	2		**MDW 1310GS2**	33.1	52.7	107.7	2.7	14.0	2
	4		**1310GS4**	67.1	86.7	149.7	2.7	14.0	2
13.2	2		**MDW 1320GS2**	32.9	52.7	107.7	2.7	14.0	2
	4		**1320GS4**	66.9	86.7	149.7	2.7	14.0	2
13.3	2		**MDW 1330GS2**	32.9	52.8	107.8	2.8	14.0	2
	4		**1330GS4**	66.9	86.8	149.8	2.8	14.0	2
13.4	2		**MDW 1340GS2**	32.7	52.8	107.8	2.8	14.0	2
	4		**1340GS4**	66.7	86.8	149.8	2.8	14.0	2
13.5	2		**MDW 1350GS2**	32.6	52.8	107.8	2.8	14.0	2
	4		**1350GS4**	66.6	86.8	149.8	2.8	14.0	2
13.6	2		**MDW 1360GS2**	34.4	54.8	107.8	2.8	14.0	2
	4		**1360GS4**	68.4	88.8	149.8	2.8	14.0	2
13.7	2		**MDW 1370GS2**	34.3	54.8	107.8	2.8	14.0	2
	4		**1370GS4**	68.3	88.8	149.8	2.8	14.0	2
13.8	2		**MDW 1380GS2**	34.2	54.9	107.9	2.9	14.0	2
	4		**1380GS4**	68.2	88.9	149.9	2.9	14.0	2
13.9	2		**MDW 1390GS2**	34.1	54.9	107.9	2.9	14.0	2
	4		**1390GS4**	68.1	88.9	149.9	2.9	14.0	2
14.0	2		**MDW 1400GS2**	33.9	54.9	107.9	2.9	14.0	2
	4		**1400GS4**	67.9	88.9	149.9	2.9	14.0	2
14.1	2		**MDW 1410GS2**	33.8	54.9	110.9	2.9	15.0	2
	4		**1410GS4**	70.8	91.9	155.9	2.9	15.0	2
14.2	2		**MDW 1420GS2**	33.6	54.9	110.9	2.9	15.0	2
	4		**1420GS4**	70.6	91.9	155.9	2.9	15.0	2
14.3	2		**MDW 1430GS2**	33.6	55.0	111.0	3.0	15.0	2
	4		**1430GS4**	70.6	92.0	156.0	3.0	15.0	2
14.4	2		**MDW 1440GS2**	33.4	55.0	111.0	3.0	15.0	2
	4		**1440GS4**	70.4	92.0	156.0	3.0	15.0	2
14.5	2		**MDW 1450GS2**	33.3	55.0	111.0	3.0	15.0	2
	4		**1450GS4**	70.3	92.0	156.0	3.0	15.0	2
14.6	2		**MDW 1460GS2**	34.1	56.0	111.0	3.0	15.0	2
	4		**1460GS4**	72.1	94.0	156.0	3.0	15.0	2
14.7	2		**MDW 1470GS2**	34.0	56.0	111.0	3.0	15.0	2
	4		**1470GS4**	72.0	94.0	156.0	3.0	15.0	2
14.8	2		**MDW 1480GS2**	33.9	56.1	111.1	3.1	15.0	2
	4		**1480GS4**	71.9	94.1	156.1	3.1	15.0	2
14.9	2		**MDW 1490GS2**	33.8	56.1	111.1	3.1	15.0	2
	4		**1490GS4**	71.8	94.1	156.1	3.1	15.0	2

Grade: ACX70

Diameter ø15.0 to 17.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.0	2		**MDW 1500GS2**	33.6	56.1	111.1	3.1	15.0	2
	4		**1500GS4**	71.6	94.1	156.1	3.1	15.0	2
15.1	2		**MDW 1510GS2**	33.5	56.1	115.1	3.1	16.0	2
	4		**1510GS4**	74.5	97.1	163.1	3.1	16.0	2
15.2	2		**MDW 1520GS2**	33.3	56.1	115.1	3.1	16.0	2
	4		**1520GS4**	74.3	97.1	163.1	3.1	16.0	2
15.3	2		**MDW 1530GS2**	33.3	56.2	115.2	3.2	16.0	2
	4		**1530GS4**	74.3	97.2	163.2	3.2	16.0	2
15.4	2		**MDW 1540GS2**	33.1	56.2	115.2	3.2	16.0	2
	4		**1540GS4**	74.1	97.2	163.2	3.2	16.0	2
15.5	2		**MDW 1550GS2**	33.0	56.2	115.2	3.2	16.0	2
	4		**1550GS4**	74.0	97.2	163.2	3.2	16.0	2
15.6	2		**MDW 1560GS2**	34.8	58.2	115.2	3.2	16.0	2
	4		**1560GS4**	75.8	99.2	163.2	3.2	16.0	2
15.7	2		**MDW 1570GS2**	34.7	58.2	115.2	3.2	16.0	2
	4		**1570GS4**	75.7	99.2	163.2	3.2	16.0	2
15.8	2		**MDW 1580GS2**	34.6	58.3	115.3	3.3	16.0	2
	4		**1580GS4**	75.6	99.3	163.3	3.3	16.0	2
15.9	2		**MDW 1590GS2**	34.5	58.3	115.3	3.3	16.0	2
	4		**1590GS4**	75.5	99.3	163.3	3.3	16.0	2
16.0	2		**MDW 1600GS2**	34.3	58.3	115.3	3.3	16.0	2
	4		**1600GS4**	75.3	99.3	163.3	3.3	16.0	2
16.1	2		**MDW 1610GS2**	35.2	59.3	119.3	3.3	17.0	2
	4		**1610GS4**	77.2	101.3	170.3	3.3	17.0	2
16.2	2		**MDW 1620GS2**	35.1	59.4	119.4	3.4	17.0	2
	4		**1620GS4**	77.1	101.4	170.4	3.4	17.0	2
16.3	2		**MDW 1630GS2**	35.0	59.4	119.4	3.4	17.0	2
	4		**1630GS4**	77.0	101.4	170.4	3.4	17.0	2
16.4	2		**MDW 1640GS2**	34.8	59.4	119.4	3.4	17.0	2
	4		**1640GS4**	76.8	101.4	170.4	3.4	17.0	2
16.5	2		**MDW 1650GS2**	34.7	59.4	119.4	3.4	17.0	2
	4		**1650GS4**	76.7	101.4	170.4	3.4	17.0	2
16.6	2		**MDW 1660GS2**	35.5	60.4	119.4	3.4	17.0	2
	4		**1660GS4**	76.5	101.4	170.4	3.4	17.0	2
16.7	2		**MDW 1670GS2**	35.5	60.5	119.5	3.5	17.0	2
	4		**1670GS4**	76.5	101.5	170.5	3.5	17.0	2
16.8	2		**MDW 1680GS2**	35.3	60.5	119.5	3.5	17.0	2
	4		**1680GS4**	76.3	101.5	170.5	3.5	17.0	2
16.9	2		**MDW 1690GS2**	35.2	60.5	119.5	3.5	17.0	2
	4		**1690GS4**	76.2	101.5	170.5	3.5	17.0	2
17.0	2		**MDW 1700GS2**	35.0	60.5	119.5	3.5	17.0	2
	4		**1700GS4**	76.0	101.5	170.5	3.5	17.0	2
17.1	2		**MDW 1710GS2**	35.9	61.5	123.5	3.5	18.0	2
	4		**1710GS4**	77.9	103.5	170.5	3.5	18.0	2
17.2	2		**MDW 1720GS2**	35.8	61.6	123.6	3.6	18.0	2
	4		**1720GS4**	77.8	103.6	170.6	3.6	18.0	2
17.3	2		**MDW 1730GS2**	35.7	61.6	123.6	3.6	18.0	2
	4		**1730GS4**	77.7	103.6	170.6	3.6	18.0	2
17.4	2		**MDW 1740GS2**	35.5	61.6	123.6	3.6	18.0	2
	4		**1740GS4**	77.5	103.6	170.6	3.6	18.0	2
17.5	2		**MDW 1750GS2**	35.4	61.6	123.6	3.6	18.0	2
	4		**1750GS4**	77.4	103.6	170.6	3.6	18.0	2
17.6	2		**MDW 1760GS2**	36.2	62.6	123.6	3.6	18.0	2
	4		**1760GS4**	79.2	105.6	170.6	3.6	18.0	2
17.7	2		**MDW 1770GS2**	36.2	62.7	123.7	3.7	18.0	2
	4		**1770GS4**	79.2	105.7	170.7	3.7	18.0	2

Grade: ACX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

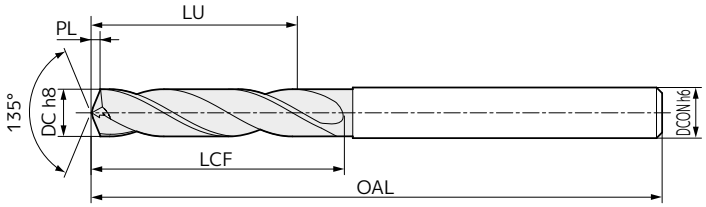
GS series (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

DEX Coat 2D 4D

*For tolerances, refer to Chapter N - References.

Fig 2



Diameter ø17.8 to 18.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
17.8	2		**MDW 1780GS2**	36.0	62.7	123.7	3.7	18.0	2
	4		**1780GS4**	79.0	105.7	170.7	3.7	18.0	2
17.9	2		**MDW 1790GS2**	35.9	62.7	123.7	3.7	18.0	2
	4		**1790GS4**	78.9	105.7	170.7	3.7	18.0	2
18.0	2		**MDW 1800GS2**	35.7	62.7	123.7	3.7	18.0	2
	4		**1800GS4**	78.7	105.7	170.7	3.7	18.0	2
18.1	2		**MDW 1810GS2**	35.6	62.7	126.7	3.7	19.0	2
	4		**1810GS4**	80.6	107.7	182.7	3.7	19.0	2
18.2	2		**MDW 1820GS2**	35.5	62.8	126.8	3.8	19.0	2
	4		**1820GS4**	80.5	107.8	182.8	3.8	19.0	2
18.3	2		**MDW 1830GS2**	35.4	62.8	126.8	3.8	19.0	2
	4		**1830GS4**	80.4	107.8	182.8	3.8	19.0	2
18.4	2		**MDW 1840GS2**	35.2	62.8	126.8	3.8	19.0	2
	4		**1840GS4**	80.2	107.8	182.8	3.8	19.0	2
18.5	2		**MDW 1850GS2**	35.1	62.8	126.8	3.8	19.0	2
	4		**1850GS4**	80.1	107.8	182.8	3.8	19.0	2
18.6	2		**MDW 1860GS2**	36.0	63.9	126.9	3.9	19.0	2
	4		**1860GS4**	82.0	109.9	182.9	3.9	19.0	2
18.7	2		**MDW 1870GS2**	35.9	63.9	126.9	3.9	19.0	2
	4		**1870GS4**	81.9	109.9	182.9	3.9	19.0	2
18.8	2		**MDW 1880GS2**	35.7	63.9	126.9	3.9	19.0	2
	4		**1880GS4**	81.7	109.9	182.9	3.9	19.0	2
18.9	2		**MDW 1890GS2**	35.6	63.9	126.9	3.9	19.0	2
	4		**1890GS4**	81.6	109.9	182.9	3.9	19.0	2

Grade: ACX70

Diameter ø19.0 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
19.0	2		**MDW 1900GS2**	35.4	63.9	126.9	3.9	19.0	2
	4		**1900GS4**	81.4	109.9	182.9	3.9	19.0	2
19.1	2		**MDW 1910GS2**	36.4	65.0	131.0	4.0	20.0	2
	4		**1910GS4**	85.4	114.0	183.0	4.0	20.0	2
19.2	2		**MDW 1920GS2**	36.2	65.0	131.0	4.0	20.0	2
	4		**1920GS4**	85.2	114.0	183.0	4.0	20.0	2
19.3	2		**MDW 1930GS2**	36.1	65.0	131.0	4.0	20.0	2
	4		**1930GS4**	85.1	114.0	183.0	4.0	20.0	2
19.4	2		**MDW 1940GS2**	35.9	65.0	131.0	4.0	20.0	2
	4		**1940GS4**	84.9	114.0	183.0	4.0	20.0	2
19.5	2		**MDW 1950GS2**	35.8	65.0	131.0	4.0	20.0	2
	4		**1950GS4**	84.8	114.0	183.0	4.0	20.0	2
19.6	2		**MDW 1960GS2**	36.7	66.1	131.1	4.1	20.0	2
	4		**1960GS4**	88.7	118.1	183.1	4.1	20.0	2
19.7	2		**MDW 1970GS2**	36.6	66.1	131.1	4.1	20.0	2
	4		**1970GS4**	88.6	118.1	183.1	4.1	20.0	2
19.8	2		**MDW 1980GS2**	36.4	66.1	131.1	4.1	20.0	2
	4		**1980GS4**	88.4	118.1	183.1	4.1	20.0	2
19.9	2		**MDW 1990GS2**	36.3	66.1	131.1	4.1	20.0	2
	4		**1990GS4**	88.3	118.1	183.1	4.1	20.0	2
20.0	2		**MDW 2000GS2**	36.1	66.1	131.1	4.1	20.0	2
	4		**2000GS4**	88.1	118.1	183.1	4.1	20.0	2

Grade: ACX70

Recommended Cutting Conditions (For 2D/4D)

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Hardened Steel (up to 45HRC)	Hardened Steel (46HRC up)	Stainless Steel (up to 200HB)	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3
ø3.0	n	6,400	3,200	1,600	2,700	5,300	4,800
	vc	30 - **60** - 70	20 - **30** - 40	10 - **15** - 20	10 - **25** - 40	40 - **50** - 70	35 - **45** - 60
	f	0.1 - **0.15** - 0.2	0.06 - **0.07** - 0.08	0.05 - **0.07** - 0.08	0.06 - **0.08** - 0.12	0.15 - **0.2** - 0.25	0.12 - **0.15** - 0.2
ø4.0	n	4,800	2,400	1,200	2,000	4,000	3,600
	vc	30 - **60** - 80	20 - **30** - 40	10 - **15** - 20	10 - **25** - 45	40 - **50** - 70	35 - **45** - 60
	f	0.12 - **0.17** - 0.22	0.07 - **0.08** - 0.09	0.05 - **0.07** - 0.08	0.07 - **0.09** - 0.13	0.15 - **0.2** - 0.27	0.13 - **0.17** - 0.22
ø5.0	n	3,800	1,900	950	1,900	3,200	3,200
	vc	40 - **60** - 100	20 - **30** - 40	10 - **15** - 20	15 - **30** - 55	40 - **50** - 70	40 - **50** - 60
	f	0.15 - **0.2** - 0.25	0.08 - **0.09** - 0.1	0.05 - **0.07** - 0.08	0.08 - **0.1** - 0.15	0.15 - **0.2** - 0.3	0.15 - **0.2** - 0.25
ø8.0	n	3,200	1,200	600	1,400	2,000	2,400
	vc	40 - **80** - 120	20 - **30** - 40	10 - **15** - 20	15 - **35** - 55	40 - **50** - 80	50 - **60** - 70
	f	0.18 - **0.23** - 0.3	0.09 - **0.1** - 0.13	0.06 - **0.08** - 0.1	0.09 - **0.12** - 0.17	0.18 - **0.23** - 0.33	0.18 - **0.23** - 0.3
ø10.0	n	2,500	1,000	500	1,300	1,900	1,900
	vc	50 - **80** - 130	20 - **30** - 40	10 - **15** - 20	15 - **40** - 60	50 - **60** - 80	50 - **60** - 70
	f	0.2 - **0.25** - 0.35	0.1 - **0.12** - 0.15	0.06 - **0.08** - 0.1	0.1 - **0.15** - 0.2	0.2 - **0.3** - 0.35	0.2 - **0.25** - 0.35
ø12.0	n	2,100	800	400	1,100	1,700	1,600
	vc	50 - **80** - 130	20 - **30** - 40	10 - **15** - 20	15 - **40** - 60	50 - **65** - 80	50 - **60** - 70
	f	0.2 - **0.25** - 0.35	0.1 - **0.12** - 0.15	0.06 - **0.08** - 0.1	0.1 - **0.15** - 0.2	0.2 - **0.3** - 0.35	0.2 - **0.25** - 0.35
ø16.0	n	1,800	600	300	800	1,600	1,200
	vc	50 - **90** - 130	20 - **30** - 40	10 - **15** - 20	20 - **40** - 60	60 - **80** - 90	50 - **60** - 75
	f	0.22 - **0.26** - 0.35	0.1 - **0.12** - 0.15	0.07 - **0.09** - 0.11	0.1 - **0.15** - 0.2	0.22 - **0.3** - 0.35	0.22 - **0.28** - 0.35
ø20.0	n	1,600	500	250	650	1,300	950
	vc	60 - **100** - 140	20 - **30** - 40	10 - **15** - 20	20 - **40** - 60	60 - **80** - 100	50 - **60** - 80
	f	0.25 - **0.3** - 0.35	0.1 - **0.12** - 0.15	0.08 - **0.1** - 0.12	0.1 - **0.15** - 0.2	0.25 - **0.3** - 0.35	0.25 - **0.3** - 0.35

Min. - **Optimum** - Max.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 1 (Diameter ø1.5 to 2.4mm, single margin)

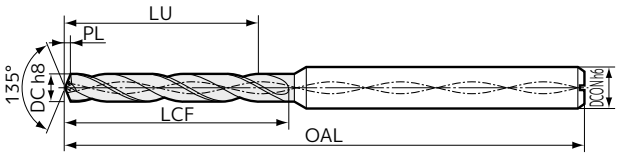
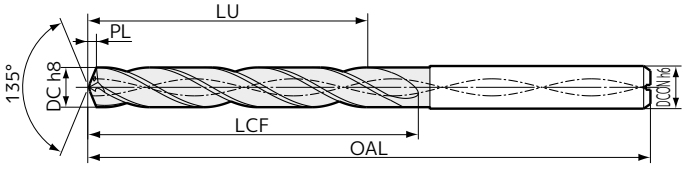


Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø1.5 to 3.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.5	3	★	MDW 0150HGS3	8.1	10.3	63.3	0.3	3.0	1
	5	★	0150HGS5	12.1	14.3	70.3	0.3	3.0	1
	8	★	0150HGS8	16.6	18.8	76.3	0.3	3.0	1
1.6	3	★	MDW 0160HGS3	10.4	12.8	63.3	0.3	3.0	1
	5	★	0160HGS5	16.9	19.3	70.3	0.3	3.0	1
	8	★	0160HGS8	21.9	24.3	76.3	0.3	3.0	1
1.7	3	★	MDW 0170HGS3	10.4	12.9	63.4	0.4	3.0	1
	5	★	0170HGS5	16.9	19.4	70.4	0.4	3.0	1
	8	★	0170HGS8	21.9	24.4	76.4	0.4	3.0	1
1.8	3	★	MDW 0180HGS3	10.2	12.9	63.4	0.4	3.0	1
	5	★	0180HGS5	16.7	19.4	70.4	0.4	3.0	1
	8	★	0180HGS8	21.7	24.4	76.4	0.4	3.0	1
1.9	3	★	MDW 0190HGS3	10.1	12.9	63.4	0.4	3.0	1
	5	★	0190HGS5	16.6	19.4	70.4	0.4	3.0	1
	8	★	0190HGS8	21.6	24.4	76.4	0.4	3.0	1
2.0	3	★	MDW 0200HGS3	9.9	12.9	63.4	0.4	3.0	1
	5	★	0200HGS5	16.4	19.4	70.4	0.4	3.0	1
	8	★	0200HGS8	21.4	24.4	76.4	0.4	3.0	1
2.1	3	★	MDW 0210HGS3	12.3	15.4	68.4	0.4	3.0	1
	5	★	0210HGS5	21.3	24.4	78.4	0.4	3.0	1
	8	★	0210HGS8	24.8	27.9	81.4	0.4	3.0	1
2.2	3	★	MDW 0220HGS3	12.2	15.5	68.5	0.5	3.0	1
	5	★	0220HGS5	21.2	24.5	78.5	0.5	3.0	1
	8	★	0220HGS8	24.7	28.0	81.5	0.5	3.0	1
2.3	3	★	MDW 0230HGS3	12.1	15.5	68.5	0.5	3.0	1
	5	★	0230HGS5	21.1	24.5	78.5	0.5	3.0	1
	8	★	0230HGS8	24.6	28.0	81.5	0.5	3.0	1
2.4	3	★	MDW 0240HGS3	11.9	15.5	68.5	0.5	3.0	1
	5	★	0240HGS5	20.9	24.5	78.5	0.5	3.0	1
	8	★	0240HGS8	24.4	28.0	81.5	0.5	3.0	1
2.5	3	★	MDW 0250HGS3	11.8	15.5	68.5	0.5	3.0	2
	5	★	0250HGS5	20.8	24.5	78.5	0.5	3.0	2
	8	★	0250HGS8	24.3	28.0	81.5	0.5	3.0	2
2.6	3	★	MDW 0260HGS3	14.1	18.0	68.5	0.5	3.0	2
	5	★	0260HGS5	24.6	28.5	78.5	0.5	3.0	2
	8	★	0260HGS8	29.6	33.5	81.5	0.5	3.0	2
2.7	3	★	MDW 0270HGS3	14.1	18.1	68.6	0.6	3.0	2
	5	★	0270HGS5	24.6	28.6	78.6	0.6	3.0	2
	8	★	0270HGS8	29.6	33.6	81.6	0.6	3.0	2
2.8	3	★	MDW 0280HGS3	13.9	18.1	68.6	0.6	3.0	2
	5	★	0280HGS5	24.4	28.6	78.6	0.6	3.0	2
	8	★	0280HGS8	29.4	33.6	81.6	0.6	3.0	2
2.9	3	★	MDW 0290HGS3	13.8	18.1	68.6	0.6	3.0	2
	5	★	0290HGS5	24.3	28.6	78.6	0.6	3.0	2
	8	★	0290HGS8	29.3	33.6	81.6	0.6	3.0	2
3.0	3	★	MDW 0300HGS3	13.6	18.1	68.6	0.6	3.0	2
	5	★	0300HGS5	24.1	28.6	78.6	0.6	3.0	2
	8	★	0300HGS8	29.1	33.6	81.6	0.6	3.0	2
3.1	3	★	MDW 0310HGS3	16.0	20.6	72.6	0.6	4.0	2
	5	★	0310HGS5	28.0	32.6	86.6	0.6	4.0	2
	8	★	0310HGS8	34.5	39.1	92.6	0.6	4.0	2
3.2	3	★	MDW 0320HGS3	15.9	20.7	72.7	0.7	4.0	2
	5	★	0320HGS5	27.9	32.7	86.7	0.7	4.0	2
	8	★	0320HGS8	34.4	39.2	92.7	0.7	4.0	2

Grade: ACX70

Diameter ø3.3 to 5.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.3	3	★	MDW 0330HGS3	15.8	20.7	72.7	0.7	4.0	2
	5	★	0330HGS5	27.8	32.7	86.7	0.7	4.0	2
	8	★	0330HGS8	34.3	39.2	92.7	0.7	4.0	2
3.4	3	★	MDW 0340HGS3	15.6	20.7	72.7	0.7	4.0	2
	5	★	0340HGS5	27.6	32.7	86.7	0.7	4.0	2
	8	★	0340HGS8	34.1	39.2	92.7	0.7	4.0	2
3.5	3	★	MDW 0350HGS3	15.5	20.7	72.7	0.7	4.0	2
	5	★	0350HGS5	27.5	32.7	86.7	0.7	4.0	2
	8	★	0350HGS8	34.0	39.2	92.7	0.7	4.0	2
3.6	3	★	MDW 0360HGS3	17.8	23.2	72.7	0.7	4.0	2
	5	★	0360HGS5	31.3	36.7	86.7	0.7	4.0	2
	8	★	0360HGS8	39.3	44.7	92.7	0.7	4.0	2
3.7	3	★	MDW 0370HGS3	17.8	23.3	72.8	0.8	4.0	2
	5	★	0370HGS5	31.3	36.8	86.8	0.8	4.0	2
	8	★	0370HGS8	39.3	44.8	92.8	0.8	4.0	2
3.8	3	★	MDW 0380HGS3	17.6	23.3	72.8	0.8	4.0	2
	5	★	0380HGS5	31.1	36.8	86.8	0.8	4.0	2
	8	★	0380HGS8	39.1	44.8	92.8	0.8	4.0	2
3.9	3	★	MDW 0390HGS3	17.5	23.3	72.8	0.8	4.0	2
	5	★	0390HGS5	31.0	36.8	86.8	0.8	4.0	2
	8	★	0390HGS8	39.0	44.8	92.8	0.8	4.0	2
4.0	3	★	MDW 0400HGS3	17.3	23.3	72.8	0.8	4.0	2
	5	★	0400HGS5	30.8	36.8	86.8	0.8	4.0	2
	8	★	0400HGS8	38.8	44.8	92.8	0.8	4.0	2
4.1	3	★	MDW 0410HGS3	19.7	25.8	80.8	0.8	5.0	2
	5	★	0410HGS5	34.7	40.8	98.8	0.8	5.0	2
	8	★	0410HGS8	44.2	50.3	105.8	0.8	5.0	2
4.2	3	★	MDW 0420HGS3	19.6	25.9	80.9	0.9	5.0	2
	5	★	0420HGS5	34.6	40.9	98.9	0.9	5.0	2
	8	★	0420HGS8	44.1	50.4	105.9	0.9	5.0	2
4.3	3	★	MDW 0430HGS3	19.5	25.9	80.9	0.9	5.0	2
	5	★	0430HGS5	34.5	40.9	98.9	0.9	5.0	2
	8	★	0430HGS8	44.0	50.4	105.9	0.9	5.0	2
4.4	3	★	MDW 0440HGS3	19.3	25.9	80.9	0.9	5.0	2
	5	★	0440HGS5	34.3	40.9	98.9	0.9	5.0	2
	8	★	0440HGS8	43.8	50.4	105.9	0.9	5.0	2
4.5	3	★	MDW 0450HGS3	19.2	25.9	80.9	0.9	5.0	2
	5	★	0450HGS5	34.2	40.9	98.9	0.9	5.0	2
	8	★	0450HGS8	43.7	50.4	105.9	0.9	5.0	2
4.6	3	★	MDW 0460HGS3	21.6	28.5	81.0	1.0	5.0	2
	5	★	0460HGS5	38.1	45.0	99.0	1.0	5.0	2
	8	★	0460HGS8	49.1	56.0	106.0	1.0	5.0	2
4.7	3	★	MDW 0470HGS3	21.5	28.5	81.0	1.0	5.0	2
	5	★	0470HGS5	38.0	45.0	99.0	1.0	5.0	2
	8	★	0470HGS8	49.0	56.0	106.0	1.0	5.0	2
4.8	3	★	MDW 0480HGS3	21.3	28.5	81.0	1.0	5.0	2
	5	★	0480HGS5	37.8	45.0	99.0	1.0	5.0	2
	8	★	0480HGS8	48.8	56.0	106.0	1.0	5.0	2
4.9	3	★	MDW 0490HGS3	21.2	28.5	81.0	1.0	5.0	2
	5	★	0490HGS5	37.7	45.0	99.0	1.0	5.0	2
	8	★	0490HGS8	48.7	56.0	106.0	1.0	5.0	2
5.0	3	★	MDW 0500HGS3	21.0	28.5	81.0	1.0	5.0	2
	5	★	0500HGS5	37.5	45.0	99.0	1.0	5.0	2
	8	★	0500HGS8	48.5	56.0	106.0	1.0	5.0	2

Grade: ACX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

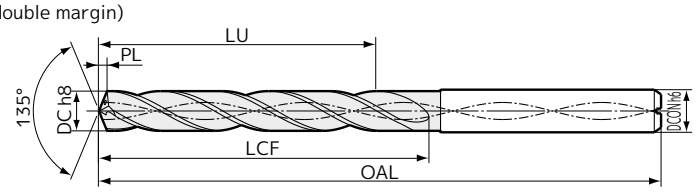
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø5.1 to 6.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.1	3	★	MDW 0510HGS3	21.0	28.6	83.1	1.1	6.0	2
	5	★	0510HGS5	37.5	45.1	101.1	1.1	6.0	2
	8	★	0510HGS8	54.0	61.6	119.1	1.1	6.0	2
5.2	3	★	MDW 0520HGS3	20.8	28.6	83.1	1.1	6.0	2
	5	★	0520HGS5	37.3	45.1	101.1	1.1	6.0	2
	8	★	0520HGS8	53.8	61.6	119.1	1.1	6.0	2
5.3	3	★	MDW 0530HGS3	20.7	28.6	83.1	1.1	6.0	2
	5	★	0530HGS5	37.2	45.1	101.1	1.1	6.0	2
	8	★	0530HGS8	53.7	61.6	119.1	1.1	6.0	2
5.4	3	★	MDW 0540HGS3	20.5	28.6	83.1	1.1	6.0	2
	5	★	0540HGS5	37.0	45.1	101.1	1.1	6.0	2
	8	★	0540HGS8	53.5	61.6	119.1	1.1	6.0	2
5.5	3	★	MDW 0550HGS3	20.4	28.6	83.1	1.1	6.0	2
	5	★	0550HGS5	36.9	45.1	101.1	1.1	6.0	2
	8	★	0550HGS8	53.4	61.6	119.1	1.1	6.0	2
5.6	3	★	MDW 0560HGS3	22.8	31.2	83.2	1.2	6.0	2
	5	★	0560HGS5	40.8	49.2	101.2	1.2	6.0	2
	8	★	0560HGS8	58.8	67.2	119.2	1.2	6.0	2
5.7	3	★	MDW 0570HGS3	22.7	31.2	83.2	1.2	6.0	2
	5	★	0570HGS5	40.7	49.2	101.2	1.2	6.0	2
	8	★	0570HGS8	58.7	67.2	119.2	1.2	6.0	2
5.8	3	★	MDW 0580HGS3	22.5	31.2	83.2	1.2	6.0	2
	5	★	0580HGS5	40.5	49.2	101.2	1.2	6.0	2
	8	★	0580HGS8	58.5	67.2	119.2	1.2	6.0	2
5.9	3	★	MDW 0590HGS3	22.4	31.2	83.2	1.2	6.0	2
	5	★	0590HGS5	40.4	49.2	101.2	1.2	6.0	2
	8	★	0590HGS8	58.4	67.2	119.2	1.2	6.0	2
6.0	3	★	MDW 0600HGS3	22.2	31.2	83.2	1.2	6.0	2
	5	★	0600HGS5	40.2	49.2	101.2	1.2	6.0	2
	8	★	0600HGS8	58.2	67.2	119.2	1.2	6.0	2
6.1	3	★	MDW 0610HGS3	24.7	33.8	89.3	1.3	7.0	2
	5	★	0610HGS5	44.2	53.3	110.3	1.3	7.0	2
	8	★	0610HGS8	63.7	72.8	131.3	1.3	7.0	2
6.2	3	★	MDW 0620HGS3	24.5	33.8	89.3	1.3	7.0	2
	5	★	0620HGS5	44.0	53.3	110.3	1.3	7.0	2
	8	★	0620HGS8	63.5	72.8	131.3	1.3	7.0	2
6.3	3	★	MDW 0630HGS3	24.4	33.8	89.3	1.3	7.0	2
	5	★	0630HGS5	43.9	53.3	110.3	1.3	7.0	2
	8	★	0630HGS8	63.4	72.8	131.3	1.3	7.0	2
6.4	3	★	MDW 0640HGS3	24.2	33.8	89.3	1.3	7.0	2
	5	★	0640HGS5	43.7	53.3	110.3	1.3	7.0	2
	8	★	0640HGS8	63.2	72.8	131.3	1.3	7.0	2
6.5	3	★	MDW 0650HGS3	24.1	33.8	89.3	1.3	7.0	2
	5	★	0650HGS5	43.6	53.3	110.3	1.3	7.0	2
	8	★	0650HGS8	63.1	72.8	131.3	1.3	7.0	2
6.6	3	★	MDW 0660HGS3	26.5	36.4	89.4	1.4	7.0	2
	5	★	0660HGS5	47.5	57.4	110.4	1.4	7.0	2
	8	★	0660HGS8	68.5	78.4	131.4	1.4	7.0	2
6.7	3	★	MDW 0670HGS3	26.4	36.4	89.4	1.4	7.0	2
	5	★	0670HGS5	47.4	57.4	110.4	1.4	7.0	2
	8	★	0670HGS8	68.4	78.4	131.4	1.4	7.0	2
6.8	3	★	MDW 0680HGS3	26.2	36.4	89.4	1.4	7.0	2
	5	★	0680HGS5	47.2	57.4	110.4	1.4	7.0	2
	8	★	0680HGS8	68.2	78.4	131.4	1.4	7.0	2

Grade: ACX70

Diameter ø6.9 to 8.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.9	3	★	MDW 0690HGS3	26.1	36.4	89.4	1.4	7.0	2
	5	★	0690HGS5	47.1	57.4	110.4	1.4	7.0	2
	8	★	0690HGS8	68.1	78.4	131.4	1.4	7.0	2
7.0	3	★	MDW 0700HGS3	25.9	36.4	89.4	1.4	7.0	2
	5	★	0700HGS5	46.9	57.4	110.4	1.4	7.0	2
	8	★	0700HGS8	67.9	78.4	131.4	1.4	7.0	2
7.1	3	★	MDW 0710HGS3	28.4	39.0	95.5	1.5	8.0	2
	5	★	0710HGS5	50.9	61.5	119.5	1.5	8.0	2
	8	★	0710HGS8	73.4	84.0	143.5	1.5	8.0	2
7.2	3	★	MDW 0720HGS3	28.2	39.0	95.5	1.5	8.0	2
	5	★	0720HGS5	50.7	61.5	119.5	1.5	8.0	2
	8	★	0720HGS8	73.2	84.0	143.5	1.5	8.0	2
7.3	3	★	MDW 0730HGS3	28.1	39.0	95.5	1.5	8.0	2
	5	★	0730HGS5	50.6	61.5	119.5	1.5	8.0	2
	8	★	0730HGS8	73.1	84.0	143.5	1.5	8.0	2
7.4	3	★	MDW 0740HGS3	27.9	39.0	95.5	1.5	8.0	2
	5	★	0740HGS5	50.4	61.5	119.5	1.5	8.0	2
	8	★	0740HGS8	72.9	84.0	143.5	1.5	8.0	2
7.5	3	★	MDW 0750HGS3	27.9	39.1	95.6	1.6	8.0	2
	5	★	0750HGS5	50.4	61.6	119.6	1.6	8.0	2
	8	★	0750HGS8	72.9	84.1	143.6	1.6	8.0	2
7.6	3	★	MDW 0760HGS3	30.2	41.6	95.6	1.6	8.0	2
	5	★	0760HGS5	54.2	65.6	119.6	1.6	8.0	2
	8	★	0760HGS8	78.2	89.6	143.6	1.6	8.0	2
7.7	3	★	MDW 0770HGS3	30.1	41.6	95.6	1.6	8.0	2
	5	★	0770HGS5	54.1	65.6	119.6	1.6	8.0	2
	8	★	0770HGS8	78.1	89.6	143.6	1.6	8.0	2
7.8	3	★	MDW 0780HGS3	29.9	41.6	95.6	1.6	8.0	2
	5	★	0780HGS5	53.9	65.6	119.6	1.6	8.0	2
	8	★	0780HGS8	77.9	89.6	143.6	1.6	8.0	2
7.9	3	★	MDW 0790HGS3	29.8	41.6	95.6	1.6	8.0	2
	5	★	0790HGS5	53.8	65.6	119.6	1.6	8.0	2
	8	★	0790HGS8	77.8	89.6	143.6	1.6	8.0	2
8.0	3	★	MDW 0800HGS3	29.7	41.7	95.7	1.7	8.0	2
	5	★	0800HGS5	53.7	65.7	119.7	1.7	8.0	2
	8	★	0800HGS8	77.7	89.7	143.7	1.7	8.0	2
8.1	3	★	MDW 0810HGS3	32.1	44.2	101.7	1.7	9.0	2
	5	★	0810HGS5	57.6	69.7	128.7	1.7	9.0	2
	8	★	0810HGS8	83.1	95.2	155.7	1.7	9.0	2
8.2	3	★	MDW 0820HGS3	31.9	44.2	101.7	1.7	9.0	2
	5	★	0820HGS5	57.4	69.7	128.7	1.7	9.0	2
	8	★	0820HGS8	82.9	95.2	155.7	1.7	9.0	2
8.3	3	★	MDW 0830HGS3	31.8	44.2	101.7	1.7	9.0	2
	5	★	0830HGS5	57.3	69.7	128.7	1.7	9.0	2
	8	★	0830HGS8	82.8	95.2	155.7	1.7	9.0	2
8.4	3	★	MDW 0840HGS3	31.6	44.2	101.7	1.7	9.0	2
	5	★	0840HGS5	57.1	69.7	128.7	1.7	9.0	2
	8	★	0840HGS8	82.6	95.2	155.7	1.7	9.0	2
8.5	3	★	MDW 0850HGS3	31.6	44.3	101.8	1.8	9.0	2
	5	★	0850HGS5	57.1	69.8	128.8	1.8	9.0	2
	8	★	0850HGS8	82.6	95.3	155.8	1.8	9.0	2
8.6	3	★	MDW 0860HGS3	33.9	46.8	101.8	1.8	9.0	2
	5	★	0860HGS5	60.9	73.8	128.8	1.8	9.0	2
	8	★	0860HGS8	87.9	100.8	155.8	1.8	9.0	2

Grade: ACX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

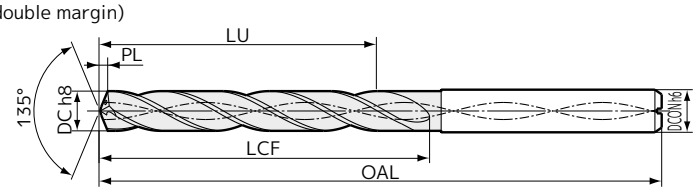
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø8.7 to 10.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.7	3	★	MDW 0870HGS3	33.8	46.8	101.8	1.8	9.0	2
	5	★	0870HGS5	60.8	73.8	128.8	1.8	9.0	2
	8	★	0870HGS8	87.8	100.8	155.8	1.8	9.0	2
8.8	3	★	MDW 0880HGS3	33.6	46.8	101.8	1.8	9.0	2
	5	★	0880HGS5	60.6	73.8	128.8	1.8	9.0	2
	8	★	0880HGS8	87.6	100.8	155.8	1.8	9.0	2
8.9	3	★	MDW 0890HGS3	33.5	46.8	101.8	1.8	9.0	2
	5	★	0890HGS5	60.5	73.8	128.8	1.8	9.0	2
	8	★	0890HGS8	87.5	100.8	155.8	1.8	9.0	2
9.0	3	★	MDW 0900HGS3	33.4	46.9	101.9	1.9	9.0	2
	5	★	0900HGS5	60.4	73.9	128.9	1.9	9.0	2
	8	★	0900HGS8	87.4	100.9	155.9	1.9	9.0	2
9.1	3	★	MDW 0910HGS3	35.8	49.4	107.9	1.9	10.0	2
	5	★	0910HGS5	64.3	77.9	137.9	1.9	10.0	2
	8	★	0910HGS8	92.8	106.4	167.9	1.9	10.0	2
9.2	3	★	MDW 0920HGS3	35.6	49.4	107.9	1.9	10.0	2
	5	★	0920HGS5	64.1	77.9	137.9	1.9	10.0	2
	8	★	0920HGS8	92.6	106.4	167.9	1.9	10.0	2
9.3	3	★	MDW 0930HGS3	35.5	49.4	107.9	1.9	10.0	2
	5	★	0930HGS5	64.0	77.9	137.9	1.9	10.0	2
	8	★	0930HGS8	92.5	106.4	167.9	1.9	10.0	2
9.4	3	★	MDW 0940HGS3	35.3	49.4	107.9	1.9	10.0	2
	5	★	0940HGS5	63.8	77.9	137.9	1.9	10.0	2
	8	★	0940HGS8	92.3	106.4	167.9	1.9	10.0	2
9.5	3	★	MDW 0950HGS3	35.3	49.5	108.0	2.0	10.0	2
	5	★	0950HGS5	63.8	78.0	138.0	2.0	10.0	2
	8	★	0950HGS8	92.3	106.5	168.0	2.0	10.0	2
9.6	3	★	MDW 0960HGS3	37.6	52.0	108.0	2.0	10.0	2
	5	★	0960HGS5	67.6	82.0	138.0	2.0	10.0	2
	8	★	0960HGS8	97.6	112.0	168.0	2.0	10.0	2
9.7	3	★	MDW 0970HGS3	37.5	52.0	108.0	2.0	10.0	2
	5	★	0970HGS5	67.5	82.0	138.0	2.0	10.0	2
	8	★	0970HGS8	97.5	112.0	168.0	2.0	10.0	2
9.8	3	★	MDW 0980HGS3	37.3	52.0	108.0	2.0	10.0	2
	5	★	0980HGS5	67.3	82.0	138.0	2.0	10.0	2
	8	★	0980HGS8	97.3	112.0	168.0	2.0	10.0	2
9.9	3	★	MDW 0990HGS3	37.2	52.0	108.0	2.0	10.0	2
	5	★	0990HGS5	67.2	82.0	138.0	2.0	10.0	2
	8	★	0990HGS8	97.2	112.0	168.0	2.0	10.0	2
10.0	3	★	MDW 1000HGS3	37.1	52.1	108.1	2.1	10.0	2
	5	★	1000HGS5	67.1	82.1	138.1	2.1	10.0	2
	8	★	1000HGS8	97.1	112.1	168.1	2.1	10.0	2
10.1	3	★	MDW 1010HGS3	39.5	54.6	118.1	2.1	11.0	2
	5	★	1010HGS5	71.0	86.1	151.1	2.1	11.0	2
	8	★	1010HGS8	102.5	117.6	184.1	2.1	11.0	2
10.2	3	★	MDW 1020HGS3	39.3	54.6	118.1	2.1	11.0	2
	5	★	1020HGS5	70.8	86.1	151.1	2.1	11.0	2
	8	★	1020HGS8	102.3	117.6	184.1	2.1	11.0	2
10.3	3	★	MDW 1030HGS3	39.2	54.6	118.1	2.1	11.0	2
	5	★	1030HGS5	70.7	86.1	151.1	2.1	11.0	2
	8	★	1030HGS8	102.2	117.6	184.1	2.1	11.0	2
10.4	3	★	MDW 1040HGS3	39.1	54.7	118.2	2.2	11.0	2
	5	★	1040HGS5	70.6	86.2	151.2	2.2	11.0	2
	8	★	1040HGS8	102.1	117.7	184.2	2.2	11.0	2

Grade: ACX70

Diameter ø10.5 to 12.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.5	3	★	MDW 1050HGS3	39.0	54.7	118.2	2.2	11.0	2
	5	★	1050HGS5	70.5	86.2	151.2	2.2	11.0	2
	8	★	1050HGS8	102.0	117.7	184.2	2.2	11.0	2
10.6	3	★	MDW 1060HGS3	41.3	57.2	118.2	2.2	11.0	2
	5	★	1060HGS5	74.3	90.2	151.2	2.2	11.0	2
	8	★	1060HGS8	107.3	123.2	184.2	2.2	11.0	2
10.7	3	★	MDW 1070HGS3	41.2	57.2	118.2	2.2	11.0	2
	5	★	1070HGS5	74.2	90.2	151.2	2.2	11.0	2
	8	★	1070HGS8	107.2	123.2	184.2	2.2	11.0	2
10.8	3	★	MDW 1080HGS3	41.0	57.2	118.2	2.2	11.0	2
	5	★	1080HGS5	74.0	90.2	151.2	2.2	11.0	2
	8	★	1080HGS8	107.0	123.2	184.2	2.2	11.0	2
10.9	3	★	MDW 1090HGS3	41.0	57.3	118.3	2.3	11.0	2
	5	★	1090HGS5	74.0	90.3	151.3	2.3	11.0	2
	8	★	1090HGS8	107.0	123.3	184.3	2.3	11.0	2
11.0	3	★	MDW 1100HGS3	40.8	57.3	118.3	2.3	11.0	2
	5	★	1100HGS5	73.8	90.3	151.3	2.3	11.0	2
	8	★	1100HGS8	106.8	123.3	184.3	2.3	11.0	2
11.1	3	★	MDW 1110HGS3	43.2	59.8	124.3	2.3	12.0	2
	5	★	1110HGS5	77.7	94.3	160.3	2.3	12.0	2
	8	★	1110HGS8	112.2	128.8	196.3	2.3	12.0	2
11.2	3	★	MDW 1120HGS3	43.0	59.8	124.3	2.3	12.0	2
	5	★	1120HGS5	77.5	94.3	160.3	2.3	12.0	2
	8	★	1120HGS8	112.0	128.8	196.3	2.3	12.0	2
11.3	3	★	MDW 1130HGS3	42.9	59.8	124.3	2.3	12.0	2
	5	★	1130HGS5	77.4	94.3	160.3	2.3	12.0	2
	8	★	1130HGS8	111.9	128.8	196.3	2.3	12.0	2
11.4	3	★	MDW 1140HGS3	42.8	59.9	124.4	2.4	12.0	2
	5	★	1140HGS5	77.3	94.4	160.4	2.4	12.0	2
	8	★	1140HGS8	111.8	128.9	196.4	2.4	12.0	2
11.5	3	★	MDW 1150HGS3	42.7	59.9	124.4	2.4	12.0	2
	5	★	1150HGS5	77.2	94.4	160.4	2.4	12.0	2
	8	★	1150HGS8	111.7	128.9	196.4	2.4	12.0	2
11.6	3	★	MDW 1160HGS3	45.0	62.4	124.4	2.4	12.0	2
	5	★	1160HGS5	81.0	98.4	160.4	2.4	12.0	2
	8	★	1160HGS8	117.0	134.4	196.4	2.4	12.0	2
11.7	3	★	MDW 1170HGS3	44.9	62.4	124.4	2.4	12.0	2
	5	★	1170HGS5	80.9	98.4	160.4	2.4	12.0	2
	8	★	1170HGS8	116.9	134.4	196.4	2.4	12.0	2
11.8	3	★	MDW 1180HGS3	44.7	62.4	124.4	2.4	12.0	2
	5	★	1180HGS5	80.7	98.4	160.4	2.4	12.0	2
	8	★	1180HGS8	116.7	134.4	196.4	2.4	12.0	2
11.9	3	★	MDW 1190HGS3	44.7	62.5	124.5	2.5	12.0	2
	5	★	1190HGS5	80.7	98.5	160.5	2.5	12.0	2
	8	★	1190HGS8	116.7	134.5	196.5	2.5	12.0	2
12.0	3	★	MDW 1200HGS3	44.5	62.5	124.5	2.5	12.0	2
	5	★	1200HGS5	80.5	98.5	160.5	2.5	12.0	2
	8	★	1200HGS8	116.5	134.5	196.5	2.5	12.0	2
12.1	3	★	MDW 1210HGS3	46.9	65.0	130.5	2.5	13.0	2
	5	★	1210HGS5	84.4	102.5	169.5	2.5	13.0	2
	8		1210HGS8	121.9	140.0	208.5	2.5	13.0	2
12.2	3	★	MDW 1220HGS3	46.7	65.0	130.5	2.5	13.0	2
	5	★	1220HGS5	84.2	102.5	169.5	2.5	13.0	2
	8		1220HGS8	121.7	140.0	208.5	2.5	13.0	2

Grade: ACX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

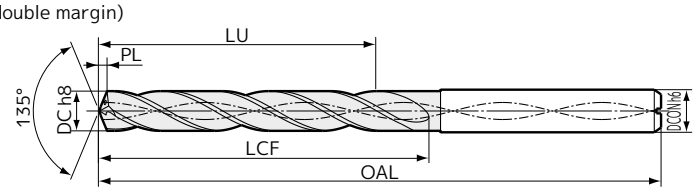
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø12.3 to 14.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW 1230HGS3**	46.6	65.0	130.5	2.5	13.0	2
12.3	5	★	**1230HGS5**	84.1	102.5	169.5	2.5	13.0	2
	8		**1230HGS8**	121.6	140.0	208.5	2.5	13.0	2
	3	★	**MDW 1240HGS3**	46.5	65.1	130.6	2.6	13.0	2
12.4	5	★	**1240HGS5**	84.0	102.6	169.6	2.6	13.0	2
	8		**1240HGS8**	121.5	140.1	208.6	2.6	13.0	2
	3	★	**MDW 1250HGS3**	46.4	65.1	130.6	2.6	13.0	2
12.5	5	★	**1250HGS5**	83.9	102.6	169.6	2.6	13.0	2
	8	★	**1250HGS8**	121.4	140.1	208.6	2.6	13.0	2
	3	★	**MDW 1260HGS3**	48.7	67.6	130.6	2.6	13.0	2
12.6	5	★	**1260HGS5**	87.7	106.6	169.6	2.6	13.0	2
	8		**1260HGS8**	126.7	145.6	208.6	2.6	13.0	2
	3	★	**MDW 1270HGS3**	48.6	67.6	130.6	2.6	13.0	2
12.7	5	★	**1270HGS5**	87.6	106.6	169.6	2.6	13.0	2
	8		**1270HGS8**	126.6	145.6	208.6	2.6	13.0	2
	3	★	**MDW 1280HGS3**	48.4	67.6	130.6	2.6	13.0	2
12.8	5	★	**1280HGS5**	87.4	106.6	169.6	2.6	13.0	2
	8		**1280HGS8**	126.4	145.6	208.6	2.6	13.0	2
	3	★	**MDW 1290HGS3**	48.4	67.7	130.7	2.7	13.0	2
12.9	5	★	**1290HGS5**	87.4	106.7	169.7	2.7	13.0	2
	8		**1290HGS8**	126.4	145.7	208.7	2.7	13.0	2
	3	★	**MDW 1300HGS3**	48.2	67.7	130.7	2.7	13.0	2
13.0	5	★	**1300HGS5**	87.2	106.7	169.7	2.7	13.0	2
	8	★	**1300HGS8**	126.2	145.7	208.7	2.7	13.0	2
	3	★	**MDW 1310HGS3**	50.6	70.2	136.7	2.7	14.0	2
13.1	5	★	**1310HGS5**	91.1	110.7	178.7	2.7	14.0	2
	8		**1310HGS8**	131.6	151.2	220.7	2.7	14.0	2
	3	★	**MDW 1320HGS3**	50.4	70.2	136.7	2.7	14.0	2
13.2	5	★	**1320HGS5**	90.9	110.7	178.7	2.7	14.0	2
	8		**1320HGS8**	131.4	151.2	220.7	2.7	14.0	2
	3	★	**MDW 1330HGS3**	50.4	70.3	136.8	2.8	14.0	2
13.3	5	★	**1330HGS5**	90.9	110.8	178.8	2.8	14.0	2
	8		**1330HGS8**	131.4	151.3	220.8	2.8	14.0	2
	3	★	**MDW 1340HGS3**	50.2	70.3	136.8	2.8	14.0	2
13.4	5	★	**1340HGS5**	90.7	110.8	178.8	2.8	14.0	2
	8		**1340HGS8**	131.2	151.3	220.8	2.8	14.0	2
	3	★	**MDW 1350HGS3**	50.1	70.3	136.8	2.8	14.0	2
13.5	5	★	**1350HGS5**	90.6	110.8	178.8	2.8	14.0	2
	8	★	**1350HGS8**	131.1	151.3	220.8	2.8	14.0	2
	3	★	**MDW 1360HGS3**	52.4	72.8	136.8	2.8	14.0	2
13.6	5	★	**1360HGS5**	94.4	114.8	178.8	2.8	14.0	2
	8		**1360HGS8**	136.4	156.8	220.8	2.8	14.0	2
	3	★	**MDW 1370HGS3**	52.3	72.8	136.8	2.8	14.0	2
13.7	5	★	**1370HGS5**	94.3	114.8	178.8	2.8	14.0	2
	8		**1370HGS8**	136.3	156.8	220.8	2.8	14.0	2
	3	★	**MDW 1380HGS3**	52.2	72.9	136.9	2.9	14.0	2
13.8	5	★	**1380HGS5**	94.2	114.9	178.9	2.9	14.0	2
	8		**1380HGS8**	136.2	156.9	220.9	2.9	14.0	2
	3	★	**MDW 1390HGS3**	52.1	72.9	136.9	2.9	14.0	2
13.9	5	★	**1390HGS5**	94.1	114.9	178.9	2.9	14.0	2
	8		**1390HGS8**	136.1	156.9	220.9	2.9	14.0	2
	3	★	**MDW 1400HGS3**	51.9	72.9	136.9	2.9	14.0	2
14.0	5	★	**1400HGS5**	93.9	114.9	178.9	2.9	14.0	2
	8	★	**1400HGS8**	135.9	156.9	220.9	2.9	14.0	2

Grade: ACX70

Diameter ø14.1 to 15.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW 1410HGS3**	54.3	75.4	142.9	2.9	15.0	2
14.1	5	★	**1410HGS5**	97.8	118.9	187.9	2.9	15.0	2
	8		**1410HGS8**	141.3	162.4	232.9	2.9	15.0	2
	3	★	**MDW 1420HGS3**	54.1	75.4	142.9	2.9	15.0	2
14.2	5	★	**1420HGS5**	97.6	118.9	187.9	2.9	15.0	2
	8		**1420HGS8**	141.1	162.4	232.9	2.9	15.0	2
	3	★	**MDW 1430HGS3**	54.1	75.5	143.0	3.0	15.0	2
14.3	5	★	**1430HGS5**	97.6	119.0	188.0	3.0	15.0	2
	8		**1430HGS8**	141.1	162.5	233.0	3.0	15.0	2
	3	★	**MDW 1440HGS3**	53.9	75.5	143.0	3.0	15.0	2
14.4	5	★	**1440HGS5**	97.4	119.0	188.0	3.0	15.0	2
	8		**1440HGS8**	140.9	162.5	233.0	3.0	15.0	2
	3	★	**MDW 1450HGS3**	53.8	75.5	143.0	3.0	15.0	2
14.5	5	★	**1450HGS5**	97.3	119.0	188.0	3.0	15.0	2
	8	★	**1450HGS8**	140.8	162.5	233.0	3.0	15.0	2
	3	★	**MDW 1460HGS3**	56.1	78.0	143.0	3.0	15.0	2
14.6	5	★	**1460HGS5**	101.1	123.0	188.0	3.0	15.0	2
	8		**1460HGS8**	146.1	168.0	233.0	3.0	15.0	2
	3	★	**MDW 1470HGS3**	56.0	78.0	143.0	3.0	15.0	2
14.7	5	★	**1470HGS5**	101.0	123.0	188.0	3.0	15.0	2
	8		**1470HGS8**	146.0	168.0	233.0	3.0	15.0	2
	3	★	**MDW 1480HGS3**	55.9	78.1	143.1	3.1	15.0	2
14.8	5	★	**1480HGS5**	100.9	123.1	188.1	3.1	15.0	2
	8		**1480HGS8**	145.9	168.1	233.1	3.1	15.0	2
	3	★	**MDW 1490HGS3**	55.8	78.1	143.1	3.1	15.0	2
14.9	5	★	**1490HGS5**	100.8	123.1	188.1	3.1	15.0	2
	8		**1490HGS8**	145.8	168.1	233.1	3.1	15.0	2
	3	★	**MDW 1500HGS3**	55.6	78.1	143.1	3.1	15.0	2
15.0	5	★	**1500HGS5**	100.6	123.1	188.1	3.1	15.0	2
	8	★	**1500HGS8**	145.6	168.1	233.1	3.1	15.0	2
	3	★	**MDW 1510HGS3**	58.0	80.6	149.1	3.1	16.0	2
15.1	5	★	**1510HGS5**	104.5	127.1	197.1	3.1	16.0	2
	8		**1510HGS8**	151.0	173.6	245.1	3.1	16.0	2
	3	★	**MDW 1520HGS3**	57.8	80.6	149.1	3.1	16.0	2
15.2	5	★	**1520HGS5**	104.3	127.1	197.1	3.1	16.0	2
	8		**1520HGS8**	150.8	173.6	245.1	3.1	16.0	2
	3	★	**MDW 1530HGS3**	57.8	80.7	149.2	3.2	16.0	2
15.3	5	★	**1530HGS5**	104.3	127.2	197.2	3.2	16.0	2
	8		**1530HGS8**	150.8	173.7	245.2	3.2	16.0	2
	3	★	**MDW 1540HGS3**	57.6	80.7	149.2	3.2	16.0	2
15.4	5	★	**1540HGS5**	104.1	127.2	197.2	3.2	16.0	2
	8		**1540HGS8**	150.6	173.7	245.2	3.2	16.0	2
	3	★	**MDW 1550HGS3**	57.5	80.7	149.2	3.2	16.0	2
15.5	5	★	**1550HGS5**	104.0	127.2	197.2	3.2	16.0	2
	8	★	**1550HGS8**	150.5	173.7	245.2	3.2	16.0	2
	3	★	**MDW 1560HGS3**	59.8	83.2	149.2	3.2	16.0	2
15.6	5	★	**1560HGS5**	107.8	131.2	197.2	3.2	16.0	2
	8		**1560HGS8**	155.8	179.2	245.2	3.2	16.0	2
	3	★	**MDW 1570HGS3**	59.7	83.2	149.2	3.2	16.0	2
15.7	5	★	**1570HGS5**	107.7	131.2	197.2	3.2	16.0	2
	8		**1570HGS8**	155.7	179.2	245.2	3.2	16.0	2
	3	★	**MDW 1580HGS3**	59.6	83.3	149.3	3.3	16.0	2
15.8	5	★	**1580HGS5**	107.6	131.3	197.3	3.3	16.0	2
	8		**1580HGS8**	155.6	179.3	245.3	3.3	16.0	2

Grade: ACX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

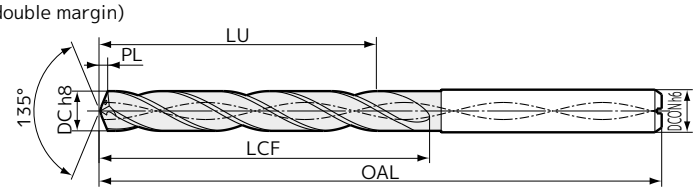
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø15.9 to 18.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.9	3	★	**MDW 1590HGS3**	59.5	83.3	149.3	3.3	16.0	2
	5	★	**1590HGS5**	107.5	131.3	197.3	3.3	16.0	2
	8		**1590HGS8**	155.5	179.3	245.3	3.3	16.0	2
16.0	3	★	**MDW 1600HGS3**	59.3	83.3	149.3	3.3	16.0	2
	5	★	**1600HGS5**	107.3	131.3	197.3	3.3	16.0	2
	8	★	**1600HGS8**	155.3	179.3	245.3	3.3	16.0	2
16.1	3		**MDW 1610HGS3**	61.7	85.8	155.3	3.3	17.0	2
	5		**1610HGS5**	111.2	135.3	206.3	3.3	17.0	2
16.2	3		**MDW 1620HGS3**	61.6	85.9	155.4	3.4	17.0	2
	5		**1620HGS5**	111.1	135.4	206.4	3.4	17.0	2
16.3	3		**MDW 1630HGS3**	61.5	85.9	155.4	3.4	17.0	2
	5		**1630HGS5**	111.0	135.4	206.4	3.4	17.0	2
16.4	3		**MDW 1640HGS3**	61.3	85.9	155.4	3.4	17.0	2
	5		**1640HGS5**	110.8	135.4	206.4	3.4	17.0	2
16.5	3	★	**MDW 1650HGS3**	61.2	85.9	155.4	3.4	17.0	2
	5	★	**1650HGS5**	110.7	135.4	206.4	3.4	17.0	2
16.6	3		**MDW 1660HGS3**	63.5	88.4	155.4	3.4	17.0	2
	5		**1660HGS5**	114.5	139.4	206.4	3.4	17.0	2
16.7	3		**MDW 1670HGS3**	63.5	88.5	155.5	3.5	17.0	2
	5		**1670HGS5**	114.5	139.5	206.5	3.5	17.0	2
16.8	3		**MDW 1680HGS3**	63.3	88.5	155.5	3.5	17.0	2
	5		**1680HGS5**	114.3	139.5	206.5	3.5	17.0	2
16.9	3		**MDW 1690HGS3**	63.2	88.5	155.5	3.5	17.0	2
	5		**1690HGS5**	114.2	139.5	206.5	3.5	17.0	2
17.0	3	★	**MDW 1700HGS3**	63.0	88.5	155.5	3.5	17.0	2
	5	★	**1700HGS5**	114.0	139.5	206.5	3.5	17.0	2
17.1	3		**MDW 1710HGS3**	65.4	91.0	161.5	3.5	18.0	2
	5		**1710HGS5**	117.9	143.5	217.5	3.5	18.0	2
17.2	3		**MDW 1720HGS3**	65.3	91.1	161.6	3.6	18.0	2
	5		**1720HGS5**	117.8	143.6	217.6	3.6	18.0	2
17.3	3		**MDW 1730HGS3**	65.2	91.1	161.6	3.6	18.0	2
	5		**1730HGS5**	117.7	143.6	217.6	3.6	18.0	2
17.4	3		**MDW 1740HGS3**	65.0	91.1	161.6	3.6	18.0	2
	5		**1740HGS5**	117.5	143.6	217.6	3.6	18.0	2
17.5	3	★	**MDW 1750HGS3**	64.9	91.1	161.6	3.6	18.0	2
	5	★	**1750HGS5**	117.4	143.6	217.6	3.6	18.0	2
17.6	3		**MDW 1760HGS3**	67.2	93.6	161.6	3.6	18.0	2
	5		**1760HGS5**	121.2	147.6	217.6	3.6	18.0	2
17.7	3		**MDW 1770HGS3**	67.2	93.7	161.7	3.7	18.0	2
	5		**1770HGS5**	121.2	147.7	217.7	3.7	18.0	2
17.8	3		**MDW 1780HGS3**	67.0	93.7	161.7	3.7	18.0	2
	5		**1780HGS5**	121.0	147.7	217.7	3.7	18.0	2
17.9	3		**MDW 1790HGS3**	66.9	93.7	161.7	3.7	18.0	2
	5		**1790HGS5**	120.9	147.7	217.7	3.7	18.0	2
18.0	3	★	**MDW 1800HGS3**	66.7	93.7	161.7	3.7	18.0	2
	5	★	**1800HGS5**	120.7	147.7	217.7	3.7	18.0	2
18.1	3		**MDW 1810HGS3**	69.1	96.2	167.7	3.7	19.0	2
	5		**1810HGS5**	124.6	151.7	224.7	3.7	19.0	2
18.2	3		**MDW 1820HGS3**	69.0	96.3	167.8	3.8	19.0	2
	5		**1820HGS5**	124.5	151.8	224.8	3.8	19.0	2
18.3	3		**MDW 1830HGS3**	68.9	96.3	167.8	3.8	19.0	2
	5		**1830HGS5**	124.4	151.8	224.8	3.8	19.0	2
18.4	3		**MDW 1840HGS3**	68.7	96.3	167.8	3.8	19.0	2
	5		**1840HGS5**	124.2	151.8	224.8	3.8	19.0	2

Grade: ACX70

Diameter ø18.5 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
18.5	3	★	**MDW 1850HGS3**	68.6	96.3	167.8	3.8	19.0	2
	5	★	**1850HGS5**	124.1	151.8	224.8	3.8	19.0	2
18.6	3		**MDW 1860HGS3**	71.0	98.9	167.9	3.9	19.0	2
	5		**1860HGS5**	128.0	155.9	224.9	3.9	19.0	2
18.7	3		**MDW 1870HGS3**	70.9	98.9	167.9	3.9	19.0	2
	5		**1870HGS5**	127.9	155.9	224.9	3.9	19.0	2
18.8	3		**MDW 1880HGS3**	70.7	98.9	167.9	3.9	19.0	2
	5		**1880HGS5**	127.7	155.9	224.9	3.9	19.0	2
18.9	3		**MDW 1890HGS3**	70.6	98.9	167.9	3.9	19.0	2
	5		**1890HGS5**	127.6	155.9	224.9	3.9	19.0	2
19.0	3	★	**MDW 1900HGS3**	70.4	98.9	167.9	3.9	19.0	2
	5	★	**1900HGS5**	127.4	155.9	224.9	3.9	19.0	2
19.1	3		**MDW 1910HGS3**	72.9	101.5	174.0	4.0	20.0	2
	5		**1910HGS5**	131.4	160.0	234.0	4.0	20.0	2
19.2	3		**MDW 1920HGS3**	72.7	101.5	174.0	4.0	20.0	2
	5		**1920HGS5**	131.2	160.0	234.0	4.0	20.0	2
19.3	3		**MDW 1930HGS3**	72.6	101.5	174.0	4.0	20.0	2
	5		**1930HGS5**	131.1	160.0	234.0	4.0	20.0	2
19.4	3		**MDW 1940HGS3**	72.4	101.5	174.0	4.0	20.0	2
	5		**1940HGS5**	130.9	160.0	234.0	4.0	20.0	2
19.5	3	★	**MDW 1950HGS3**	72.3	101.5	174.0	4.0	20.0	2
	5	★	**1950HGS5**	130.8	160.0	234.0	4.0	20.0	2
19.6	3		**MDW 1960HGS3**	74.7	104.1	174.1	4.1	20.0	2
	5		**1960HGS5**	134.7	164.1	234.1	4.1	20.0	2
19.7	3		**MDW 1970HGS3**	74.6	104.1	174.1	4.1	20.0	2
	5		**1970HGS5**	134.6	164.1	234.1	4.1	20.0	2
19.8	3		**MDW 1980HGS3**	74.4	104.1	174.1	4.1	20.0	2
	5		**1980HGS5**	134.4	164.1	234.1	4.1	20.0	2
19.9	3		**MDW 1990HGS3**	74.3	104.1	174.1	4.1	20.0	2
	5		**1990HGS5**	134.3	164.1	234.1	4.1	20.0	2
20.0	3	★	**MDW 2000HGS3**	74.1	104.1	174.1	4.1	20.0	2
	5	★	**2000HGS5**	134.1	164.1	234.1	4.1	20.0	2

Grade: ACX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

HGS series (Internal Coolant Supply)

Recommended Cutting Conditions (For 3D/5D/8D)

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Hardened Steel (up to 45HRC)	Hardened Steel (46HRC up)	Stainless Steel (up to 200HB)	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3	Titanium Alloy Ti-6Al-4V	Ni-based Heat-resistant Alloy (Inconel 718)
ø3.0	n	6,400	3,200	1,600	4,200	7,400	5,300	3,200	1,100
	vc	30 - **60** - 100	20 - **30** - 40	10 - **15** - 20	30 - **40** - 50	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	5 - **10** - 30
	f	0.10 - **0.15** - 0.20	0.06 - **0.07** - 0.08	0.05 - **0.07** - 0.08	0.06 - **0.08** - 0.12	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.20	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08
ø4.0	n	5,600	2,400	1,200	3,200	5,600	4,000	2,400	800
	vc	40 - **70** - 110	20 - **30** - 40	10 - **15** - 20	30 - **40** - 55	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	5 - **10** - 30
	f	0.15 - **0.2** - 0.25	0.07 - **0.08** - 0.09	0.05 - **0.07** - 0.08	0.07 - **0.10** - 0.13	0.15 - **0.20** - 0.25	0.13 - **0.18** - 0.23	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08
ø5.0	n	5,100	1,900	950	2,500	4,500	3,200	1,900	600
	vc	50 - **80** - 120	20 - **30** - 40	10 - **15** - 20	30 - **40** - 60	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	5 - **10** - 30
	f	0.15 - **0.2** - 0.25	0.08 - **0.09** - 0.10	0.05 - **0.07** - 0.08	0.08 - **0.12** - 0.15	0.15 - **0.20** - 0.30	0.15 - **0.20** - 0.25	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08
ø8.0	n	3,600	1,200	600	1,800	3,200	2,400	1,200	600
	vc	60 - **90** - 140	20 - **30** - 40	10 - **15** - 20	30 - **45** - 70	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	10 - **15** - 30
	f	0.18 - **0.25** - 0.30	0.09 - **0.10** - 0.13	0.06 - **0.08** - 0.10	0.09 - **0.14** - 0.18	0.18 - **0.23** - 0.33	0.18 - **0.23** - 0.30	0.08 - **0.09** - 0.10	0.07 - **0.08** - 0.09
ø10.0	n	3,200	1,000	500	1,600	2,500	1,900	950	500
	vc	70 - **100** - 150	20 - **30** - 40	10 - **15** - 20	40 - **50** - 80	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	10 - **15** - 30
	f	0.20 - **0.25** - 0.35	0.10 - **0.12** - 0.15	0.06 - **0.08** - 0.10	0.10 - **0.15** - 0.20	0.20 - **0.30** - 0.35	0.20 - **0.25** - 0.35	0.08 - **0.10** - 0.12	0.08 - **0.09** - 0.10
ø12.0	n	2,700	800	400	1,300	2,100	1,600	800	400
	vc	70 - **100** - 150	20 - **30** - 40	10 - **15** - 20	40 - **50** - 80	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	10 - **15** - 30
	f	0.20 - **0.25** - 0.35	0.10 - **0.12** - 0.15	0.06 - **0.08** - 0.10	0.10 - **0.15** - 0.20	0.20 - **0.30** - 0.35	0.20 - **0.25** - 0.35	0.08 - **0.10** - 0.12	0.08 - **0.09** - 0.10
ø16.0	n	2,200	600	300	1,200	1,800	1,400	600	400
	vc	75 - **110** - 150	20 - **30** - 40	10 - **15** - 20	45 - **60** - 80	65 - **90** - 110	55 - **70** - 95	25 - **30** - 40	15 - **20** - 35
	f	0.22 - **0.27** - 0.35	0.10 - **0.12** - 0.15	0.07 - **0.09** - 0.11	0.10 - **0.15** - 0.20	0.25 - **0.30** - 0.35	0.22 - **0.28** - 0.35	0.09 - **0.11** - 0.13	0.08 - **0.09** - 0.10
ø20.0	n	1,900	500	250	950	1,600	1,300	500	300
	vc	80 - **120** - 160	20 - **30** - 40	10 - **15** - 20	45 - **60** - 80	70 - **100** - 120	60 - **80** - 100	25 - **30** - 40	15 - **20** - 35
	f	0.25 - **0.30** - 0.35	0.10 - **0.12** - 0.15	0.08 - **0.10** - 0.12	0.10 - **0.15** - 0.20	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.10 - **0.12** - 0.15	0.08 - **0.09** - 0.10

Min. - **Optimum** - Max.



■ General Features

- Oil holes shaped for excellent cooling performance achieves longer tool life.
- Effective cooling of the cutting edge created through fluid analysis.
  Reduces adhesion fracture.
- Chip control and workpiece hardening problems resolved.
- Outstanding stability in machining of stainless steel and exotic alloys.

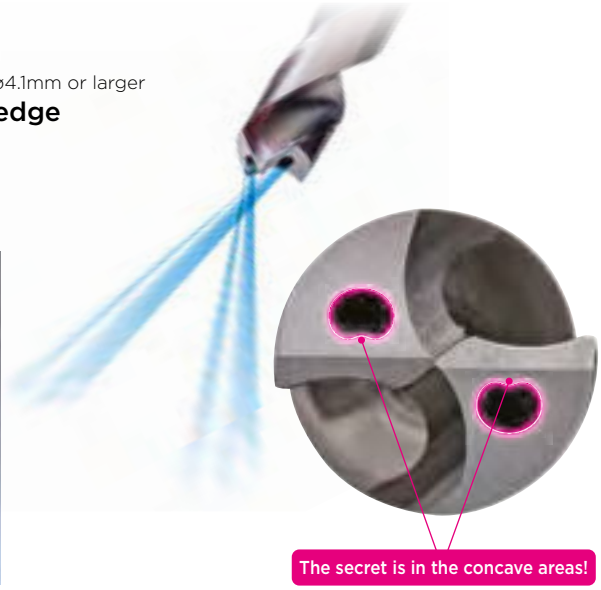
■ Features and Applications

- Greater discharge of coolant for effective cooling of the cutting edge.

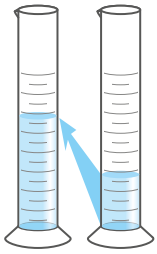
Bean Jet Cooling

*Utilised for diameters of ø4.1mm or larger

Bean-shaped oil hole supplies coolant at the cutting edge for effective cooling of the cutting edge



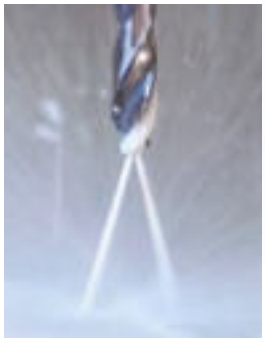
Discharge **2x or more**



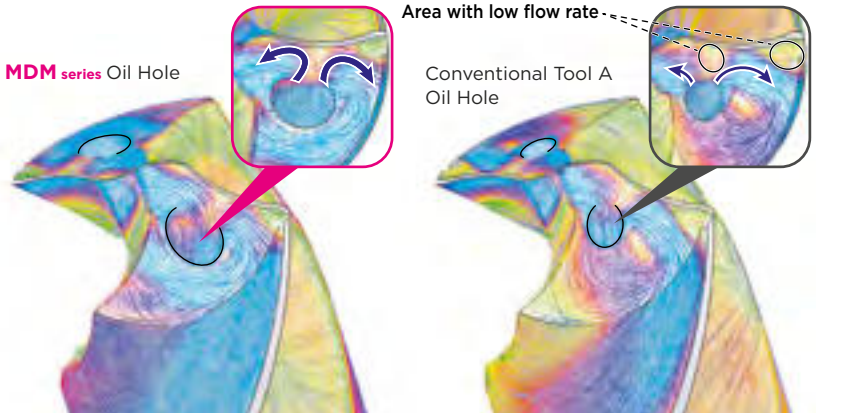
MDM series



Conventional Tool A



- Effective cooling of the cutting edge created through fluid analysis



Analysed at tool rotation speed of 3,200min^{-1}

Low flow rate ■■■■■■■■■■■■■■■■■■■■ High flow rate

- Significantly reduces adhesion on the cutting edge, preventing adhesion fracture

MDM series



Minimal adhesion, able to continue

Competitor's Product A

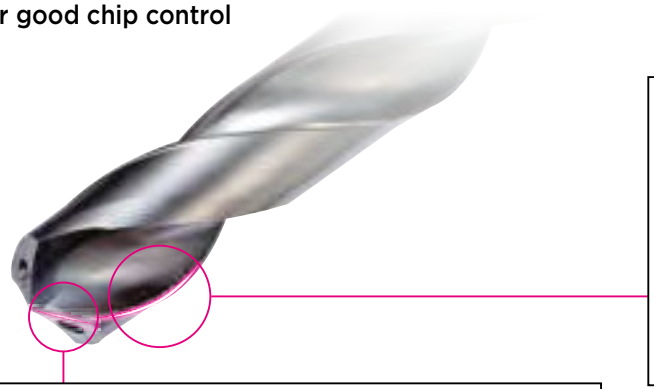


Adhesion fracture at peripheral edge

Work Material	: X5CrNi18-10
Machine	: BT30 vertical machining centre
Tool	: MDM 0800S08H05 (ø8mmx5D)
Cutting Conditions	: vc = 80m/min, f = 0.25mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble)
Drilling Distance	: 40m

MDM series

● New cutting edge design that emphasises sharpness for good chip control



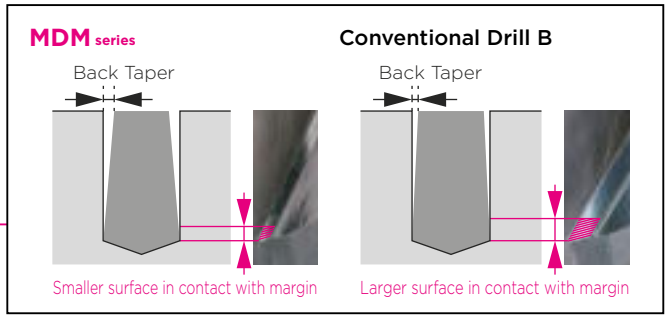
MDM series | **Competitor's Product B**

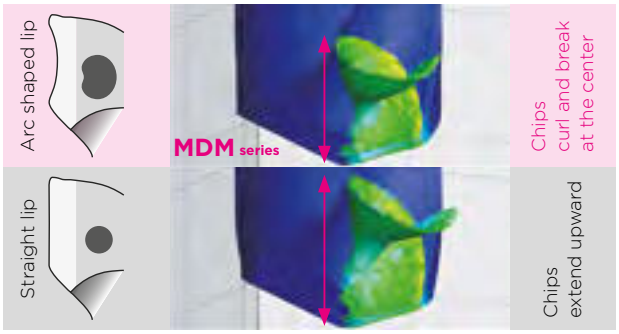


Work Material : X5CrNi18-10
Machine : BT30 vertical machining centre
Tool : MDM 0400S04H05 (ø4.0mmx5D)
Cutting Conditions : vc = 80m/min, f = 0.10mm/rev, Internal Coolant Supply (Water-soluble)

● Narrow margin and large back taper

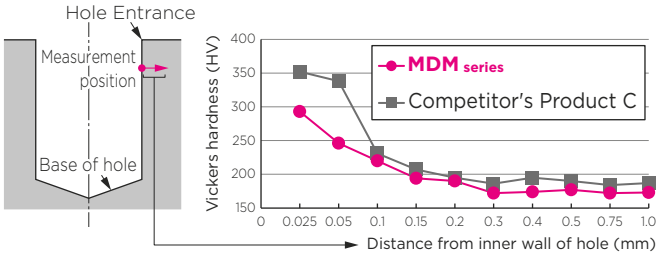
Reducing the contact area with the workpiece, suppressing temperature rise at the margin





● Suppressing work hardening on drilled hole wall

Reduces drilling load, reducing damage to the drill and increasing the life of the reamer and tap used in post-processing



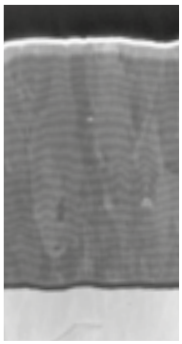
Work Material : X5CrNi18-10
Machine : BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : vc = 80m/min, f = 0.20mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble)

● Ideal grade for stainless steel and exotic alloy drilling

ACT70

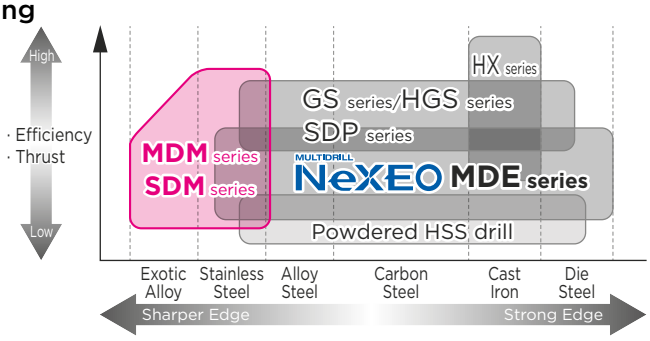
● NX Coat

High-quality, high-hardness, high-strength coating based on ABSOTECH™ technology achieves excellent wear and thermal resistance.



Super multi-layered TiAlCrSi Coated Carbide
Hardness (HV): 46GPa
Oxidisation Starting Temperature: 1,100°C

Highly Adhesive Layer



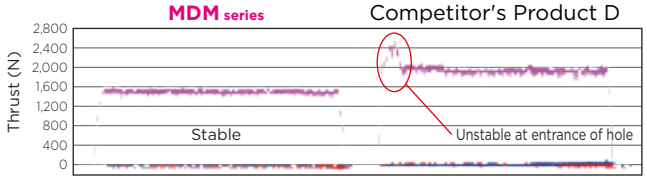
● NX coat reduces margin wear

MDM series | **Conventional Tool C**



Work Material : X5CrNi18-10, Machine: BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : vc = 80m/min, f = 0.20mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble)

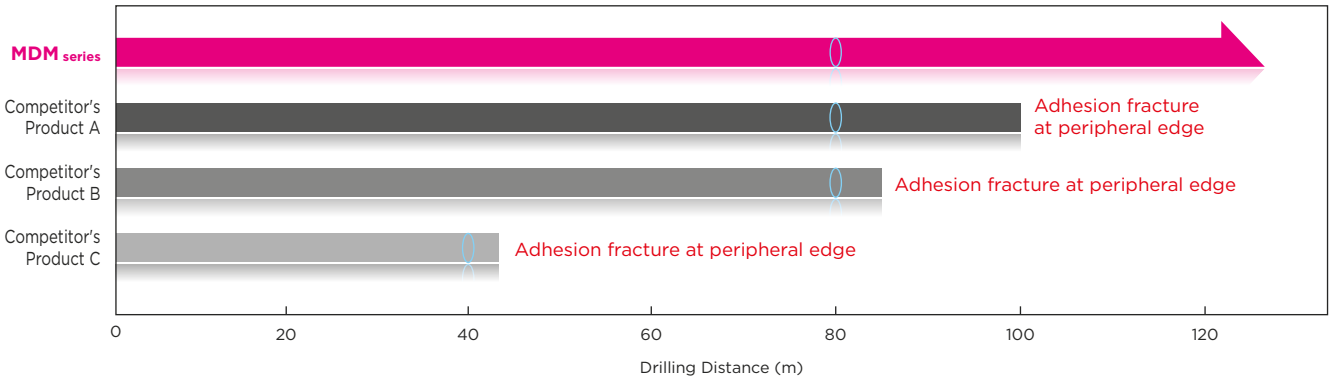
● Reduces thrust for stable drilling from the entrance to the exit of the hole



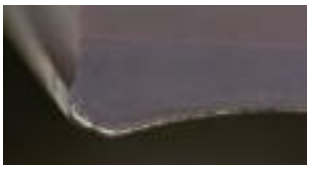
Work Material : X5CrNi18-10, Machine: BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : vc = 80m/min, f = 0.20mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble)

■ Application Examples

Austenitic Stainless Steel (Machining Centre)



MDM series after 80m of drilling



Competitor's Product A after 80m of drilling



Competitor's Product B after 80m of drilling

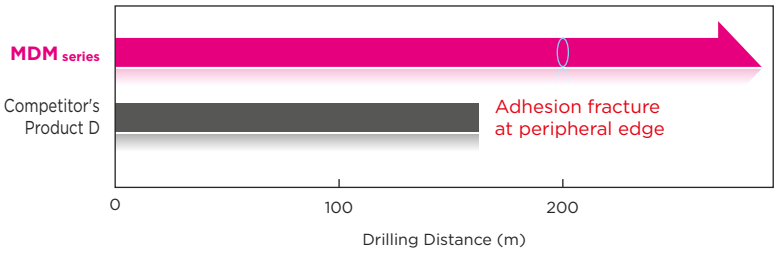


Competitor's Product C after 40m of drilling



Work Material: X5CrNi18-10, Machine: BT30 vertical machining centre, Tool: MDM 0800S08H05 (ø8mmx5D)
Cutting Conditions: vc = 80m/min, f = 0.20mm/rev, H = 40mm (Through), Internal Coolant Supply (Water-soluble)

Austenitic Stainless Steel (Small Lathe)

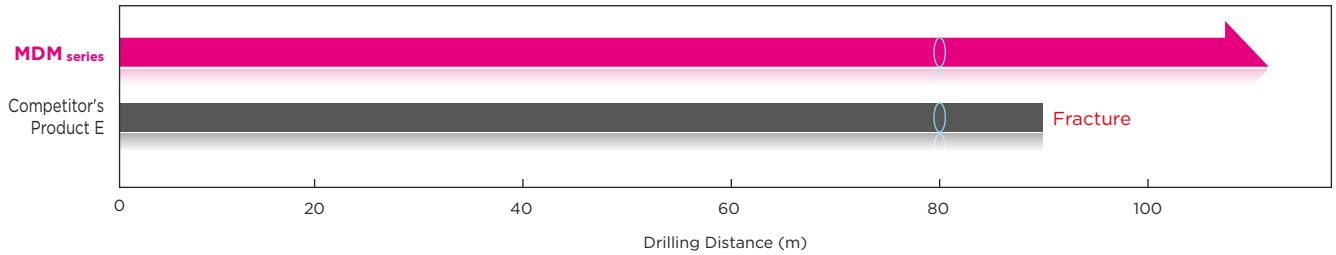


MDM series after 200m of drilling



Work Material: X5CrNi18-10, Machine: CNC autolathe (workpiece rotates), Tool: MDM 0540S06H03 (ø5.4mmx3D)
Cutting Conditions: vc = 47m/min, f = 0.12mm/rev, H = 25mm (Blind), Internal Coolant Supply (Non-water-soluble)

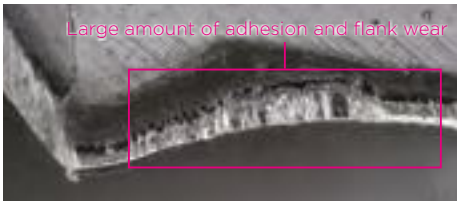
Precipitation Hardened Stainless Steel



MDM series after 80m of drilling

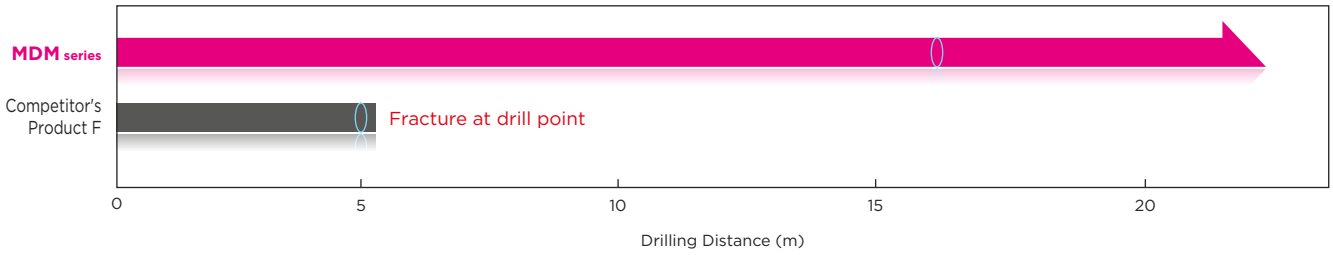


Competitor's Product E after 80m of drilling



Work Material: X5CrNiCuNb16-4, Machine: BT30 vertical machining centre, Tool: MDM 0400S04H05 (ø4mmx5D)
Cutting Conditions: vc = 50m/min, f = 0.10mm/rev, H = 14mm (Blind), Internal Coolant Supply (Water-soluble)

Duplex Stainless Steel



MDM series after 16m of drilling

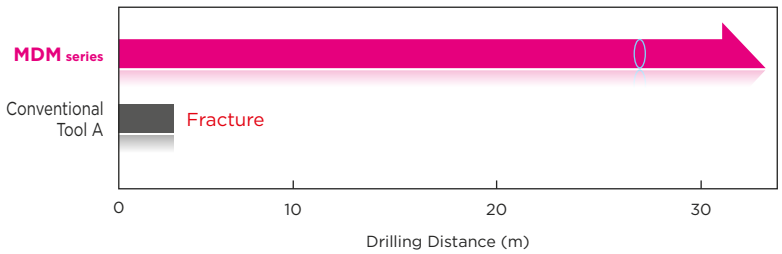


Competitor's Product F after 5m of drilling



Work Material: X2CrNiMoCuN 25-6-3 [h2abc.com], [steeljis.com], Machine: BT30 vertical machining centre, Tool: MDM 0800S05H05 (ø8mm×5D)
Cutting Conditions: vc = 60m/min, f = 0.20mm/rev, H = 30mm (Through), Internal Coolant Supply (Water-soluble)

Titanium Alloy



MDM series after 27m of drilling



MDM series

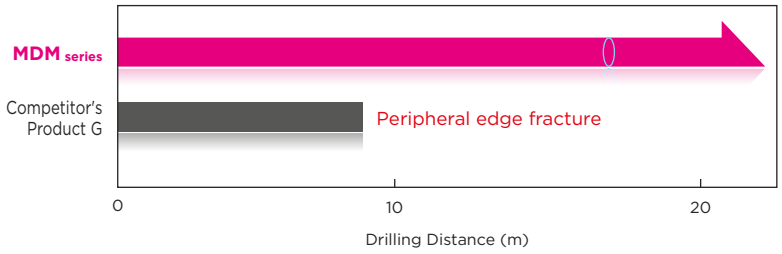


Conventional Tool A

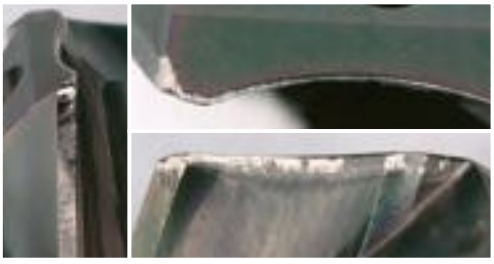


Work Material: Ti-6Al-4V, Machine: BT50 vertical machining centre, Tool: MDM 0500S05H05 (ø5mm×5D)
Cutting Conditions: vc = 40m/min, f = 0.12mm/rev, H = 19mm (Blind), Internal Coolant Supply (Water-soluble)

Heat-resistant Cast Steel



MDM series after 17.1m of drilling



Work Material: X40CrNiSi25-12 equivalent, Machine: BT50 vertical machining centre, Tool: MDM 0880S09H03 (ø8.8mmx3D)
Cutting Conditions: vc = 50m/min, f = 0.11mm/rev, H = 18mm (Blind, Through), Internal Coolant Supply (Water soluble)

MDM series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat | 3D | 5D

*Bean Jet Cooling is applicable to diameters ø4.1mm and up

*For tolerances, refer to Chapter N - References.

Fig 1 (Diameter under ø4.1)

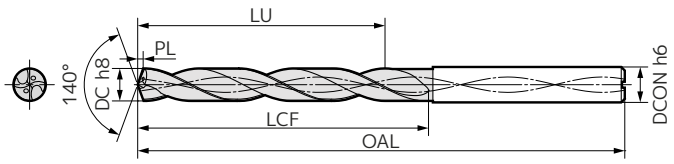
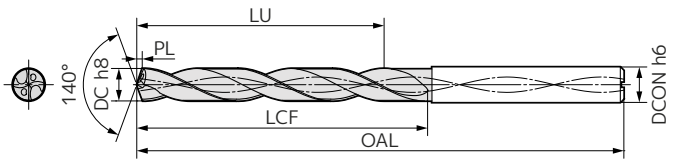


Fig 2 (Diameter ø4.1 or larger) Bean Jet Cooling



Diameter ø3.0 to 4.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	MDM 0300S03H03	14.0	18.5	68.5	0.5	3.0	1
	5	★	0300S03H05	24.0	28.5	78.5	0.5	3.0	1
3.1	3	★	MDM 0310S04H03	16.0	20.6	72.6	0.6	4.0	1
	5	★	0310S04H05	28.0	32.6	86.6	0.6	4.0	1
3.2	3	★	MDM 0320S04H03	15.8	20.6	72.6	0.6	4.0	1
	5	★	0320S04H05	27.8	32.6	86.6	0.6	4.0	1
3.3	3	★	MDM 0330S04H03	15.7	20.6	72.6	0.6	4.0	1
	5	★	0330S04H05	27.7	32.6	86.6	0.6	4.0	1
3.4	3	★	MDM 0340S04H03	15.5	20.6	72.6	0.6	4.0	1
	5	★	0340S04H05	27.5	32.6	86.6	0.6	4.0	1
3.5	3	★	MDM 0350S04H03	15.4	20.6	72.6	0.6	4.0	1
	5	★	0350S04H05	27.4	32.6	86.6	0.6	4.0	1
3.6	3	★	MDM 0360S04H03	17.8	23.2	72.7	0.7	4.0	1
	5	★	0360S04H05	31.3	36.7	86.7	0.7	4.0	1
3.7	3	★	MDM 0370S04H03	17.7	23.2	72.7	0.7	4.0	1
	5	★	0370S04H05	31.2	36.7	86.7	0.7	4.0	1
3.8	3	★	MDM 0380S04H03	17.5	23.2	72.7	0.7	4.0	1
	5	★	0380S04H05	31.0	36.7	86.7	0.7	4.0	1
3.9	3	★	MDM 0390S04H03	17.4	23.2	72.7	0.7	4.0	1
	5	★	0390S04H05	30.9	36.7	86.7	0.7	4.0	1
4.0	3	★	MDM 0400S04H03	17.2	23.2	72.7	0.7	4.0	1
	5	★	0400S04H05	30.7	36.7	86.7	0.7	4.0	1
4.1	3	★	MDM 0410S05H03	19.6	25.7	80.7	0.7	5.0	2
	5	★	0410S05H05	34.6	40.7	98.7	0.7	5.0	2
4.2	3	★	MDM 0420S05H03	19.5	25.8	80.8	0.8	5.0	2
	5	★	0420S05H05	34.5	40.8	98.8	0.8	5.0	2
4.3	3	★	MDM 0430S05H03	19.4	25.8	80.8	0.8	5.0	2
	5	★	0430S05H05	34.4	40.8	98.8	0.8	5.0	2
4.4	3	★	MDM 0440S05H03	19.2	25.8	80.8	0.8	5.0	2
	5	★	0440S05H05	34.2	40.8	98.8	0.8	5.0	2
4.5	3	★	MDM 0450S05H03	19.1	25.8	80.8	0.8	5.0	2
	5	★	0450S05H05	34.1	40.8	98.8	0.8	5.0	2
4.6	3	★	MDM 0460S05H03	21.4	28.3	80.8	0.8	5.0	2
	5	★	0460S05H05	37.9	44.8	98.8	0.8	5.0	2
4.7	3	★	MDM 0470S05H03	21.4	28.4	80.9	0.9	5.0	2
	5	★	0470S05H05	37.9	44.9	98.9	0.9	5.0	2
4.8	3	★	MDM 0480S05H03	21.2	28.4	80.9	0.9	5.0	2
	5	★	0480S05H05	37.7	44.9	98.9	0.9	5.0	2
4.9	3	★	MDM 0490S05H03	21.1	28.4	80.9	0.9	5.0	2
	5	★	0490S05H05	37.6	44.9	98.9	0.9	5.0	2

Grade: ACT70

Diameter ø5.0 to 6.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.0	3	★	MDM 0500S05H03	20.9	28.4	80.9	0.9	5.0	2
	5	★	0500S05H05	37.4	44.9	98.9	0.9	5.0	2
5.1	3	★	MDM 0510S06H03	20.8	28.4	82.9	0.9	6.0	2
	5	★	0510S06H05	37.3	44.9	100.9	0.9	6.0	2
5.2	3	★	MDM 0520S06H03	20.6	28.4	82.9	0.9	6.0	2
	5	★	0520S06H05	37.1	44.9	100.9	0.9	6.0	2
5.3	3	★	MDM 0530S06H03	20.6	28.5	83.0	1.0	6.0	2
	5	★	0530S06H05	37.1	45.0	101.0	1.0	6.0	2
5.4	3	★	MDM 0540S06H03	20.4	28.5	83.0	1.0	6.0	2
	5	★	0540S06H05	36.9	45.0	101.0	1.0	6.0	2
5.5	3	★	MDM 0550S06H03	20.3	28.5	83.0	1.0	6.0	2
	5	★	0550S06H05	36.8	45.0	101.0	1.0	6.0	2
5.6	3	★	MDM 0560S06H03	22.6	31.0	83.0	1.0	6.0	2
	5	★	0560S06H05	40.6	49.0	101.0	1.0	6.0	2
5.7	3	★	MDM 0570S06H03	22.5	31.0	83.0	1.0	6.0	2
	5	★	0570S06H05	40.5	49.0	101.0	1.0	6.0	2
5.8	3	★	MDM 0580S06H03	22.4	31.1	83.1	1.1	6.0	2
	5	★	0580S06H05	40.4	49.1	101.1	1.1	6.0	2
5.9	3	★	MDM 0590S06H03	22.3	31.1	83.1	1.1	6.0	2
	5	★	0590S06H05	40.3	49.1	101.1	1.1	6.0	2
6.0	3	★	MDM 0600S06H03	22.1	31.1	83.1	1.1	6.0	2
	5	★	0600S06H05	40.1	49.1	101.1	1.1	6.0	2
6.1	3	★	MDM 0610S07H03	24.5	33.6	89.1	1.1	7.0	2
	5	★	0610S07H05	44.0	53.1	110.1	1.1	7.0	2
6.2	3	★	MDM 0620S07H03	24.3	33.6	89.1	1.1	7.0	2
	5	★	0620S07H05	43.8	53.1	110.1	1.1	7.0	2
6.3	3	★	MDM 0630S07H03	24.2	33.6	89.1	1.1	7.0	2
	5	★	0630S07H05	43.7	53.1	110.1	1.1	7.0	2
6.4	3	★	MDM 0640S07H03	24.1	33.7	89.2	1.2	7.0	2
	5	★	0640S07H05	43.6	53.2	110.2	1.2	7.0	2
6.5	3	★	MDM 0650S07H03	24.0	33.7	89.2	1.2	7.0	2
	5	★	0650S07H05	43.5	53.2	110.2	1.2	7.0	2
6.6	3	★	MDM 0660S07H03	26.3	36.2	89.2	1.2	7.0	2
	5	★	0660S07H05	47.3	57.2	110.2	1.2	7.0	2
6.7	3	★	MDM 0670S07H03	26.2	36.2	89.2	1.2	7.0	2
	5	★	0670S07H05	47.2	57.2	110.2	1.2	7.0	2
6.8	3	★	MDM 0680S07H03	26.0	36.2	89.2	1.2	7.0	2
	5	★	0680S07H05	47.0	57.2	110.2	1.2	7.0	2
6.9	3	★	MDM 0690S07H03	26.0	36.3	89.3	1.3	7.0	2
	5	★	0690S07H05	47.0	57.3	110.3	1.3	7.0	2

Grade: ACT70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDM series (Internal Coolant Supply)

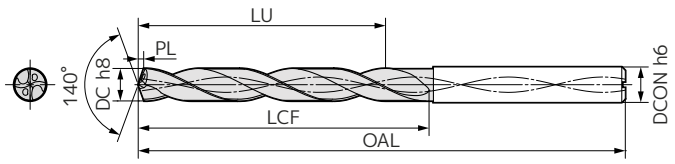
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1 (Diameter ø4.1 or larger)

Bean Jet Cooling



Diameter ø7.0 to 8.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.0	3	★	MDM 0700S07H03	25.8	36.3	89.3	1.3	7.0	2
	5	★	0700S07H05	46.8	57.3	110.3	1.3	7.0	2
7.1	3	★	MDM 0710S08H03	28.2	38.8	95.3	1.3	8.0	2
	5	★	0710S08H05	50.7	61.3	119.3	1.3	8.0	2
7.2	3	★	MDM 0720S08H03	28.0	38.8	95.3	1.3	8.0	2
	5	★	0720S08H05	50.5	61.3	119.3	1.3	8.0	2
7.3	3	★	MDM 0730S08H03	27.9	38.8	95.3	1.3	8.0	2
	5	★	0730S08H05	50.4	61.3	119.3	1.3	8.0	2
7.4	3	★	MDM 0740S08H03	27.7	38.8	95.3	1.3	8.0	2
	5	★	0740S08H05	50.2	61.3	119.3	1.3	8.0	2
7.5	3	★	MDM 0750S08H03	27.7	38.9	95.4	1.4	8.0	2
	5	★	0750S08H05	50.2	61.4	119.4	1.4	8.0	2
7.6	3	★	MDM 0760S08H03	30.0	41.4	95.4	1.4	8.0	2
	5	★	0760S08H05	54.0	65.4	119.4	1.4	8.0	2
7.7	3	★	MDM 0770S08H03	29.9	41.4	95.4	1.4	8.0	2
	5	★	0770S08H05	53.9	65.4	119.4	1.4	8.0	2
7.8	3	★	MDM 0780S08H03	29.7	41.4	95.4	1.4	8.0	2
	5	★	0780S08H05	53.7	65.4	119.4	1.4	8.0	2
7.9	3	★	MDM 0790S08H03	29.6	41.4	95.4	1.4	8.0	2
	5	★	0790S08H05	53.6	65.4	119.4	1.4	8.0	2
8.0	3	★	MDM 0800S08H03	29.5	41.5	95.5	1.5	8.0	2
	5	★	0800S08H05	53.5	65.5	119.5	1.5	8.0	2
8.1	3	★	MDM 0810S09H03	31.9	44.0	101.5	1.5	9.0	2
	5	★	0810S09H05	57.4	69.5	128.5	1.5	9.0	2
8.2	3	★	MDM 0820S09H03	31.7	44.0	101.5	1.5	9.0	2
	5	★	0820S09H05	57.2	69.5	128.5	1.5	9.0	2
8.3	3	★	MDM 0830S09H03	31.6	44.0	101.5	1.5	9.0	2
	5	★	0830S09H05	57.1	69.5	128.5	1.5	9.0	2
8.4	3	★	MDM 0840S09H03	31.4	44.0	101.5	1.5	9.0	2
	5	★	0840S09H05	56.9	69.5	128.5	1.5	9.0	2
8.5	3	★	MDM 0850S09H03	31.3	44.0	101.5	1.5	9.0	2
	5	★	0850S09H05	56.8	69.5	128.5	1.5	9.0	2
8.6	3	★	MDM 0860S09H03	33.7	46.6	101.6	1.6	9.0	2
	5	★	0860S09H05	60.7	73.6	128.6	1.6	9.0	2
8.7	3	★	MDM 0870S09H03	33.6	46.6	101.6	1.6	9.0	2
	5	★	0870S09H05	60.6	73.6	128.6	1.6	9.0	2
8.8	3	★	MDM 0880S09H03	33.4	46.6	101.6	1.6	9.0	2
	5	★	0880S09H05	60.4	73.6	128.6	1.6	9.0	2
8.9	3	★	MDM 0890S09H03	33.3	46.6	101.6	1.6	9.0	2
	5	★	0890S09H05	60.3	73.6	128.6	1.6	9.0	2

Grade: ACT70

Diameter ø9.0 to 10.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.0	3	★	MDM 0900S09H03	33.1	46.6	101.6	1.6	9.0	2
	5	★	0900S09H05	60.1	73.6	128.6	1.6	9.0	2
9.1	3	★	MDM 0910S10H03	35.6	49.2	107.7	1.7	10.0	2
	5	★	0910S10H05	64.1	77.7	137.7	1.7	10.0	2
9.2	3	★	MDM 0920S10H03	35.4	49.2	107.7	1.7	10.0	2
	5	★	0920S10H05	63.9	77.7	137.7	1.7	10.0	2
9.3	3	★	MDM 0930S10H03	35.3	49.2	107.7	1.7	10.0	2
	5	★	0930S10H05	63.8	77.7	137.7	1.7	10.0	2
9.4	3	★	MDM 0940S10H03	35.1	49.2	107.7	1.7	10.0	2
	5	★	0940S10H05	63.6	77.7	137.7	1.7	10.0	2
9.5	3	★	MDM 0950S10H03	35.0	49.2	107.7	1.7	10.0	2
	5	★	0950S10H05	63.5	77.7	137.7	1.7	10.0	2
9.6	3	★	MDM 0960S10H03	37.3	51.7	107.7	1.7	10.0	2
	5	★	0960S10H05	67.3	81.7	137.7	1.7	10.0	2
9.7	3	★	MDM 0970S10H03	37.3	51.8	107.8	1.8	10.0	2
	5	★	0970S10H05	67.3	81.8	137.8	1.8	10.0	2
9.8	3	★	MDM 0980S10H03	37.1	51.8	107.8	1.8	10.0	2
	5	★	0980S10H05	67.1	81.8	137.8	1.8	10.0	2
9.9	3	★	MDM 0990S10H03	37.0	51.8	107.8	1.8	10.0	2
	5	★	0990S10H05	67.0	81.8	137.8	1.8	10.0	2
10.0	3	★	MDM 1000S10H03	36.8	51.8	107.8	1.8	10.0	2
	5	★	1000S10H05	66.8	81.8	137.8	1.8	10.0	2
10.1	3	★	MDM 1010S11H03	39.2	54.3	117.8	1.8	11.0	2
	5	★	1010S11H05	70.7	85.8	150.8	1.8	11.0	2
10.2	3	★	MDM 1020S11H03	39.1	54.4	117.9	1.9	11.0	2
	5	★	1020S11H05	70.6	85.9	150.9	1.9	11.0	2
10.3	3	★	MDM 1030S11H03	39.0	54.4	117.9	1.9	11.0	2
	5	★	1030S11H05	70.5	85.9	150.9	1.9	11.0	2
10.4	3	★	MDM 1040S11H03	38.8	54.4	117.9	1.9	11.0	2
	5	★	1040S11H05	70.3	85.9	150.9	1.9	11.0	2
10.5	3	★	MDM 1050S11H03	38.7	54.4	117.9	1.9	11.0	2
	5	★	1050S11H05	70.2	85.9	150.9	1.9	11.0	2
10.6	3	★	MDM 1060S11H03	41.0	56.9	117.9	1.9	11.0	2
	5	★	1060S11H05	74.0	89.9	150.9	1.9	11.0	2
10.7	3	★	MDM 1070S11H03	40.9	56.9	117.9	1.9	11.0	2
	5	★	1070S11H05	73.9	89.9	150.9	1.9	11.0	2
10.8	3	★	MDM 1080S11H03	40.8	57.0	118.0	2.0	11.0	2
	5	★	1080S11H05	73.8	90.0	151.0	2.0	11.0	2
10.9	3	★	MDM 1090S11H03	40.7	57.0	118.0	2.0	11.0	2
	5	★	1090S11H05	73.7	90.0	151.0	2.0	11.0	2

Grade: ACT70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

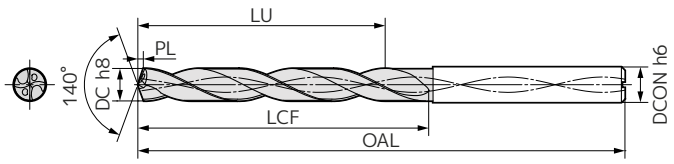
MDM series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat 3D 5D

*For tolerances, refer to Chapter N - References.

Fig 1 (Diameter ø4.1 or larger)



Diameter ø11.0 to 12.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.0	3	★	MDM 1100S11H03	40.5	57.0	118.0	2.0	11.0	2
	5	★	1100S11H05	73.5	90.0	151.0	2.0	11.0	2
11.1	3	★	MDM 1110S12H03	42.9	59.5	124.0	2.0	12.0	2
	5	★	1110S12H05	77.4	94.0	160.0	2.0	12.0	2
11.2	3	★	MDM 1120S12H03	42.7	59.5	124.0	2.0	12.0	2
	5	★	1120S12H05	77.2	94.0	160.0	2.0	12.0	2
11.3	3	★	MDM 1130S12H03	42.7	59.6	124.1	2.1	12.0	2
	5	★	1130S12H05	77.2	94.1	160.1	2.1	12.0	2
11.4	3	★	MDM 1140S12H03	42.5	59.6	124.1	2.1	12.0	2
	5	★	1140S12H05	77.0	94.1	160.1	2.1	12.0	2
11.5	3	★	MDM 1150S12H03	42.4	59.6	124.1	2.1	12.0	2
	5	★	1150S12H05	76.9	94.1	160.1	2.1	12.0	2
11.6	3	★	MDM 1160S12H03	44.7	62.1	124.1	2.1	12.0	2
	5	★	1160S12H05	80.7	98.1	160.1	2.1	12.0	2
11.7	3	★	MDM 1170S12H03	44.6	62.1	124.1	2.1	12.0	2
	5	★	1170S12H05	80.6	98.1	160.1	2.1	12.0	2
11.8	3	★	MDM 1180S12H03	44.4	62.1	124.1	2.1	12.0	2
	5	★	1180S12H05	80.4	98.1	160.1	2.1	12.0	2
11.9	3	★	MDM 1190S12H03	44.4	62.2	124.2	2.2	12.0	2
	5	★	1190S12H05	80.4	98.2	160.2	2.2	12.0	2
12.0	3	★	MDM 1200S12H03	44.2	62.2	124.2	2.2	12.0	2
	5	★	1200S12H05	80.2	98.2	160.2	2.2	12.0	2
12.1	3	★	MDM 1210S13H03	46.6	64.7	130.2	2.2	13.0	2
	5	★	1210S13H05	84.1	102.2	169.2	2.2	13.0	2
12.2	3	★	MDM 1220S13H03	46.4	64.7	130.2	2.2	13.0	2
	5	★	1220S13H05	83.9	102.2	169.2	2.2	13.0	2
12.3	3	★	MDM 1230S13H03	46.3	64.7	130.2	2.2	13.0	2
	5	★	1230S13H05	83.8	102.2	169.2	2.2	13.0	2
12.4	3	★	MDM 1240S13H03	46.2	64.8	130.3	2.3	13.0	2
	5	★	1240S13H05	83.7	102.3	169.3	2.3	13.0	2
12.5	3	★	MDM 1250S13H03	46.1	64.8	130.3	2.3	13.0	2
	5	★	1250S13H05	83.6	102.3	169.3	2.3	13.0	2
12.6	3	★	MDM 1260S13H03	48.4	67.3	130.3	2.3	13.0	2
	5	★	1260S13H05	87.4	106.3	169.3	2.3	13.0	2
12.7	3	★	MDM 1270S13H03	48.3	67.3	130.3	2.3	13.0	2
	5	★	1270S13H05	87.3	106.3	169.3	2.3	13.0	2
12.8	3	★	MDM 1280S13H03	48.1	67.3	130.3	2.3	13.0	2
	5	★	1280S13H05	87.1	106.3	169.3	2.3	13.0	2
12.9	3	★	MDM 1290S13H03	48.0	67.3	130.3	2.3	13.0	2
	5	★	1290S13H05	87.0	106.3	169.3	2.3	13.0	2

Grade: ACT70

Diameter ø13.0 to 14.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.0	3	★	MDM 1300S13H03	47.9	67.4	130.4	2.4	13.0	2
	5	★	1300S13H05	86.9	106.4	169.4	2.4	13.0	2
13.1	3	★	MDM 1310S14H03	50.3	69.9	136.4	2.4	14.0	2
	5	★	1310S14H05	90.8	110.4	178.4	2.4	14.0	2
13.2	3	★	MDM 1320S14H03	50.1	69.9	136.4	2.4	14.0	2
	5	★	1320S14H05	90.6	110.4	178.4	2.4	14.0	2
13.3	3	★	MDM 1330S14H03	50.0	69.9	136.4	2.4	14.0	2
	5	★	1330S14H05	90.5	110.4	178.4	2.4	14.0	2
13.4	3	★	MDM 1340S14H03	49.8	69.9	136.4	2.4	14.0	2
	5	★	1340S14H05	90.3	110.4	178.4	2.4	14.0	2
13.5	3	★	MDM 1350S14H03	49.8	70.0	136.5	2.5	14.0	2
	5	★	1350S14H05	90.3	110.5	178.5	2.5	14.0	2
13.6	3	★	MDM 1360S14H03	52.1	72.5	136.5	2.5	14.0	2
	5	★	1360S14H05	94.1	114.5	178.5	2.5	14.0	2
13.7	3	★	MDM 1370S14H03	52.0	72.5	136.5	2.5	14.0	2
	5	★	1370S14H05	94.0	114.5	178.5	2.5	14.0	2
13.8	3	★	MDM 1380S14H03	51.8	72.5	136.5	2.5	14.0	2
	5	★	1380S14H05	93.8	114.5	178.5	2.5	14.0	2
13.9	3	★	MDM 1390S14H03	51.7	72.5	136.5	2.5	14.0	2
	5	★	1390S14H05	93.7	114.5	178.5	2.5	14.0	2
14.0	3	★	MDM 1400S14H03	51.5	72.5	136.5	2.5	14.0	2
	5	★	1400S14H05	93.5	114.5	178.5	2.5	14.0	2
14.1	3	★	MDM 1410S15H03	54.0	75.1	142.6	2.6	15.0	2
	5	★	1410S15H05	97.5	118.6	187.6	2.6	15.0	2
14.2	3	★	MDM 1420S15H03	53.8	75.1	142.6	2.6	15.0	2
	5	★	1420S15H05	97.3	118.6	187.6	2.6	15.0	2
14.3	3	★	MDM 1430S15H03	53.7	75.1	142.6	2.6	15.0	2
	5	★	1430S15H05	97.2	118.6	187.6	2.6	15.0	2
14.4	3	★	MDM 1440S15H03	53.5	75.1	142.6	2.6	15.0	2
	5	★	1440S15H05	97.0	118.6	187.6	2.6	15.0	2
14.5	3	★	MDM 1450S15H03	53.4	75.1	142.6	2.6	15.0	2
	5	★	1450S15H05	96.9	118.6	187.6	2.6	15.0	2
14.6	3	★	MDM 1460S15H03	55.8	77.7	142.7	2.7	15.0	2
	5	★	1460S15H05	100.8	122.7	187.7	2.7	15.0	2
14.7	3	★	MDM 1470S15H03	55.7	77.7	142.7	2.7	15.0	2
	5	★	1470S15H05	100.7	122.7	187.7	2.7	15.0	2
14.8	3	★	MDM 1480S15H03	55.5	77.7	142.7	2.7	15.0	2
	5	★	1480S15H05	100.5	122.7	187.7	2.7	15.0	2
14.9	3	★	MDM 1490S15H03	55.4	77.7	142.7	2.7	15.0	2
	5	★	1490S15H05	100.4	122.7	187.7	2.7	15.0	2

Grade: ACT70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDM series (Internal Coolant Supply)

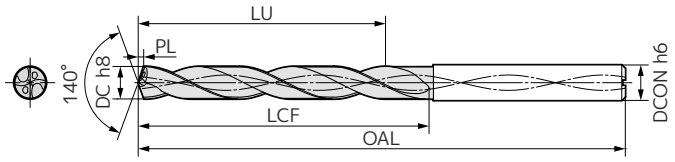
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron

NX Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1 (Diameter ø4.1 or larger)

Bean Jet Cooling



Diameter ø15.0 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.0	3	★	MDM 1500S15H03	55.2	77.7	142.7	2.7	15.0	2
	5	★	1500S15H05	100.2	122.7	187.7	2.7	15.0	2
15.1	3	★	MDM 1510S16H03	57.6	80.2	148.7	2.7	16.0	2
	5	★	1510S16H05	104.1	126.7	196.7	2.7	16.0	2
15.2	3	★	MDM 1520S16H03	57.5	80.3	148.8	2.8	16.0	2
	5	★	1520S16H05	104.0	126.8	196.8	2.8	16.0	2
15.3	3	★	MDM 1530S16H03	57.4	80.3	148.8	2.8	16.0	2
	5	★	1530S16H05	103.9	126.8	196.8	2.8	16.0	2
15.4	3	★	MDM 1540S16H03	57.2	80.3	148.8	2.8	16.0	2
	5	★	1540S16H05	103.7	126.8	196.8	2.8	16.0	2
15.5	3	★	MDM 1550S16H03	57.1	80.3	148.8	2.8	16.0	2
	5	★	1550S16H05	103.6	126.8	196.8	2.8	16.0	2
15.6	3	★	MDM 1560S16H03	59.4	82.8	148.8	2.8	16.0	2
	5	★	1560S16H05	107.4	130.8	196.8	2.8	16.0	2
15.7	3	★	MDM 1570S16H03	59.4	82.9	148.9	2.9	16.0	2
	5	★	1570S16H05	107.4	130.9	196.9	2.9	16.0	2
15.8	3	★	MDM 1580S16H03	59.2	82.9	148.9	2.9	16.0	2
	5	★	1580S16H05	107.2	130.9	196.9	2.9	16.0	2
15.9	3	★	MDM 1590S16H03	59.1	82.9	148.9	2.9	16.0	2
	5	★	1590S16H05	107.1	130.9	196.9	2.9	16.0	2
16.0	3	★	MDM 1600S16H03	58.9	82.9	148.9	2.9	16.0	2
	5	★	1600S16H05	106.9	130.9	196.9	2.9	16.0	2

Grade: ACT70

Metals Symbols Chart

Work Material	Hardness	Japanese Industrial Standards JIS	International Standard ISO 15510	European Standards EN	US Standards AISI
Ferritic/ Martensitic Stainless Steel	≤ 200HB	SUS405	X6CrAl13	1.4002	405
		SUS410	X12Cr13	1.4006	410
		SUS410S	X6Cr13	1.4000	—
		SUS430	X6Cr17	1.4016	430
		SUS434	X6CrMo17-1	1.4113	434
	> 200HB	SUS420J1	X20Cr13	1.4021	420
		SUS420J2	X30Cr13	1.4028	420
		SUS431	X17CrNi16-2	1.4057	431
Austenitic Stainless Steel	≤ 200HB	SUS304	X5CrNi18-10	1.4301	304
		SUS305	X6CrNi18-12	1.4303	305
		SUS303	X10CrNiS18-9	1.4305	303
		SUS304L	X2CrNi18-9	1.4307	304L
		SUS316	X5CrNiMo17-12-2	1.4401	316
		SUS316L	X2CrNiMo17-12-2	1.4404	316L
		SUS317L	X2CrNiMo19-14-4	1.4438	317L
		SUS321	X6CrNiTi18-10	1.4541	321
		SUS347	X6CrNiNb18-10	1.4550	347
		SUS316Ti	X6CrNiMoTi17-12-2	1.4571	—
		SUS309S	X6CrNi23-13	1.4950	309S
		SUS310S	X6CrNi25-20	1.4951	310S
	> 200HB	SUS304N1	X5CrNiN19-9	1.4315	304N
		SUS301	X5CrNi17-7	1.4319	301
		SUS301L	X2CrNiN18-7	1.4318	—
Precipitation Hardened Stainless Steel	≤ 340HB	SUS630	X5CrNiCuNb16-4	1.4542	17-4PH (S17400)
		—	—	—	15-5PH (S15500)
		SUS631	X7CrNiAl17-7	1.4568	17-7PH (S17700)
Duplex Stainless Steel	≤ 310HB	SUS329J1	X6CrNiMo26-4-2	—	329
		SUS329J3L	X2CrNiMoN22-5-3	1.4462	—
		SUS329J4L	X2CrNiMoN25-7-3	—	—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDM series (Internal Coolant Supply)

Recommended Cutting Conditions

1. The recommended cutting conditions below are for cases where an internal supply of a water soluble coolant is used.
2. If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
4. Make sure the flute does not enter the collet.
5. If the engagement surface of the workpiece is abnormally shaped (tilted, interrupted, etc.), reduce the feed rate to about half when feeding the drill into the workpiece.
   *If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

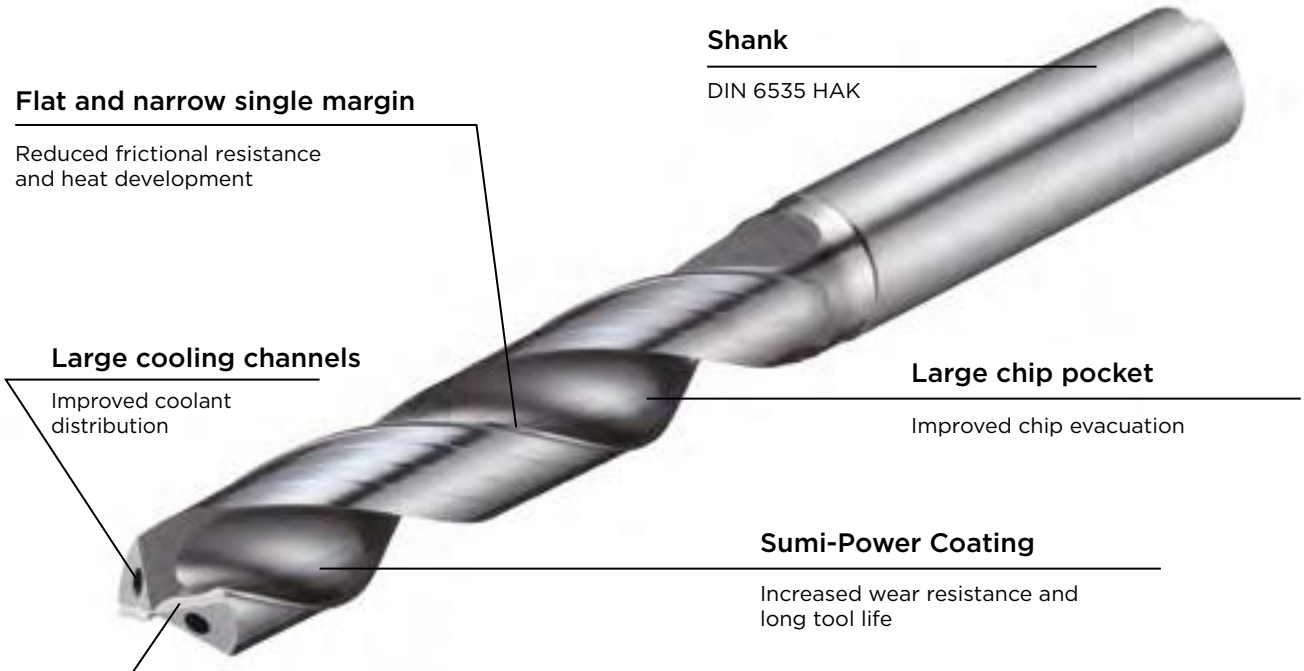
Work Material	Ferritic/Martensitic Stainless Steel				Austenitic Stainless Steel			
	≤ 200HB		> 200HB		≤ 200HB		> 200HB	
Cutting Speed	60 to 100m/min		40 to 80m/min		60 to 100m/min		40 to 80m/min	
Diameter DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø3	8,500	0.06 to 0.12	6,400	0.06 to 0.12	8,500	0.06 to 0.12	6,400	0.06 to 0.12
ø4	6,400	0.08 to 0.17	4,800	0.08 to 0.17	6,400	0.08 to 0.17	4,800	0.08 to 0.17
ø5	5,100	0.08 to 0.20	3,900	0.08 to 0.20	5,100	0.08 to 0.20	3,900	0.08 to 0.20
ø6	4,300	0.10 to 0.20	3,200	0.10 to 0.20	4,300	0.10 to 0.20	3,200	0.10 to 0.20
ø7	3,700	0.12 to 0.23	2,800	0.12 to 0.23	3,700	0.12 to 0.23	2,800	0.12 to 0.23
ø8	3,200	0.15 to 0.25	2,400	0.15 to 0.25	3,200	0.15 to 0.25	2,400	0.15 to 0.25
ø9	2,900	0.17 to 0.25	2,200	0.17 to 0.25	2,900	0.17 to 0.25	2,200	0.17 to 0.25
ø10	2,600	0.18 to 0.28	2,000	0.18 to 0.28	2,600	0.18 to 0.28	2,000	0.18 to 0.28
ø11	2,400	0.20 to 0.30	1,800	0.20 to 0.30	2,400	0.20 to 0.30	1,800	0.20 to 0.30
ø12	2,200	0.20 to 0.30	1,600	0.20 to 0.30	2,200	0.20 to 0.30	1,600	0.20 to 0.30
ø13	2,000	0.20 to 0.30	1,500	0.20 to 0.30	2,000	0.20 to 0.30	1,500	0.20 to 0.30
ø14	1,900	0.20 to 0.30	1,400	0.20 to 0.30	1,900	0.20 to 0.30	1,400	0.20 to 0.30
ø15	1,700	0.20 to 0.30	1,300	0.20 to 0.30	1,700	0.20 to 0.30	1,300	0.20 to 0.30
ø16	1,600	0.20 to 0.30	1,200	0.20 to 0.30	1,600	0.20 to 0.30	1,200	0.20 to 0.30

Work Material	Precipitation Hardened Stainless Steel ≤ 340HB		Duplex Stainless Steel ≤ 310HB		Titanium Alloy 260HB to 340HB		Ni-based Heat-resistant Alloy (Inconel 718) 38 to 45HRC	
Cutting Speed	40 to 60m/min		40 to 60m/min		30 to 50m/min		10 to 30m/min	
Diameter DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø3	5,300	0.06 to 0.12	5,300	0.06 to 0.12	4,200	0.06 to 0.12	2,100	0.05 to 0.08
ø4	4,000	0.08 to 0.17	4,000	0.08 to 0.17	3,200	0.08 to 0.17	1,600	0.06 to 0.10
ø5	3,200	0.08 to 0.20	3,200	0.08 to 0.20	2,500	0.08 to 0.20	1,250	0.07 to 0.12
ø6	2,700	0.10 to 0.20	2,700	0.10 to 0.20	2,100	0.10 to 0.20	1,050	0.08 to 0.15
ø7	2,300	0.12 to 0.23	2,300	0.12 to 0.23	1,800	0.12 to 0.23	900	0.08 to 0.15
ø8	2,000	0.15 to 0.25	2,000	0.15 to 0.25	1,600	0.15 to 0.25	800	0.10 to 0.18
ø9	1,800	0.17 to 0.25	1,800	0.17 to 0.25	1,400	0.17 to 0.25	700	0.12 to 0.18
ø10	1,600	0.18 to 0.28	1,600	0.18 to 0.28	1,300	0.18 to 0.28	650	0.12 to 0.18
ø11	1,400	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30	600	0.15 to 0.20
ø12	1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30	550	0.15 to 0.20
ø13	1,200	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30	500	0.15 to 0.20
ø14	1,100	0.20 to 0.30	1,100	0.20 to 0.30	900	0.20 to 0.30	450	0.15 to 0.20
ø15	1,050	0.20 to 0.30	1,050	0.20 to 0.30	850	0.20 to 0.30	420	0.15 to 0.20
ø16	1,000	0.20 to 0.30	1,000	0.20 to 0.30	800	0.20 to 0.30	400	0.15 to 0.20

MEMO

SDM series (Internal Coolant Supply)

■ Features



Shank

DIN 6535 HAK

Flat and narrow single margin

Reduced frictional resistance
and heat development

Large cooling channels

Improved coolant
distribution

Large chip pocket

Improved chip evacuation

Sumi-Power Coating

Increased wear resistance and
long tool life

Sharp cutting edge

Optimised for stainless steel
and reduction in cutting forces

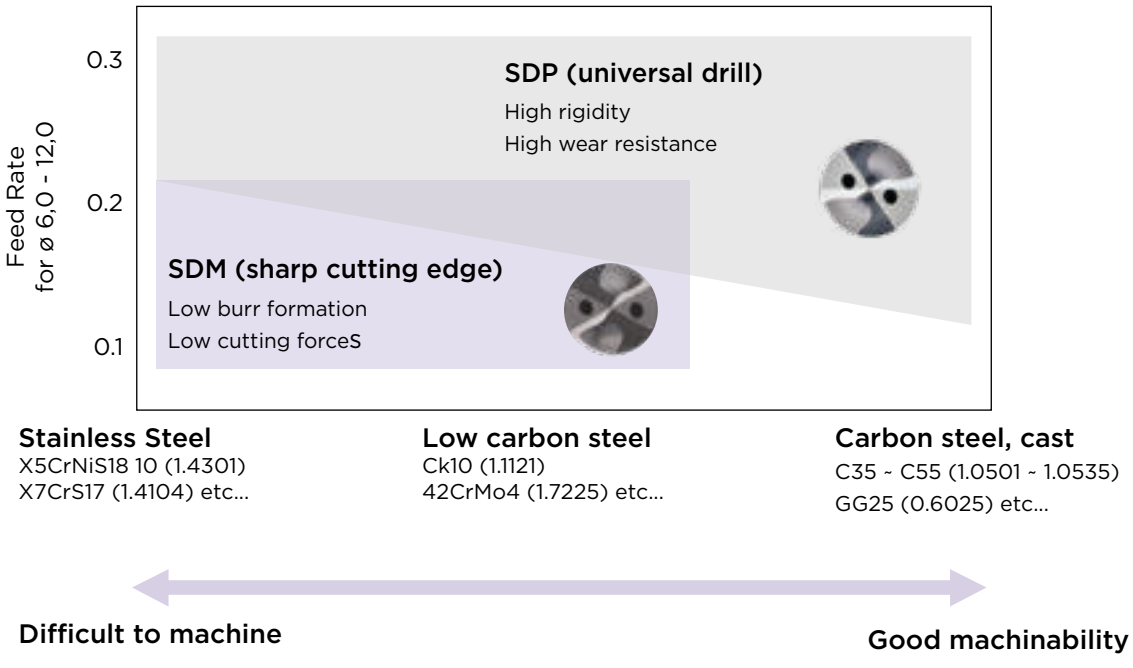
Stock Size

Ø3,0 ~ Ø12,0
Increment 0,1mm

Ø12,1 ~ Ø16,0
Standard diameter

■ Advantages

- High process reliability in stainless steel and low carbon steel
- Can be used on low-performance machines! (avoids overload!)
- High surface quality in the bore
- Sharp cutting edge
- High adhesion resistance by Sumi-Power Coating



SDM series - Recommended Cutting Conditions/Identification

■ Recommended Cutting Conditions

Material Group						SDM_____U_HAK PCX70					
						ØD: 3,0 - 6,0		ØD: 6,1 - 10,0		ØD: 10,1 - 16,0	
ISO 513	Work Material	Type/ Structure	R_m N/mm²	Hard-ness HB30	Fitness	v_c=m/min	feed rate mm/rpm	v_c=m/min	feed rate mm/rpm	v_c=m/min	feed rate mm/rpm
P	Carbon steel Cast steel	free cutting steel construction steel case-hardened steel heat-treatable steel spring steel	420	125	○	80 - **100** - 120	0,08 - **0,11** - 0,14	80 - **100** - 120	0,10 - **0,15** - 0,20	80 - **100** - 120	0,20 - **0,25** - 0,30
			650	190	○	80 - **100** - 120	0,08 - **0,11** - 0,14	80 - **100** - 120	0,10 - **0,15** - 0,20	80 - **100** - 120	0,20 - **0,25** - 0,30
			850	250	○	80 - **100** - 120	0,08 - **0,11** - 0,14	80 - **100** - 120	0,10 - **0,15** - 0,20	80 - **100** - 120	0,20 - **0,25** - 0,30
			750	270	○	40 - **60** - 100	0,08 - **0,10** - 0,12	40 - **60** - 100	0,10 - **0,12** - 0,16	40 - **60** - 100	0,15 - **0,17** - 0,20
			1000	300							
	Low alloy steel Cast steel	case-hardened steel heat-treatable steel bearing steel nitriding steel cold work steel	600	180	○	80 - **100** - 120	0,08 - **0,11** - 0,14	80 - **100** - 120	0,10 - **0,15** - 0,20	80 - **100** - 120	0,20 - **0,25** - 0,30
			930	275	○	40 - **60** - 100	0,08 - **0,10** - 0,12	40 - **60** - 100	0,10 - **0,12** - 0,16	40 - **60** - 100	0,15 - **0,17** - 0,20
			1000	300							
			1200	350							
	High alloy steel / Cast steel	tool steel hot work steel	680	200	○	40 - **60** - 100	0,08 - **0,10** - 0,12	40 - **60** - 100	0,10 - **0,12** - 0,16	40 - **60** - 100	0,15 - **0,17** - 0,20
			1100	325							
M	Stainless steel Cast steel	martensitic/ferritic	680	200	◉	40 - **60** - 100	0,08 - **0,10** - 0,12	40 - **60** - 100	0,10 - **0,14** - 0,18	40 - **60** - 100	0,15 - **0,20** - 0,25
		martensitic/ferritic		> 200	◉	30 - **50** - 80	0,08 - **0,10** - 0,12	30 - **50** - 80	0,10 - **0,14** - 0,18	30 - **50** - 80	0,15 - **0,20** - 0,25
		martensitic	820	240	◉	30 - **50** - 80	0,08 - **0,10** - 0,12	30 - **50** - 80	0,10 - **0,14** - 0,18	30 - **50** - 80	0,15 - **0,20** - 0,25
		austenitic	600	180	◉	40 - **60** - 100	0,08 - **0,10** - 0,12	40 - **60** - 100	0,10 - **0,14** - 0,18	40 - **60** - 100	0,15 - **0,20** - 0,25
		austenitic		> 200	◉	30 - **50** - 80	0,08 - **0,10** - 0,12	30 - **50** - 80	0,10 - **0,14** - 0,18	30 - **50** - 80	0,15 - **0,20** - 0,25
		Duplex	740	230	◉	30 - **45** - 70	0,08 - **0,10** - 0,12	30 - **45** - 70	0,10 - **0,14** - 0,18	30 - **45** - 70	0,15 - **0,20** - 0,25
		Precipation hardened		≤ 450	◉	30 - **45** - 70	0,08 - **0,10** - 0,12	30 - **45** - 70	0,10 - **0,14** - 0,18	30 - **45** - 70	0,15 - **0,20** - 0,25
K	Cast iron GG	ferritic/pearlitic		180							
		pearlitic		260							
	Cast iron GGG	ferritic		160							
		pearlitic		250							
S	Heat resisting alloys	Fe-based			○	20 - **30** - 40	0,06 - **0,08** - 0,10	20 - **30** - 40	0,08 - **0,10** - 0,12	20 - **30** - 40	0,10 - **0,12** - 0,15
		Ni / Co-based			○	20 - **30** - 40	0,06 - **0,08** - 0,10	20 - **30** - 40	0,08 - **0,10** - 0,12	20 - **30** - 40	0,10 - **0,12** - 0,15
	Titanium Titanium alloys	pure Titanium	430								
		Ti-Basis			○	20 - **30** - 40	0,06 - **0,08** - 0,10	20 - **30** - 40	0,08 - **0,10** - 0,12	20 - **30** - 40	0,10 - **0,12** - 0,15
N	Aluminium	pure aluminium									
		wrought alloys									
	Aluminium Cast alloys	Si ≤ 12%									
		Si ≥ 12%									
		Al - Mg alloys									
	Zinc die-cast	Zn alloys									
	Copper alloys	Copper									
		Brass									
		Bronze									
H	Hardened steel	45 HRC									
		55 HRC									
		60 HRC									
		> 60 HRC									

◉ Preferred choice ○ Possible

■ SDM-Identification

SDM **0800U** **3** **HAK** PCX70

- **SDM**: **S**umi-**D**rill **M** (ISO-Code)
- **0800**: Drill Diameter 8,0mm
- **U**: Universal
- **3**: Drilling Depth 3D/5D
- **HAK**: DIN 6535 Form HAK
- PCX70: Grade

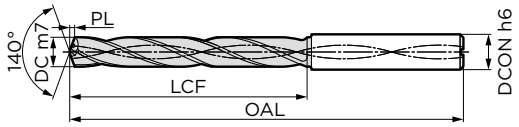
SDM series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy

DD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø3.0 to 5.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	SDM 0300 U3 HAK	17	62	0.5	6	1
	5	★	0300 U5 HAK	24	66	0.5	6	1
3.1	3	★	SDM 0310 U3 HAK	17	62	0.6	6	1
	5	★	0310 U5 HAK	24	66	0.6	6	1
3.2	3	★	SDM 0320 U3 HAK	17	62	0.6	6	1
	5	★	0320 U5 HAK	24	66	0.6	6	1
3.25	3		SDM 0325 U3 HAK	17	62	0.6	6	1
	5		0325 U5 HAK	24	66	0.6	6	1
3.3	3	★	SDM 0330 U3 HAK	17	62	0.6	6	1
	5	★	0330 U5 HAK	24	66	0.6	6	1
3.4	3	★	SDM 0340 U3 HAK	17	62	0.6	6	1
	5	★	0340 U5 HAK	24	66	0.6	6	1
3.5	3	★	SDM 0350 U3 HAK	17	62	0.6	6	1
	5	★	0350 U5 HAK	24	66	0.6	6	1
3.6	3	★	SDM 0360 U3 HAK	17	62	0.7	6	1
	5	★	0360 U5 HAK	24	66	0.7	6	1
3.7	3	★	SDM 0370 U3 HAK	17	62	0.7	6	1
	5	★	0370 U5 HAK	24	66	0.7	6	1
3.8	3	★	SDM 0380 U3 HAK	21	66	0.7	6	1
	5	★	0380 U5 HAK	33	74	0.7	6	1
3.9	3	★	SDM 0390 U3 HAK	21	66	0.7	6	1
	5	★	0390 U5 HAK	33	74	0.7	6	1
4.0	3	★	SDM 0400 U3 HAK	21	66	0.7	6	1
	5	★	0400 U5 HAK	33	74	0.7	6	1
4.1	3	★	SDM 0410 U3 HAK	21	66	0.7	6	1
	5	★	0410 U5 HAK	33	74	0.7	6	1
4.2	3	★	SDM 0420 U3 HAK	21	66	0.8	6	1
	5	★	0420 U5 HAK	33	74	0.8	6	1
4.3	3	★	SDM 0430 U3 HAK	21	66	0.8	6	1
	5	★	0430 U5 HAK	33	74	0.8	6	1
4.4	3	★	SDM 0440 U3 HAK	21	66	0.8	6	1
	5	★	0440 U5 HAK	33	74	0.8	6	1
4.5	3	★	SDM 0450 U3 HAK	21	66	0.8	6	1
	5	★	0450 U5 HAK	33	74	0.8	6	1
4.6	3	★	SDM 0460 U3 HAK	21	66	0.8	6	1
	5	★	0460 U5 HAK	33	74	0.8	6	1
4.65	3		SDM 0465 U3 HAK	21	66	0.8	6	1
	5		0465 U5 HAK	33	74	0.8	6	1
4.7	3	★	SDM 0470 U3 HAK	21	66	0.9	6	1
	5	★	0470 U5 HAK	33	74	0.9	6	1
4.8	3	★	SDM 0480 U3 HAK	25	66	0.9	6	1
	5	★	0480 U5 HAK	41	82	0.9	6	1
4.9	3	★	SDM 0490 U3 HAK	25	66	0.9	6	1
	5	★	0490 U5 HAK	41	82	0.9	6	1
5.0	3	★	SDM 0500 U3 HAK	25	66	0.9	6	1
	5	★	0500 U5 HAK	41	82	0.9	6	1
5.1	3	★	SDM 0510 U3 HAK	25	66	0.9	6	1
	5	★	0510 U5 HAK	41	82	0.9	6	1
5.2	3	★	SDM 0520 U3 HAK	25	66	0.9	6	1
	5	★	0520 U5 HAK	41	82	0.9	6	1
5.3	3	★	SDM 0530 U3 HAK	25	66	1.0	6	1
	5	★	0530 U5 HAK	41	82	1.0	6	1

Grade: PCX70

Diameter ø5.4 to 7.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.4	3	★	SDM 0540 U3 HAK	25	66	1.0	6	1
	5	★	0540 U5 HAK	41	82	1.0	6	1
5.5	3	★	SDM 0550 U3 HAK	25	66	1.0	6	1
	5	★	0550 U5 HAK	41	82	1.0	6	1
5.6	3	★	SDM 0560 U3 HAK	25	66	1.0	6	1
	5	★	0560 U5 HAK	41	82	1.0	6	1
5.5	3	★	SDM 0550 U3 HAK	25	66	1.0	6	1
	5	★	0550 U5 HAK	41	82	1.0	6	1
5.55	3		SDM 0555 U3 HAK	25	66	1.0	6	1
	5		0555 U5 HAK	41	82	1.0	6	1
5.6	3	★	SDM 0560 U3 HAK	25	66	1.0	6	1
	5	★	0560 U5 HAK	41	82	1.0	6	1
5.7	3	★	SDM 0570 U3 HAK	25	66	1.0	6	1
	5	★	0570 U5 HAK	41	82	1.0	6	1
5.8	3	★	SDM 0580 U3 HAK	25	66	1.1	6	1
	5	★	0580 U5 HAK	41	82	1.1	6	1
5.9	3	★	SDM 0590 U3 HAK	25	66	1.1	6	1
	5	★	0590 U5 HAK	41	82	1.1	6	1
6.0	3	★	SDM 0600 U3 HAK	25	66	1.1	6	1
	5	★	0600 U5 HAK	41	82	1.1	6	1
6.1	3	★	SDM 0610 U3 HAK	31	79	1.1	8	1
	5	★	0610 U5 HAK	50	91	1.1	8	1
6.2	3	★	SDM 0620 U3 HAK	31	79	1.1	8	1
	5	★	0620 U5 HAK	50	91	1.1	8	1
6.3	3	★	SDM 0630 U3 HAK	31	79	1.1	8	1
	5	★	0630 U5 HAK	50	91	1.1	8	1
6.4	3	★	SDM 0640 U3 HAK	31	79	1.2	8	1
	5	★	0640 U5 HAK	50	91	1.2	8	1
6.5	3	★	SDM 0650 U3 HAK	31	79	1.2	8	1
	5	★	0650 U5 HAK	50	91	1.2	8	1
6.6	3	★	SDM 0660 U3 HAK	31	79	1.2	8	1
	5	★	0660 U5 HAK	50	91	1.2	8	1
6.7	3	★	SDM 0670 U3 HAK	31	79	1.2	8	1
	5	★	0670 U5 HAK	50	91	1.2	8	1
6.8	3	★	SDM 0680 U3 HAK	31	79	1.2	8	1
	5	★	0680 U5 HAK	50	91	1.2	8	1
6.9	3	★	SDM 0690 U3 HAK	31	79	1.3	8	1
	5	★	0690 U5 HAK	50	91	1.3	8	1
7.0	3	★	SDM 0700 U3 HAK	31	79	1.3	8	1
	5	★	0700 U5 HAK	50	91	1.3	8	1
7.1	3	★	SDM 0710 U3 HAK	37	79	1.3	8	1
	5	★	0710 U5 HAK	50	91	1.3	8	1
7.2	3	★	SDM 0720 U3 HAK	37	79	1.3	8	1
	5	★	0720 U5 HAK	50	91	1.3	8	1
7.3	3	★	SDM 0730 U3 HAK	37	79	1.3	8	1
	5	★	0730 U5 HAK	50	91	1.3	8	1
7.4	3	★	SDM 0740 U3 HAK	37	79	1.3	8	1
	5	★	0740 U5 HAK	50	91	1.3	8	1
7.5	3	★	SDM 0750 U3 HAK	37	79	1.4	8	1
	5	★	0750 U5 HAK	50	91	1.4	8	1

Grade: PCX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

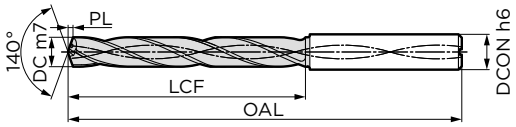
SDM series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy

DD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø7.6 to 10.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.6	3	★	**SDM 0760 U3 HAK**	37	79	1.4	8	1
	5	★	**0760 U5 HAK**	50	91	1.4	8	1
7.7	3	★	**SDM 0770 U3 HAK**	37	79	1.4	8	1
	5	★	**0770 U5 HAK**	50	91	1.4	8	1
7.8	3	★	**SDM 0780 U3 HAK**	37	79	1.4	8	1
	5	★	**0780 U5 HAK**	50	91	1.4	8	1
7.9	3	★	**SDM 0790 U3 HAK**	37	79	1.4	8	1
	5	★	**0790 U5 HAK**	50	91	1.4	8	1
8.0	3	★	**SDM 0800 U3 HAK**	37	79	1.5	8	1
	5	★	**0800 U5 HAK**	50	91	1.5	8	1
8.1	3	★	**SDM 0810 U3 HAK**	43	89	1.5	10	1
	5	★	**0810 U5 HAK**	57	103	1.5	10	1
8.2	3	★	**SDM 0820 U3 HAK**	43	89	1.5	10	1
	5	★	**0820 U5 HAK**	57	103	1.5	10	1
8.3	3	★	**SDM 0830 U3 HAK**	43	89	1.5	10	1
	5	★	**0830 U5 HAK**	57	103	1.5	10	1
8.4	3	★	**SDM 0840 U3 HAK**	43	89	1.5	10	1
	5	★	**0840 U5 HAK**	57	103	1.5	10	1
8.5	3	★	**SDM 0850 U3 HAK**	43	89	1.5	10	1
	5	★	**0850 U5 HAK**	57	103	1.5	10	1
8.6	3	★	**SDM 0860 U3 HAK**	43	89	1.6	10	1
	5	★	**0860 U5 HAK**	57	103	1.6	10	1
8.7	3	★	**SDM 0870 U3 HAK**	43	89	1.6	10	1
	5	★	**0870 U5 HAK**	57	103	1.6	10	1
8.8	3	★	**SDM 0880 U3 HAK**	43	89	1.6	10	1
	5	★	**0880 U5 HAK**	57	103	1.6	10	1
8.9	3	★	**SDM 0890 U3 HAK**	43	89	1.6	10	1
	5	★	**0890 U5 HAK**	57	103	1.6	10	1
9.0	3	★	**SDM 0900 U3 HAK**	43	89	1.6	10	1
	5	★	**0900 U5 HAK**	57	103	1.6	10	1
9.1	3	★	**SDM 0910 U3 HAK**	43	89	1.7	10	1
	5	★	**0910 U5 HAK**	57	103	1.7	10	1
9.25	3		**SDM 0925 U3 HAK**	43	89	1.7	10	1
	5		**0925 U5 HAK**	57	103	1.7	10	1
9.2	3	★	**SDM 0920 U3 HAK**	43	89	1.7	10	1
	5	★	**0920 U5 HAK**	57	103	1.7	10	1
9.3	3	★	**SDM 0930 U3 HAK**	43	89	1.7	10	1
	5	★	**0930 U5 HAK**	57	103	1.7	10	1
9.4	3	★	**SDM 0940 U3 HAK**	43	89	1.7	10	1
	5	★	**0940 U5 HAK**	57	103	1.7	10	1
9.5	3	★	**SDM 0950 U3 HAK**	43	89	1.7	10	1
	5	★	**0950 U5 HAK**	57	103	1.7	10	1
9.6	3	★	**SDM 0960 U3 HAK**	43	89	1.7	10	1
	5	★	**0960 U5 HAK**	57	103	1.7	10	1
9.7	3	★	**SDM 0970 U3 HAK**	43	89	1.8	10	1
	5	★	**0970 U5 HAK**	57	103	1.8	10	1
9.8	3	★	**SDM 0980 U3 HAK**	43	89	1.8	10	1
	5	★	**0980 U5 HAK**	57	103	1.8	10	1
9.9	3	★	**SDM 0990 U3 HAK**	43	89	1.8	10	1
	5	★	**0990 U5 HAK**	57	103	1.8	10	1
10.0	3	★	**SDM 1000 U3 HAK**	43	89	1.8	10	1
	5	★	**1000 U5 HAK**	57	103	1.8	10	1

Grade: PCX70

Diameter ø10.1 to 12.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.1	3	★	**SDM 1010 U3 HAK**	51	102	1.8	12	1
	5	★	**1010 U5 HAK**	67	118	1.8	12	1
10.2	3	★	**SDM 1020 U3 HAK**	51	102	1.9	12	1
	5	★	**1020 U5 HAK**	67	118	1.9	12	1
10.3	3	★	**SDM 1030 U3 HAK**	51	102	1.9	12	1
	5	★	**1030 U5 HAK**	67	118	1.9	12	1
10.4	3	★	**SDM 1040 U3 HAK**	51	102	1.9	12	1
	5	★	**1040 U5 HAK**	67	118	1.9	12	1
10.5	3	★	**SDM 1050 U3 HAK**	51	102	1.9	12	1
	5	★	**1050 U5 HAK**	67	118	1.9	12	1
10.6	3	★	**SDM 1060 U3 HAK**	51	102	1.9	12	1
	5	★	**1060 U5 HAK**	67	118	1.9	12	1
10.7	3	★	**SDM 1070 U3 HAK**	51	102	1.9	12	1
	5	★	**1070 U5 HAK**	67	118	1.9	12	1
10.8	3	★	**SDM 1080 U3 HAK**	51	102	2.0	12	1
	5	★	**1080 U5 HAK**	67	118	2.0	12	1
10.9	3	★	**SDM 1090 U3 HAK**	51	102	2.0	12	1
	5	★	**1090 U5 HAK**	67	118	2.0	12	1
11.0	3	★	**SDM 1100 U3 HAK**	51	102	2.0	12	1
	5	★	**1100 U5 HAK**	67	118	2.0	12	1
11.1	3	★	**SDM 1110 U3 HAK**	51	102	2.0	12	1
	5	★	**1110 U5 HAK**	67	118	2.0	12	1
11.2	3	★	**SDM 1120 U3 HAK**	51	102	2.0	12	1
	5	★	**1120 U5 HAK**	67	118	2.0	12	1
11.3	3	★	**SDM 1130 U3 HAK**	51	102	2.1	12	1
	5	★	**1130 U5 HAK**	67	118	2.1	12	1
11.4	3	★	**SDM 1140 U3 HAK**	51	102	2.1	12	1
	5	★	**1140 U5 HAK**	67	118	2.1	12	1
11.5	3	★	**SDM 1150 U3 HAK**	51	102	2.1	12	1
	5	★	**1150 U5 HAK**	67	118	2.1	12	1
11.6	3	★	**SDM 1160 U3 HAK**	51	102	2.1	12	1
	5	★	**1160 U5 HAK**	67	118	2.1	12	1
11.7	3	★	**SDM 1170 U3 HAK**	51	102	2.1	12	1
	5	★	**1170 U5 HAK**	67	118	2.1	12	1
11.8	3	★	**SDM 1180 U3 HAK**	51	102	2.1	12	1
	5	★	**1180 U5 HAK**	67	118	2.1	12	1
11.9	3	★	**SDM 1190 U3 HAK**	51	102	2.2	12	1
	5	★	**1190 U5 HAK**	67	118	2.2	12	1
12.0	3	★	**SDM 1200 U3 HAK**	51	102	2.2	12	1
	5	★	**1200 U5 HAK**	67	118	2.2	12	1

Grade: PCX70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

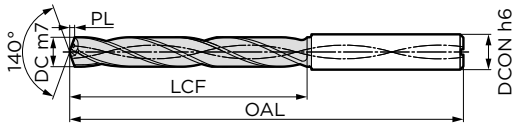
SDM series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy

DD Coat | 3D | 5D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø12.1 to 14.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.1	3		**SDM 1210 U3 HAK**	56	107	2.2	14	1
	5		**1210 U5 HAK**	73	124	2.2	14	1
12.2	3		**SDM 1220 U3 HAK**	56	107	2.2	14	1
	5		**1220 U5 HAK**	73	124	2.2	14	1
12.3	3		**SDM 1230 U3 HAK**	56	107	2.2	14	1
	5		**1230 U5 HAK**	73	124	2.2	14	1
12.4	3		**SDM 1240 U3 HAK**	56	107	2.3	14	1
	5		**1240 U5 HAK**	73	124	2.3	14	1
12.5	3	★	**SDM 1250 U3 HAK**	56	107	2.3	14	1
	5	★	**1250 U5 HAK**	73	124	2.3	14	1
12.6	3		**SDM 1260 U3 HAK**	56	107	2.3	14	1
	5		**1260 U5 HAK**	73	124	2.3	14	1
12.7	3		**SDM 1270 U3 HAK**	56	107	2.3	14	1
	5		**1270 U5 HAK**	73	124	2.3	14	1
12.8	3		**SDM 1280 U3 HAK**	56	107	2.3	14	1
	5		**1280 U5 HAK**	73	124	2.3	14	1
12.9	3		**SDM 1290 U3 HAK**	56	107	2.3	14	1
	5		**1290 U5 HAK**	73	124	2.3	14	1
13.0	3	★	**SDM 1300 U3 HAK**	56	107	2.4	14	1
	5	★	**1300 U5 HAK**	73	124	2.4	14	1
13.1	3		**SDM 1310 U3 HAK**	56	107	2.4	14	1
	5		**1310 U5 HAK**	73	124	2.4	14	1
13.2	3		**SDM 1320 U3 HAK**	56	107	2.4	14	1
	5		**1320 U5 HAK**	73	124	2.4	14	1
13.3	3		**SDM 1330 U3 HAK**	56	107	2.4	14	1
	5		**1330 U5 HAK**	73	124	2.4	14	1
13.4	3		**SDM 1340 U3 HAK**	56	107	2.4	14	1
	5		**1340 U5 HAK**	73	124	2.4	14	1
13.5	3	★	**SDM 1350 U3 HAK**	56	107	2.5	14	1
	5	★	**1350 U5 HAK**	73	124	2.5	14	1
13.6	3		**SDM 1360 U3 HAK**	56	107	2.5	14	1
	5		**1360 U5 HAK**	73	124	2.5	14	1
13.7	3		**SDM 1370 U3 HAK**	56	107	2.5	14	1
	5		**1370 U5 HAK**	73	124	2.5	14	1
13.8	3		**SDM 1380 U3 HAK**	56	107	2.5	14	1
	5		**1380 U5 HAK**	73	124	2.5	14	1
13.9	3		**SDM 1390 U3 HAK**	56	107	2.5	14	1
	5		**1390 U5 HAK**	73	124	2.5	14	1
14.0	3	★	**SDM 1400 U3 HAK**	56	107	2.5	14	1
	5	★	**1400 U5 HAK**	73	124	2.5	14	1
14.1	3		**SDM 1410 U3 HAK**	60	115	2.6	16	1
	5		**1410 U5 HAK**	78	133	2.6	16	1
14.2	3		**SDM 1420 U3 HAK**	60	115	2.6	16	1
	5		**1420 U5 HAK**	78	133	2.6	16	1
14.3	3		**SDM 1430 U3 HAK**	60	115	2.6	16	1
	5		**1430 U5 HAK**	78	133	2.6	16	1
14.4	3		**SDM 1440 U3 HAK**	60	115	2.6	16	1
	5		**1440 U5 HAK**	78	133	2.6	16	1
14.5	3	★	**SDM 1450 U3 HAK**	60	115	2.6	16	1
	5	★	**1450 U5 HAK**	78	133	2.6	16	1
14.6	3		**SDM 1460 U3 HAK**	60	115	2.7	16	1
	5		**1460 U5 HAK**	78	133	2.7	16	1

Grade: PCX70

Diameter ø14.7 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
14.7	3		**SDM 1470 U3 HAK**	60	115	2.7	16	1
	5		**1470 U5 HAK**	78	133	2.7	16	1
14.8	3		**SDM 1480 U3 HAK**	60	115	2.7	16	1
	5		**1480 U5 HAK**	78	133	2.7	16	1
14.9	3		**SDM 1490 U3 HAK**	60	115	2.7	16	1
	5		**1490 U5 HAK**	78	133	2.7	16	1
15.0	3	★	**SDM 1500 U3 HAK**	60	115	2.7	16	1
	5	★	**1500 U5 HAK**	78	133	2.7	16	1
15.1	3		**SDM 1510 U3 HAK**	60	115	2.7	16	1
	5		**1510 U5 HAK**	78	133	2.7	16	1
15.2	3		**SDM 1520 U3 HAK**	60	115	2.8	16	1
	5		**1520 U5 HAK**	78	133	2.8	16	1
15.3	3		**SDM 1530 U3 HAK**	60	115	2.8	16	1
	5		**1530 U5 HAK**	78	133	2.8	16	1
15.4	3		**SDM 1540 U3 HAK**	60	115	2.8	16	1
	5		**1540 U5 HAK**	78	133	2.8	16	1
15.5	3	★	**SDM 1550 U3 HAK**	60	115	2.8	16	1
	5	★	**1550 U5 HAK**	78	133	2.8	16	1
15.6	3		**SDM 1560 U3 HAK**	60	115	2.8	16	1
	5		**1560 U5 HAK**	78	133	2.8	16	1
15.7	3		**SDM 1570 U3 HAK**	60	115	2.9	16	1
	5		**1570 U5 HAK**	78	133	2.9	16	1
15.8	3		**SDM 1580 U3 HAK**	60	115	2.9	16	1
	5		**1580 U5 HAK**	78	133	2.9	16	1
15.9	3		**SDM 1590 U3 HAK**	60	115	2.9	16	1
	5		**1590 U5 HAK**	78	133	2.9	16	1
16.0	3	★	**SDM 1600 U3 HAK**	60	115	2.9	16	1
	5	★	**1600 U5 HAK**	78	133	2.9	16	1

Grade: PCX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

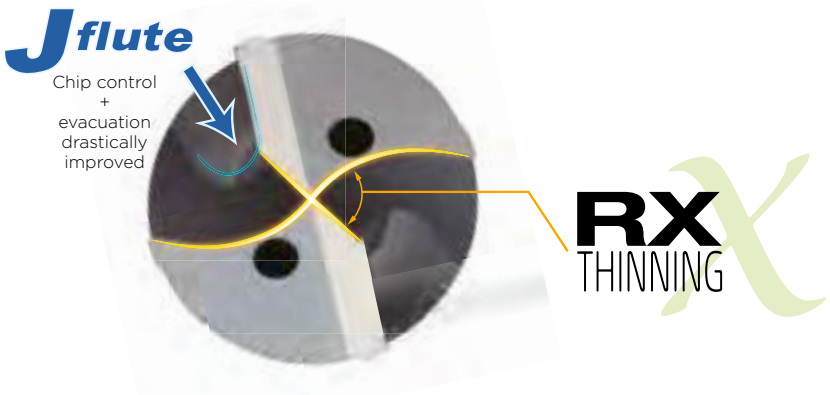
MEMO

HX series



■ General Features

Strong MULTIDRILL HX series is a special drill for cast iron that combines reduced cutting force and improved drill strength to achieve stable and high efficiency drilling of cast iron.



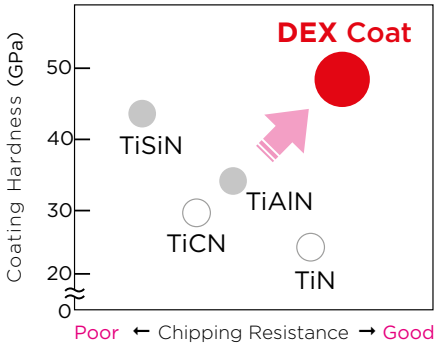
■ Features and Applications

● High-efficiency Drilling of Cast Iron

Thick web and special double margin design ensure stable behaviour even in high-efficiency drilling. Furthermore, RX THINNING drastically reduces cutting force and ensures more stable and efficient drilling. Enables high-efficiency drilling at feed rates of over vf=1,000mm/min. (for ø10mm sizes)

● Long Tool Life

DEX Coat for drills utilises nano-coating technology that provides more than double the tool life of conventional coatings. The drill guide function is enhanced through optimisation of the margin position to prevent breakage due to hole bending.

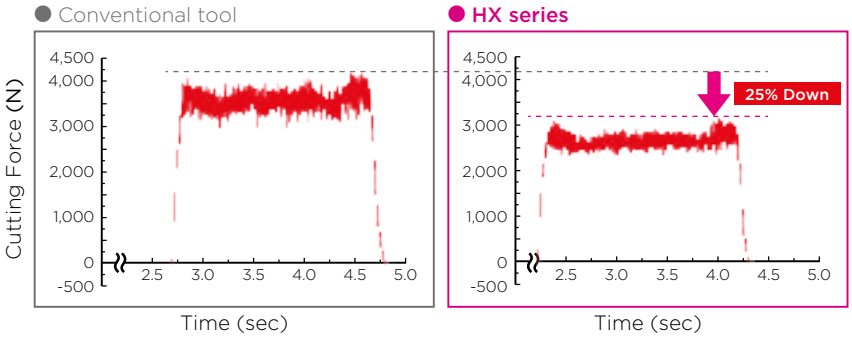


Low Resistance Wide chip pocket reduces thrust resistance.

RX THINNING

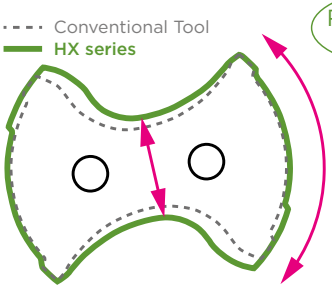
Improves tool load

Also suitable for small machining centres

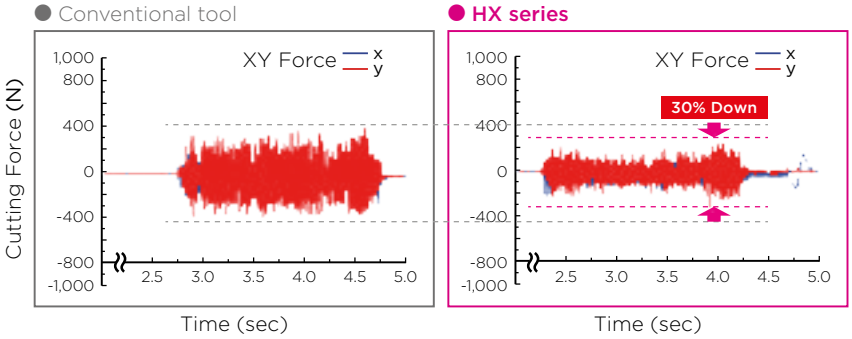


Work Material : GG-25, Tool: Conventional Tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: vc = 100m/min, f = 0.60mm/rev, H = 50mm, Internal Coolant Supply (Water-soluble)

High Rigidity Combination of large web thickness and wide land reduces vibration.



Reduces dril vibration



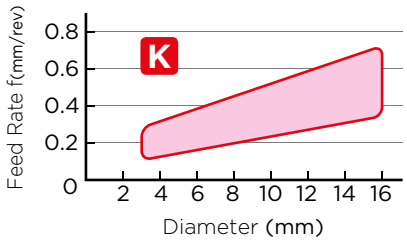
Work Material : GG-25, Tool: Conventional Tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: vc = 100m/min, f = 0.60mm/rev, H = 50mm, Internal Coolant Supply (Water-soluble)

HX series

■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of Items
Internal	MDW□□□□HX3	ø3.0 to ø20.0	up to 3	108 items in stock
	MDW□□□□HX5	ø3.0 to ø20.0	up to 5	108 items in stock
	MDW□□□□HX8	ø3.0 to ø18.0	up to 8	32 items in stock

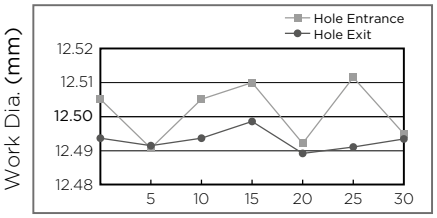
● Drilling of Grey cast iron



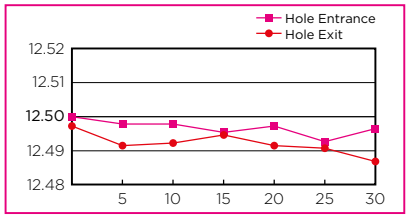
High-precision Improved margin tip position improves drilling precision



● Conventional tool



● HX series



Work Material : GG-25, Tool: Conventional Tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: vc = 100m/min, f = 0.60mm/rev, H = 50mm, Internal Coolant Supply (Water-soluble)

Longer Tool Life High-feed drilling reduces margin wear and extends tool life
→ Maintains replacement frequency (drilling time) and enables high-efficiency drilling

● Conventional tool



Cutting Conditions: f =0.30mm/rev Cutting Length: 30m (Drilling Time 39 minutes)

● HX series



Cutting Conditions: f =0.30mm/rev Cutting Length: 30m (Drilling Time 39 minutes)



Cutting Conditions: f =0.60mm/rev Cutting Length: 60m (Drilling Time 39 minutes)

Work Material : GG-25, Tool: Conventional Tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: vc = 100m/min, f = 0.60mm/rev, H = 50mm, Internal Coolant Supply (Water-soluble)

Double the feed

■ Application Examples

Machine Component (FC250)

·Tool: MDW 1850HX5 (ø18.5mm 5D)
·Drilling Distance: 50m
·Cutting Conditions: vc = 70m/min, f = 0.9mm/rev, H = 27mm (Blind), Internal Coolant Supply (Water-soluble)

Reduced cutting edge wear in ultra-high-speed drilling.

Cutting Edge Rake Face Condition after Preset Tool Life

Competitor's High-efficiency Drill



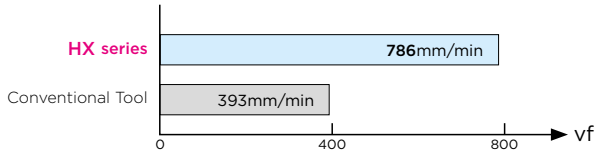
HX series



Equipment Component (FCD450)

·Tool: MDW 0850HX5 (ø8.5mm 5D)
·Drilling Distance: 60m
·Cutting Conditions: vc = 70m/min, f = 0.30mm/rev, vf=786mm/min, H = 27mm (Blind), Internal Coolant Supply (Water-soluble)

Double the drilling efficiency of conventional tools.



Engine Component (FCD700)

·Tool: MDW 1200HX3 (ø12.0mm 3D)
·Drilling Distance: 60m
·Cutting Conditions: Conventional Tool: vc = 50m/min, f = 0.22mm/rev, vf = 291.7mm/min
HX type: vc = 50m/min, f = 0.40mm/rev, vf = 530.4mm/min
H = 28mm (Blind), Internal Coolant Supply (Water-soluble)

Stable drilling performance with 1.8 times the efficiency of conventional tools.

Cutting Edge Wear Comparison after Fixed Tool Life

Conventional Tool (f = **0.22**mm/rev)



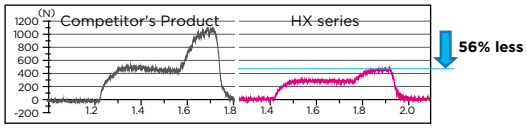
HX type (f = **0.40**mm/rev)



Machine Component (Sintered Material)

·Tool: MDW 0570HX3
·Cutting Conditions: vc = 70m/min, f = 0.9mm/rev, H = 27mm (Blind), Internal Coolant Supply (Water-soluble)

Less cutting force and edge chipping than competitor's products.





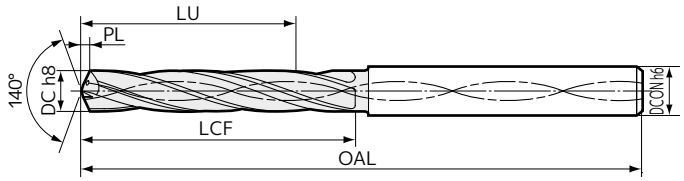
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø3.0 to 4.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	MDW 0300HX3	13.5	18.0	68.5	0.5	3.0	1
	5	★	0300HX5	24.0	28.5	78.5	0.5	3.0	1
	8	★	0300HX8	29.0	33.5	81.5	0.5	3.0	1
3.1	3	★	MDW 0310HX3	16.0	20.6	72.6	0.6	4.0	1
	5	★	0310HX5	28.0	32.6	86.6	0.6	4.0	1
	8		0310HX8	34.5	39.1	92.6	0.6	4.0	1
3.2	3	▲	MDW 0320HX3	15.8	20.6	72.6	0.6	4.0	1
	5	▲	0320HX5	27.8	32.6	86.6	0.6	4.0	1
	8		0320HX8	34.3	39.1	92.6	0.6	4.0	1
3.3	3	★	MDW 0330HX3	15.7	20.6	72.6	0.6	4.0	1
	5	★	0330HX5	27.7	32.6	86.6	0.6	4.0	1
	8		0330HX8	34.2	39.1	92.6	0.6	4.0	1
3.4	3	▲	MDW 0340HX3	15.5	20.6	72.6	0.6	4.0	1
	5	★	0340HX5	27.5	32.6	86.6	0.6	4.0	1
	8		0340HX8	34.0	39.1	92.6	0.6	4.0	1
3.5	3	▲	MDW 0350HX3	15.4	20.6	72.6	0.6	4.0	1
	5	★	0350HX5	27.4	32.6	86.6	0.6	4.0	1
	8	▲	0350HX8	33.9	39.1	92.6	0.6	4.0	1
3.6	3	★	MDW 0360HX3	17.8	23.2	72.7	0.7	4.0	1
	5	▲	0360HX5	31.3	36.7	86.7	0.7	4.0	1
	8		0360HX8	39.3	44.7	92.7	0.7	4.0	1
3.7	3	★	MDW 0370HX3	17.7	23.2	72.7	0.7	4.0	1
	5	▲	0370HX5	31.2	36.7	86.7	0.7	4.0	1
	8		0370HX8	39.2	44.7	92.7	0.7	4.0	1
3.8	3	★	MDW 0380HX3	17.5	23.2	72.7	0.7	4.0	1
	5	▲	0380HX5	31.0	36.7	86.7	0.7	4.0	1
	8		0380HX8	39.0	44.7	92.7	0.7	4.0	1
3.9	3	▲	MDW 0390HX3	17.4	23.2	72.7	0.7	4.0	1
	5	▲	0390HX5	30.9	36.7	86.7	0.7	4.0	1
	8		0390HX8	38.9	44.7	92.7	0.7	4.0	1
4.0	3	★	MDW 0400HX3	17.2	23.2	72.7	0.7	4.0	1
	5	★	0400HX5	30.7	36.7	86.7	0.7	4.0	1
	8	★	0400HX8	38.7	44.7	92.7	0.7	4.0	1
4.1	3	▲	MDW 0410HX3	19.6	25.7	80.7	0.7	5.0	1
	5	★	0410HX5	34.6	40.7	98.7	0.7	5.0	1
	8		0410HX8	44.1	50.2	105.7	0.7	5.0	1
4.2	3	★	MDW 0420HX3	19.5	25.8	80.8	0.8	5.0	1
	5	★	0420HX5	34.5	40.8	98.8	0.8	5.0	1
	8		0420HX8	44.0	50.3	105.8	0.8	5.0	1
4.3	3	▲	MDW 0430HX3	19.4	25.8	80.8	0.8	5.0	1
	5	★	0430HX5	34.4	40.8	98.8	0.8	5.0	1
	8		0430HX8	43.9	50.3	105.8	0.8	5.0	1
4.4	3	▲	MDW 0440HX3	19.2	25.8	80.8	0.8	5.0	1
	5	▲	0440HX5	34.2	40.8	98.8	0.8	5.0	1
	8		0440HX8	43.7	50.3	105.8	0.8	5.0	1
4.5	3	★	MDW 0450HX3	19.1	25.8	80.8	0.8	5.0	1
	5	▲	0450HX5	34.1	40.8	98.8	0.8	5.0	1
	8	★	0450HX8	43.6	50.3	105.8	0.8	5.0	1
4.6	3	▲	MDW 0460HX3	21.4	28.3	80.8	0.8	5.0	1
	5	★	0460HX5	37.9	44.8	98.8	0.8	5.0	1
	8		0460HX8	48.9	55.8	105.8	0.8	5.0	1
4.7	3	★	MDW 0470HX3	21.4	28.4	80.9	0.9	5.0	1
	5	▲	0470HX5	37.9	44.9	98.9	0.9	5.0	1
	8		0470HX8	48.9	55.9	105.9	0.9	5.0	1

Grade: ACX70

Diameter ø4.8 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.8	3	▲	MDW 0480HX3	21.2	28.4	80.9	0.9	5.0	1
	5	▲	0480HX5	37.7	44.9	98.9	0.9	5.0	1
	8		0480HX8	48.7	55.9	105.9	0.9	5.0	1
4.9	3	▲	MDW 0490HX3	21.1	28.4	80.9	0.9	5.0	1
	5	▲	0490HX5	37.6	44.9	98.9	0.9	5.0	1
	8		0490HX8	48.6	55.9	105.9	0.9	5.0	1
5.0	3	★	MDW 0500HX3	20.9	28.4	80.9	0.9	5.0	1
	5	★	0500HX5	37.4	44.9	98.9	0.9	5.0	1
	8	★	0500HX8	48.4	55.9	105.9	0.9	5.0	1
5.1	3	★	MDW 0510HX3	20.8	28.4	82.9	0.9	6.0	1
	5	★	0510HX5	37.3	44.9	100.9	0.9	6.0	1
	8	★	0510HX8	53.8	61.4	118.9	0.9	6.0	1
5.2	3	▲	MDW 0520HX3	20.6	28.4	82.9	0.9	6.0	1
	5	★	0520HX5	37.1	44.9	100.9	0.9	6.0	1
	8		0520HX8	53.6	61.4	118.9	0.9	6.0	1
5.3	3	▲	MDW 0530HX3	20.6	28.5	83.0	1.0	6.0	1
	5	▲	0530HX5	37.1	45.0	101.0	1.0	6.0	1
	8		0530HX8	53.6	61.5	119.0	1.0	6.0	1
5.4	3	▲	MDW 0540HX3	20.4	28.5	83.0	1.0	6.0	1
	5	▲	0540HX5	36.9	45.0	101.0	1.0	6.0	1
	8		0540HX8	53.4	61.5	119.0	1.0	6.0	1
5.5	3	★	MDW 0550HX3	20.3	28.5	83.0	1.0	6.0	1
	5	▲	0550HX5	36.8	45.0	101.0	1.0	6.0	1
	8	★	0550HX8	53.3	61.5	119.0	1.0	6.0	1
5.6	3	★	MDW 0560HX3	22.6	31.0	83.0	1.0	6.0	1
	5	▲	0560HX5	40.6	49.0	101.0	1.0	6.0	1
	8		0560HX8	58.6	67.0	119.0	1.0	6.0	1
5.7	3	★	MDW 0570HX3	22.5	31.0	83.0	1.0	6.0	1
	5	★	0570HX5	40.5	49.0	101.0	1.0	6.0	1
	8		0570HX8	58.5	67.0	119.0	1.0	6.0	1
5.8	3	★	MDW 0580HX3	22.4	31.1	83.1	1.1	6.0	1
	5	★	0580HX5	40.4	49.1	101.1	1.1	6.0	1
	8	★	0580HX8	58.4	67.1	119.1	1.1	6.0	1
5.9	3	★	MDW 0590HX3	22.3	31.1	83.1	1.1	6.0	1
	5	★	0590HX5	40.3	49.1	101.1	1.1	6.0	1
	8	▲	0590HX8	58.3	67.1	119.1	1.1	6.0	1
6.0	3	★	MDW 0600HX3	22.1	31.1	83.1	1.1	6.0	1
	5	★	0600HX5	40.1	49.1	101.1	1.1	6.0	1
	8	★	0600HX8	58.1	67.1	119.1	1.1	6.0	1
6.1	3	★	MDW 0610HX3	24.5	33.6	89.1	1.1	7.0	1
	5	★	0610HX5	44.0	53.1	110.1	1.1	7.0	1
	8		0610HX8	63.5	72.6	131.1	1.1	7.0	1
6.2	3	★	MDW 0620HX3	24.3	33.6	89.1	1.1	7.0	1
	5	★	0620HX5	43.8	53.1	110.1	1.1	7.0	1
	8		0620HX8	63.3	72.6	131.1	1.1	7.0	1
6.3	3	★	MDW 0630HX3	24.2	33.6	89.1	1.1	7.0	1
	5	★	0630HX5	43.7	53.1	110.1	1.1	7.0	1
	8		0630HX8	63.2	72.6	131.1	1.1	7.0	1
6.4	3	▲	MDW 0640HX3	24.1	33.7	89.2	1.2	7.0	1
	5	★	0640HX5	43.6	53.2	110.2	1.2	7.0	1
	8		0640HX8	63.1	72.7	131.2	1.2	7.0	1
6.5	3	▲	MDW 0650HX3	24.0	33.7	89.2	1.2	7.0	1
	5	▲	0650HX5	43.5	53.2	110.2	1.2	7.0	1
	8	★	0650HX8	63.0	72.7	131.2	1.2	7.0	1

Grade: ACX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

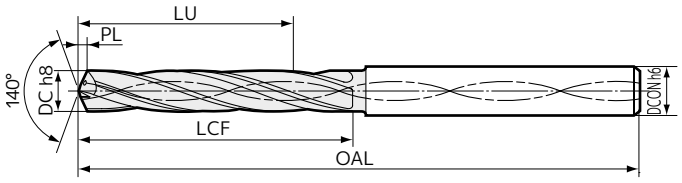
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø6.6 to 8.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	3	★	MDW 0660HX3	26.3	36.2	89.2	1.2	7.0	1
	5	★	0660HX5	47.3	57.2	110.2	1.2	7.0	1
	8		0660HX8	68.3	78.2	131.2	1.2	7.0	1
6.7	3	★	MDW 0670HX3	26.2	36.2	89.2	1.2	7.0	1
	5	★	0670HX5	47.2	57.2	110.2	1.2	7.0	1
	8	★	0670HX8	68.2	78.2	131.2	1.2	7.0	1
6.8	3	★	MDW 0680HX3	26.0	36.2	89.2	1.2	7.0	1
	5	★	0680HX5	47.0	57.2	110.2	1.2	7.0	1
	8	★	0680HX8	68.0	78.2	131.2	1.2	7.0	1
6.9	3	★	MDW 0690HX3	26.0	36.3	89.3	1.3	7.0	1
	5	★	0690HX5	47.0	57.3	110.3	1.3	7.0	1
	8	★	0690HX8	68.0	78.3	131.3	1.3	7.0	1
7.0	3	★	MDW 0700HX3	25.8	36.3	89.3	1.3	7.0	1
	5	★	0700HX5	46.8	57.3	110.3	1.3	7.0	1
	8	★	0700HX8	67.8	78.3	131.3	1.3	7.0	1
7.1	3	▲	MDW 0710HX3	28.2	38.8	95.3	1.3	8.0	1
	5	▲	0710HX5	50.7	61.3	119.3	1.3	8.0	1
	8		0710HX8	73.2	83.8	143.3	1.3	8.0	1
7.2	3	★	MDW 0720HX3	28.0	38.8	95.3	1.3	8.0	1
	5	▲	0720HX5	50.5	61.3	119.3	1.3	8.0	1
	8		0720HX8	73.0	83.8	143.3	1.3	8.0	1
7.3	3	▲	MDW 0730HX3	27.9	38.8	95.3	1.3	8.0	1
	5	▲	0730HX5	50.4	61.3	119.3	1.3	8.0	1
	8		0730HX8	72.9	83.8	143.3	1.3	8.0	1
7.4	3	▲	MDW 0740HX3	27.7	38.8	95.3	1.3	8.0	1
	5	★	0740HX5	50.2	61.3	119.3	1.3	8.0	1
	8		0740HX8	72.7	83.8	143.3	1.3	8.0	1
7.5	3	★	MDW 0750HX3	27.7	38.9	95.4	1.4	8.0	1
	5	★	0750HX5	50.2	61.4	119.4	1.4	8.0	1
	8	★	0750HX8	72.7	83.9	143.4	1.4	8.0	1
7.6	3	★	MDW 0760HX3	30.0	41.4	95.4	1.4	8.0	1
	5	▲	0760HX5	54.0	65.4	119.4	1.4	8.0	1
	8		0760HX8	78.0	89.4	143.4	1.4	8.0	1
7.7	3	★	MDW 0770HX3	29.9	41.4	95.4	1.4	8.0	1
	5	★	0770HX5	53.9	65.4	119.4	1.4	8.0	1
	8		0770HX8	77.9	89.4	143.4	1.4	8.0	1
7.8	3	★	MDW 0780HX3	29.7	41.4	95.4	1.4	8.0	1
	5	★	0780HX5	53.7	65.4	119.4	1.4	8.0	1
	8		0780HX8	77.7	89.4	143.4	1.4	8.0	1
7.9	3	▲	MDW 0790HX3	29.6	41.4	95.4	1.4	8.0	1
	5	★	0790HX5	53.6	65.4	119.4	1.4	8.0	1
	8		0790HX8	77.6	89.4	143.4	1.4	8.0	1
8.0	3	★	MDW 0800HX3	29.5	41.5	95.5	1.5	8.0	1
	5	★	0800HX5	53.5	65.5	119.5	1.5	8.0	1
	8	★	0800HX8	77.5	89.5	143.5	1.5	8.0	1
8.1	3	★	MDW 0810HX3	31.9	44.0	101.5	1.5	9.0	1
	5	★	0810HX5	57.4	69.5	128.5	1.5	9.0	1
	8		0810HX8	82.9	95.0	155.5	1.5	9.0	1
8.2	3	★	MDW 0820HX3	31.7	44.0	101.5	1.5	9.0	1
	5	★	0820HX5	57.2	69.5	128.5	1.5	9.0	1
	8		0820HX8	82.7	95.0	155.5	1.5	9.0	1
8.3	3	★	MDW 0830HX3	31.6	44.0	101.5	1.5	9.0	1
	5	★	0830HX5	57.1	69.5	128.5	1.5	9.0	1
	8		0830HX8	82.6	95.0	155.5	1.5	9.0	1

Grade: ACX70

Diameter ø8.4 to 10.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.4	3	▲	MDW 0840HX3	31.4	44.0	101.5	1.5	9.0	1
	5	▲	0840HX5	56.9	69.5	128.5	1.5	9.0	1
	8		0840HX8	82.4	95.0	155.5	1.5	9.0	1
8.5	3	★	MDW 0850HX3	31.3	44.0	101.5	1.5	9.0	1
	5	★	0850HX5	56.8	69.5	128.5	1.5	9.0	1
	8	★	0850HX8	82.3	95.0	155.5	1.5	9.0	1
8.6	3	★	MDW 0860HX3	33.7	46.6	101.6	1.6	9.0	1
	5	★	0860HX5	60.7	73.6	128.6	1.6	9.0	1
	8		0860HX8	87.7	100.6	155.6	1.6	9.0	1
8.7	3	★	MDW 0870HX3	33.6	46.6	101.6	1.6	9.0	1
	5	★	0870HX5	60.6	73.6	128.6	1.6	9.0	1
	8		0870HX8	87.6	100.6	155.6	1.6	9.0	1
8.8	3	★	MDW 0880HX3	33.4	46.6	101.6	1.6	9.0	1
	5	★	0880HX5	60.4	73.6	128.6	1.6	9.0	1
	8	★	0880HX8	87.4	100.6	155.6	1.6	9.0	1
8.9	3	▲	MDW 0890HX3	33.3	46.6	101.6	1.6	9.0	1
	5	★	0890HX5	60.3	73.6	128.6	1.6	9.0	1
	8		0890HX8	87.3	100.6	155.6	1.6	9.0	1
9.0	3	★	MDW 0900HX3	33.1	46.6	101.6	1.6	9.0	1
	5	★	0900HX5	60.1	73.6	128.6	1.6	9.0	1
	8	★	0900HX8	87.1	100.6	155.6	1.6	9.0	1
9.1	3	★	MDW 0910HX3	35.6	49.2	107.7	1.7	10.0	1
	5	★	0910HX5	64.1	77.7	137.7	1.7	10.0	1
	8		0910HX8	92.6	106.2	167.7	1.7	10.0	1
9.2	3	▲	MDW 0920HX3	35.4	49.2	107.7	1.7	10.0	1
	5	▲	0920HX5	63.9	77.7	137.7	1.7	10.0	1
	8		0920HX8	92.4	106.2	167.7	1.7	10.0	1
9.3	3	★	MDW 0930HX3	35.3	49.2	107.7	1.7	10.0	1
	5	▲	0930HX5	63.8	77.7	137.7	1.7	10.0	1
	8		0930HX8	92.3	106.2	167.7	1.7	10.0	1
9.4	3	★	MDW 0940HX3	35.1	49.2	107.7	1.7	10.0	1
	5	★	0940HX5	63.6	77.7	137.7	1.7	10.0	1
	8		0940HX8	92.1	106.2	167.7	1.7	10.0	1
9.5	3	★	MDW 0950HX3	35.0	49.2	107.7	1.7	10.0	1
	5	★	0950HX5	63.5	77.7	137.7	1.7	10.0	1
	8	★	0950HX8	92.0	106.2	167.7	1.7	10.0	1
9.6	3	▲	MDW 0960HX3	37.3	51.7	107.7	1.7	10.0	1
	5	▲	0960HX5	67.3	81.7	137.7	1.7	10.0	1
	8		0960HX8	97.3	111.7	167.7	1.7	10.0	1
9.7	3	★	MDW 0970HX3	37.3	51.8	107.8	1.8	10.0	1
	5	★	0970HX5	67.3	81.8	137.8	1.8	10.0	1
	8		0970HX8	97.3	111.8	167.8	1.8	10.0	1
9.8	3	★	MDW 0980HX3	37.1	51.8	107.8	1.8	10.0	1
	5	▲	0980HX5	67.1	81.8	137.8	1.8	10.0	1
	8		0980HX8	97.1	111.8	167.8	1.8	10.0	1
9.9	3	▲	MDW 0990HX3	37.0	51.8	107.8	1.8	10.0	1
	5	▲	0990HX5	67.0	81.8	137.8	1.8	10.0	1
	8		0990HX8	97.0	111.8	167.8	1.8	10.0	1
10.0	3	★	MDW 1000HX3	36.8	51.8	107.8	1.8	10.0	1
	5	★	1000HX5	66.8	81.8	137.8	1.8	10.0	1
	8	★	1000HX8	96.8	111.8	167.8	1.8	10.0	1
10.1	3	▲	MDW 1010HX3	39.2	54.3	117.8	1.8	11.0	1
	5	★	1010HX5	70.7	85.8	150.8	1.8	11.0	1
	8		1010HX8	102.2	117.3	183.8	1.8	11.0	1

Grade: ACX70

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

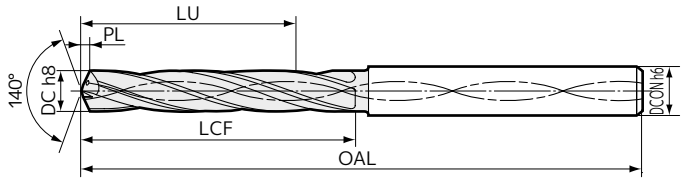
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø10.2 to 11.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.2	3	▲	MDW 1020HX3	39.1	54.4	117.9	1.9	11.0	1
	5	★	1020HX5	70.6	85.9	150.9	1.9	11.0	1
	8		1020HX8	102.1	117.4	183.9	1.9	11.0	1
10.3	3	★	MDW 1030HX3	39.0	54.4	117.9	1.9	11.0	1
	5	★	1030HX5	70.5	85.9	150.9	1.9	11.0	1
	8	★	1030HX8	102.0	117.4	183.9	1.9	11.0	1
10.4	3	★	MDW 1040HX3	38.8	54.4	117.9	1.9	11.0	1
	5	★	1040HX5	70.3	85.9	150.9	1.9	11.0	1
	8		1040HX8	101.8	117.4	183.9	1.9	11.0	1
10.5	3	★	MDW 1050HX3	38.7	54.4	117.9	1.9	11.0	1
	5	★	1050HX5	70.2	85.9	150.9	1.9	11.0	1
	8	★	1050HX8	101.7	117.4	183.9	1.9	11.0	1
10.6	3	★	MDW 1060HX3	41.0	56.9	117.9	1.9	11.0	1
	5	★	1060HX5	74.0	89.9	150.9	1.9	11.0	1
	8		1060HX8	107.0	122.9	183.9	1.9	11.0	1
10.7	3	★	MDW 1070HX3	40.9	56.9	117.9	1.9	11.0	1
	5	★	1070HX5	73.9	89.9	150.9	1.9	11.0	1
	8		1070HX8	106.9	122.9	183.9	1.9	11.0	1
10.8	3	★	MDW 1080HX3	40.8	57.0	118.0	2.0	11.0	1
	5	★	1080HX5	73.8	90.0	151.0	2.0	11.0	1
	8		1080HX8	106.8	123.0	184.0	2.0	11.0	1
10.9	3	▲	MDW 1090HX3	40.7	57.0	118.0	2.0	11.0	1
	5	▲	1090HX5	73.7	90.0	151.0	2.0	11.0	1
	8		1090HX8	106.7	123.0	184.0	2.0	11.0	1
11.0	3	★	MDW 1100HX3	40.5	57.0	118.0	2.0	11.0	1
	5	★	1100HX5	73.5	90.0	151.0	2.0	11.0	1
	8	★	1100HX8	106.5	123.0	184.0	2.0	11.0	1
11.1	3	★	MDW 1110HX3	42.9	59.5	124.0	2.0	12.0	1
	5	★	1110HX5	77.4	94.0	160.0	2.0	12.0	1
	8		1110HX8	111.9	128.5	196.0	2.0	12.0	1
11.2	3	▲	MDW 1120HX3	42.7	59.5	124.0	2.0	12.0	1
	5	★	1120HX5	77.2	94.0	160.0	2.0	12.0	1
	8		1120HX8	111.7	128.5	196.0	2.0	12.0	1
11.3	3	▲	MDW 1130HX3	42.7	59.6	124.1	2.1	12.0	1
	5	▲	1130HX5	77.2	94.1	160.1	2.1	12.0	1
	8		1130HX8	111.7	128.6	196.1	2.1	12.0	1
11.4	3	▲	MDW 1140HX3	42.5	59.6	124.1	2.1	12.0	1
	5	▲	1140HX5	77.0	94.1	160.1	2.1	12.0	1
	8		1140HX8	111.5	128.6	196.1	2.1	12.0	1
11.5	3	★	MDW 1150HX3	42.4	59.6	124.1	2.1	12.0	1
	5	★	1150HX5	76.9	94.1	160.1	2.1	12.0	1
	8	★	1150HX8	111.4	128.6	196.1	2.1	12.0	1
11.6	3	★	MDW 1160HX3	44.7	62.1	124.1	2.1	12.0	1
	5	★	1160HX5	80.7	98.1	160.1	2.1	12.0	1
	8		1160HX8	116.7	134.1	196.1	2.1	12.0	1
11.7	3	★	MDW 1170HX3	44.6	62.1	124.1	2.1	12.0	1
	5	★	1170HX5	80.6	98.1	160.1	2.1	12.0	1
	8		1170HX8	116.6	134.1	196.1	2.1	12.0	1
11.8	3	▲	MDW 1180HX3	44.4	62.1	124.1	2.1	12.0	1
	5	★	1180HX5	80.4	98.1	160.1	2.1	12.0	1
	8		1180HX8	116.4	134.1	196.1	2.1	12.0	1
11.9	3	▲	MDW 1190HX3	44.4	62.2	124.2	2.2	12.0	1
	5	▲	1190HX5	80.4	98.2	160.2	2.2	12.0	1
	8		1190HX8	116.4	134.2	196.2	2.2	12.0	1

Grade: ACX70

Diameter ø12.0 to 13.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.0	3	★	MDW 1200HX3	44.2	62.2	124.2	2.2	12.0	1
	5	★	1200HX5	80.2	98.2	160.2	2.2	12.0	1
	8	★	1200HX8	116.2	134.2	196.2	2.2	12.0	1
12.1	3		MDW 1210HX3	46.6	64.7	130.2	2.2	13.0	1
	5		1210HX5	84.1	102.2	169.2	2.2	13.0	1
	8		1210HX8	121.6	139.7	208.2	2.2	13.0	1
12.2	3		MDW 1220HX3	46.4	64.7	130.2	2.2	13.0	1
	5		1220HX5	83.9	102.2	169.2	2.2	13.0	1
	8		1220HX8	121.4	139.7	208.2	2.2	13.0	1
12.3	3		MDW 1230HX3	46.3	64.7	130.2	2.2	13.0	1
	5		1230HX5	83.8	102.2	169.2	2.2	13.0	1
	8		1230HX8	121.3	139.7	208.2	2.2	13.0	1
12.4	3		MDW 1240HX3	46.2	64.8	130.3	2.3	13.0	1
	5		1240HX5	83.7	102.3	169.3	2.3	13.0	1
	8		1240HX8	121.2	139.8	208.3	2.3	13.0	1
12.5	3	★	MDW 1250HX3	46.1	64.8	130.3	2.3	13.0	1
	5	★	1250HX5	83.6	102.3	169.3	2.3	13.0	1
	8	★	1250HX8	121.1	139.8	208.3	2.3	13.0	1
12.6	3		MDW 1260HX3	48.4	67.3	130.3	2.3	13.0	1
	5		1260HX5	87.4	106.3	169.3	2.3	13.0	1
	8		1260HX8	126.4	145.3	208.3	2.3	13.0	1
12.7	3		MDW 1270HX3	48.3	67.3	130.3	2.3	13.0	1
	5		1270HX5	87.3	106.3	169.3	2.3	13.0	1
	8		1270HX8	126.3	145.3	208.3	2.3	13.0	1
12.8	3		MDW 1280HX3	48.1	67.3	130.3	2.3	13.0	1
	5		1280HX5	87.1	106.3	169.3	2.3	13.0	1
	8		1280HX8	126.1	145.3	208.3	2.3	13.0	1
12.9	3		MDW 1290HX3	48.0	67.3	130.3	2.3	13.0	1
	5		1290HX5	87.0	106.3	169.3	2.3	13.0	1
	8		1290HX8	126.0	145.3	208.3	2.3	13.0	1
13.0	3	★	MDW 1300HX3	47.9	67.4	130.4	2.4	13.0	1
	5	★	1300HX5	86.9	106.4	169.4	2.4	13.0	1
	8	★	1300HX8	125.9	145.4	208.4	2.4	13.0	1
13.1	3		MDW 1310HX3	50.3	69.9	136.4	2.4	14.0	1
	5		1310HX5	90.8	110.4	178.4	2.4	14.0	1
	8		1310HX8	131.3	150.9	220.4	2.4	14.0	1
13.2	3		MDW 1320HX3	50.1	69.9	136.4	2.4	14.0	1
	5		1320HX5	90.6	110.4	178.4	2.4	14.0	1
	8		1320HX8	131.1	150.9	220.4	2.4	14.0	1
13.3	3		MDW 1330HX3	50.0	69.9	136.4	2.4	14.0	1
	5		1330HX5	90.5	110.4	178.4	2.4	14.0	1
	8		1330HX8	131.0	150.9	220.4	2.4	14.0	1
13.4	3		MDW 1340HX3	49.8	69.9	136.4	2.4	14.0	1
	5		1340HX5	90.3	110.4	178.4	2.4	14.0	1
	8		1340HX8	130.8	150.9	220.4	2.4	14.0	1
13.5	3	★	MDW 1350HX3	49.8	70.0	136.5	2.5	14.0	1
	5	★	1350HX5	90.3	110.5	178.5	2.5	14.0	1
	8	★	1350HX8	130.8	151.0	220.5	2.5	14.0	1
13.6	3		MDW 1360HX3	52.1	72.5	136.5	2.5	14.0	1
	5		1360HX5	94.1	114.5	178.5	2.5	14.0	1
	8		1360HX8	136.1	156.5	220.5	2.5	14.0	1
13.7	3		MDW 1370HX3	52.0	72.5	136.5	2.5	14.0	1
	5		1370HX5	94.0	114.5	178.5	2.5	14.0	1
	8		1370HX8	136.0	156.5	220.5	2.5	14.0	1

Grade: ACX70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

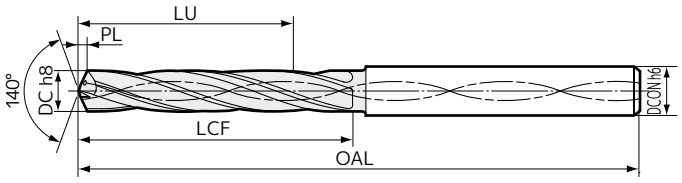
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø13.8 to 15.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**MDW 1380HX3**	51.8	72.5	136.5	2.5	14.0	1
13.8	5		**1380HX5**	93.8	114.5	178.5	2.5	14.0	1
	8		**1380HX8**	135.8	156.5	220.5	2.5	14.0	1
	3		**MDW 1390HX3**	51.7	72.5	136.5	2.5	14.0	1
13.9	5		**1390HX5**	93.7	114.5	178.5	2.5	14.0	1
	8		**1390HX8**	135.7	156.5	220.5	2.5	14.0	1
	3	★	**MDW 1400HX3**	51.5	72.5	136.5	2.5	14.0	1
14.0	5	★	**1400HX5**	93.5	114.5	178.5	2.5	14.0	1
	8		**1400HX8**	135.5	156.5	220.5	2.5	14.0	1
	3		**MDW 1410HX3**	54.0	75.1	142.6	2.6	15.0	1
14.1	5		**1410HX5**	97.5	118.6	187.6	2.6	15.0	1
	8		**1410HX8**	141.0	162.1	232.6	2.6	15.0	1
	3		**MDW 1420HX3**	53.8	75.1	142.6	2.6	15.0	1
14.2	5		**1420HX5**	97.3	118.6	187.6	2.6	15.0	1
	8		**1420HX8**	140.8	162.1	232.6	2.6	15.0	1
	3		**MDW 1430HX3**	53.7	75.1	142.6	2.6	15.0	1
14.3	5		**1430HX5**	97.2	118.6	187.6	2.6	15.0	1
	8		**1430HX8**	140.7	162.1	232.6	2.6	15.0	1
	3		**MDW 1440HX3**	53.5	75.1	142.6	2.6	15.0	1
14.4	5		**1440HX5**	97.0	118.6	187.6	2.6	15.0	1
	8		**1440HX8**	140.5	162.1	232.6	2.6	15.0	1
	3	★	**MDW 1450HX3**	53.4	75.1	142.6	2.6	15.0	1
14.5	5	★	**1450HX5**	96.9	118.6	187.6	2.6	15.0	1
	8		**1450HX8**	140.4	162.1	232.6	2.6	15.0	1
	3		**MDW 1460HX3**	55.8	77.7	142.7	2.7	15.0	1
14.6	5		**1460HX5**	100.8	122.7	187.7	2.7	15.0	1
	8		**1460HX8**	145.8	167.7	232.7	2.7	15.0	1
	3		**MDW 1470HX3**	55.7	77.7	142.7	2.7	15.0	1
14.7	5		**1470HX5**	100.7	122.7	187.7	2.7	15.0	1
	8		**1470HX8**	145.7	167.7	232.7	2.7	15.0	1
	3		**MDW 1480HX3**	55.5	77.7	142.7	2.7	15.0	1
14.8	5		**1480HX5**	100.5	122.7	187.7	2.7	15.0	1
	8		**1480HX8**	145.5	167.7	232.7	2.7	15.0	1
	3		**MDW 1490HX3**	55.4	77.7	142.7	2.7	15.0	1
14.9	5		**1490HX5**	100.4	122.7	187.7	2.7	15.0	1
	8		**1490HX8**	145.4	167.7	232.7	2.7	15.0	1
	3	★	**MDW 1500HX3**	55.2	77.7	142.7	2.7	15.0	1
15.0	5	★	**1500HX5**	100.2	122.7	187.7	2.7	15.0	1
	8	★	**1500HX8**	145.2	167.7	232.7	2.7	15.0	1
	3		**MDW 1510HX3**	57.6	80.2	148.7	2.7	16.0	1
15.1	5		**1510HX5**	104.1	126.7	196.7	2.7	16.0	1
	8		**1510HX8**	150.6	173.2	244.7	2.7	16.0	1
	3		**MDW 1520HX3**	57.5	80.3	148.8	2.8	16.0	1
15.2	5		**1520HX5**	104.0	126.8	196.8	2.8	16.0	1
	8		**1520HX8**	150.5	173.3	244.8	2.8	16.0	1
	3		**MDW 1530HX3**	57.4	80.3	148.8	2.8	16.0	1
15.3	5		**1530HX5**	103.9	126.8	196.8	2.8	16.0	1
	8		**1530HX8**	150.4	173.3	244.8	2.8	16.0	1
	3		**MDW 1540HX3**	57.2	80.3	148.8	2.8	16.0	1
15.4	5		**1540HX5**	103.7	126.8	196.8	2.8	16.0	1
	8		**1540HX8**	150.2	173.3	244.8	2.8	16.0	1
	3	★	**MDW 1550HX3**	57.1	80.3	148.8	2.8	16.0	1
15.5	5	★	**1550HX5**	103.6	126.8	196.8	2.8	16.0	1
	8		**1550HX8**	150.1	173.3	244.8	2.8	16.0	1

Grade: ACX70

Diameter ø15.6 to 17.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**MDW 1560HX3**	59.4	82.8	148.8	2.8	16.0	1
15.6	5		**1560HX5**	107.4	130.8	196.8	2.8	16.0	1
	8		**1560HX8**	155.4	178.8	244.8	2.8	16.0	1
	3		**MDW 1570HX3**	59.4	82.9	148.9	2.9	16.0	1
15.7	5		**1570HX5**	107.4	130.9	196.9	2.9	16.0	1
	8		**1570HX8**	155.4	178.9	244.9	2.9	16.0	1
	3		**MDW 1580HX3**	59.2	82.9	148.9	2.9	16.0	1
15.8	5		**1580HX5**	107.2	130.9	196.9	2.9	16.0	1
	8		**1580HX8**	155.2	178.9	244.9	2.9	16.0	1
	3		**MDW 1590HX3**	59.1	82.9	148.9	2.9	16.0	1
15.9	5		**1590HX5**	107.1	130.9	196.9	2.9	16.0	1
	8		**1590HX8**	155.1	178.9	244.9	2.9	16.0	1
	3	★	**MDW 1600HX3**	58.9	82.9	148.9	2.9	16.0	1
16.0	5	★	**1600HX5**	106.9	130.9	196.9	2.9	16.0	1
	8		**1600HX8**	154.9	178.9	244.9	2.9	16.0	1
	3		**MDW 1610HX3**	61.3	85.4	154.9	2.9	17.0	1
16.1	5		**1610HX5**	110.8	134.9	205.9	2.9	17.0	1
	8		**1610HX8**	160.3	184.4	256.9	2.9	17.0	1
	3		**MDW 1620HX3**	61.1	85.4	154.9	2.9	17.0	1
16.2	5		**1620HX5**	110.6	134.9	205.9	2.9	17.0	1
	8		**1620HX8**	160.1	184.4	256.9	2.9	17.0	1
	3		**MDW 1630HX3**	61.1	85.5	155.0	3.0	17.0	1
16.3	5		**1630HX5**	110.6	135.0	206.0	3.0	17.0	1
	8		**1630HX8**	160.1	184.5	257.0	3.0	17.0	1
	3		**MDW 1640HX3**	60.9	85.5	155.0	3.0	17.0	1
16.4	5		**1640HX5**	110.4	135.0	206.0	3.0	17.0	1
	8		**1640HX8**	159.9	184.5	257.0	3.0	17.0	1
	3	★	**MDW 1650HX3**	60.8	85.5	155.0	3.0	17.0	1
16.5	5	★	**1650HX5**	110.3	135.0	206.0	3.0	17.0	1
	8		**1650HX8**	159.8	184.5	257.0	3.0	17.0	1
	3		**MDW 1660HX3**	63.1	88.0	155.0	3.0	17.0	1
16.6	5		**1660HX5**	114.1	139.0	206.0	3.0	17.0	1
	8		**1660HX8**	165.1	190.0	257.0	3.0	17.0	1
	3		**MDW 1670HX3**	63.0	88.0	155.0	3.0	17.0	1
16.7	5		**1670HX5**	114.0	139.0	206.0	3.0	17.0	1
	8		**1670HX8**	165.0	190.0	257.0	3.0	17.0	1
	3		**MDW 1680HX3**	62.9	88.1	155.1	3.1	17.0	1
16.8	5		**1680HX5**	113.9	139.1	206.1	3.1	17.0	1
	8		**1680HX8**	164.9	190.1	257.1	3.1	17.0	1
	3		**MDW 1690HX3**	62.8	88.1	155.1	3.1	17.0	1
16.9	5		**1690HX5**	113.8	139.1	206.1	3.1	17.0	1
	8		**1690HX8**	164.8	190.1	257.1	3.1	17.0	1
	3	★	**MDW 1700HX3**	62.6	88.1	155.1	3.1	17.0	1
17.0	5	★	**1700HX5**	113.6	139.1	206.1	3.1	17.0	1
	8		**1700HX8**	164.6	190.1	257.1	3.1	17.0	1
	3	★	**MDW 1710HX3**	65.0	90.6	161.1	3.1	18.0	1
17.1	5	▲	**1710HX5**	117.5	143.1	217.1	3.1	18.0	1
	8	▲	**1710HX8**	170.0	195.6	269.1	3.1	18.0	1
	3		**MDW 1720HX3**	64.8	90.6	161.1	3.1	18.0	1
17.2	5		**1720HX5**	117.3	143.1	217.1	3.1	18.0	1
	8		**1720HX8**	169.8	195.6	269.1	3.1	18.0	1
	3		**MDW 1730HX3**	64.7	90.6	161.1	3.1	18.0	1
17.3	5		**1730HX5**	117.2	143.1	217.1	3.1	18.0	1
	8		**1730HX8**	169.7	195.6	269.1	3.1	18.0	1

Grade: ACX70

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

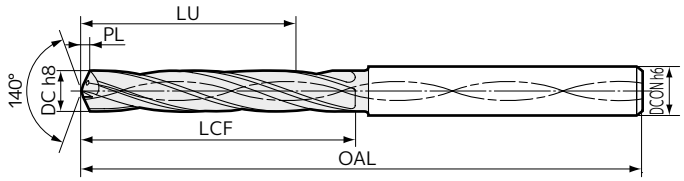
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø17.4 to 18.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
17.4	3		**MDW 1740HX3**	64.6	90.7	161.2	3.2	18.0	1
	5		**1740HX5**	117.1	143.2	217.2	3.2	18.0	1
	8		**1740HX8**	169.6	195.7	269.2	3.2	18.0	1
17.5	3	★	**MDW 1750HX3**	64.5	90.7	161.2	3.2	18.0	1
	5	★	**1750HX5**	117.0	143.2	217.2	3.2	18.0	1
	8		**1750HX8**	169.5	195.7	269.2	3.2	18.0	1
17.6	3		**MDW 1760HX3**	66.8	93.2	161.2	3.2	18.0	1
	5		**1760HX5**	120.8	147.2	217.2	3.2	18.0	1
	8		**1760HX8**	174.8	201.2	269.2	3.2	18.0	1
17.7	3		**MDW 1770HX3**	66.7	93.2	161.2	3.2	18.0	1
	5		**1770HX5**	120.7	147.2	217.2	3.2	18.0	1
	8		**1770HX8**	174.7	201.2	269.2	3.2	18.0	1
17.8	3		**MDW 1780HX3**	66.5	93.2	161.2	3.2	18.0	1
	5		**1780HX5**	120.5	147.2	217.2	3.2	18.0	1
	8		**1780HX8**	174.5	201.2	269.2	3.2	18.0	1
17.9	3		**MDW 1790HX3**	66.5	93.3	161.3	3.3	18.0	1
	5		**1790HX5**	120.5	147.3	217.3	3.3	18.0	1
	8		**1790HX8**	174.5	201.3	269.3	3.3	18.0	1
18.0	3	★	**MDW 1800HX3**	66.3	93.3	161.3	3.3	18.0	1
	5	★	**1800HX5**	120.3	147.3	217.3	3.3	18.0	1
	8		**1800HX8**	174.3	201.3	269.3	3.3	18.0	1
18.1	3		**MDW 1810HX3**	68.7	95.8	167.3	3.3	19.0	1
	5		**1810HX5**	124.2	151.3	224.3	3.3	19.0	1
18.2	3		**MDW 1820HX3**	68.5	95.8	167.3	3.3	19.0	1
	5		**1820HX5**	124.0	151.3	224.3	3.3	19.0	1
18.3	3		**MDW 1830HX3**	68.4	95.8	167.3	3.3	19.0	1
	5		**1830HX5**	123.9	151.3	224.3	3.3	19.0	1

Grade: ACX70

Diameter ø18.4 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
18.4	3		**MDW 1840HX3**	68.2	95.8	167.3	3.3	19.0	1
	5		**1840HX5**	123.7	151.3	224.3	3.3	19.0	1
18.5	3	★	**MDW 1850HX3**	68.2	95.9	167.4	3.4	19.0	1
	5	★	**1850HX5**	123.7	151.4	224.4	3.4	19.0	1
18.6	3		**MDW 1860HX3**	70.5	98.4	167.4	3.4	19.0	1
	5		**1860HX5**	127.5	155.4	224.4	3.4	19.0	1
18.7	3		**MDW 1870HX3**	70.4	98.4	167.4	3.4	19.0	1
	5		**1870HX5**	127.4	155.4	224.4	3.4	19.0	1
18.8	3		**MDW 1880HX3**	70.2	98.4	167.4	3.4	19.0	1
	5		**1880HX5**	127.2	155.4	224.4	3.4	19.0	1
18.9	3		**MDW 1890HX3**	70.1	98.4	167.4	3.4	19.0	1
	5		**1890HX5**	127.1	155.4	224.4	3.4	19.0	1
19.0	3	★	**MDW 1900HX3**	70.0	98.5	167.5	3.5	19.0	1
	5	★	**1900HX5**	127.0	155.5	224.5	3.5	19.0	1
19.1	3		**MDW 1910HX3**	72.4	101.0	173.5	3.5	20.0	1
	5		**1910HX5**	130.9	159.5	233.5	3.5	20.0	1
19.2	3		**MDW 1920HX3**	72.2	101.0	173.5	3.5	20.0	1
	5		**1920HX5**	130.7	159.5	233.5	3.5	20.0	1
19.3	3		**MDW 1930HX3**	72.1	101.0	173.5	3.5	20.0	1
	5		**1930HX5**	130.6	159.5	233.5	3.5	20.0	1
19.4	3		**MDW 1940HX3**	71.9	101.0	173.5	3.5	20.0	1
	5		**1940HX5**	130.4	159.5	233.5	3.5	20.0	1
19.5	3	★	**MDW 1950HX3**	71.8	101.0	173.5	3.5	20.0	1
	5	▲	**1950HX5**	130.3	159.5	233.5	3.5	20.0	1
19.6	3		**MDW 1960HX3**	74.2	103.6	173.6	3.6	20.0	1
	5		**1960HX5**	134.2	163.6	233.6	3.6	20.0	1
19.7	3		**MDW 1970HX3**	74.1	103.6	173.6	3.6	20.0	1
	5		**1970HX5**	134.1	163.6	233.6	3.6	20.0	1
19.8	3		**MDW 1980HX3**	73.9	103.6	173.6	3.6	20.0	1
	5		**1980HX5**	133.9	163.6	233.6	3.6	20.0	1
19.9	3		**MDW 1990HX3**	73.8	103.6	173.6	3.6	20.0	1
	5		**1990HX5**	133.8	163.6	233.6	3.6	20.0	1
20.0	3	★	**MDW 2000HX3**	73.6	103.6	173.6	3.6	20.0	1
	5	★	**2000HX5**	133.6	163.6	233.6	3.6	20.0	1

Grade: ACX70

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Grey Cast Iron GG-25	Ductile Cast Iron GGG-40.3
ø3.0	n	7,400	5,300
	vc	50 - **70** - 90	40 - **50** - 80
	f	0.10 - **0.20** - 0.30	0.12 - **0.18** - 0.24
ø5.0	n	4,500	3,800
	vc	50 - **70** - 90	40 - **50** - 80
	f	0.15 - **0.25** - 0.35	0.15 - **0.22** - 0.30
ø10.0	n	2,500	1,900
	vc	60 - **80** - 100	50 - **60** - 90
	f	0.20 - **0.35** - 0.50	0.20 - **0.30** - 0.40
ø20.0	n	1,600	1,000
	vc	70 - **100** - 120	60 - **80** - 100
	f	0.25 - **0.50** - 0.70	0.25 - **0.45** - 0.60

Min. - **Optimum** - Max.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

XHGS series/PHT series



■ General Features

Super MULTIDRILL XHGS series, a next-generation drill specialized for deep hole drilling, features high drill strength and stable chip control to further enhance efficiency of deep hole drilling.

■ Features

● Deep hole drilling

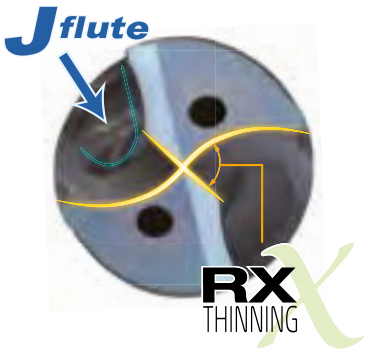
- J-flute shape achieves improved chip control during deep hole drilling
- High-efficiency drilling at over vf = 1,000mm/min at depths 20 times the diameter (diameter ø5, equivalent to S48C)
- Special web thinning shape (RX THINNING) reduces drilling force during high-efficiency machining

● Long tool life

- Special DEX Coat provides long tool life on a wide variety of work materials
- Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring long, stable tool life

● Eco-friendly

- Compatible with the MQL (Minimum Quantity Lubrication) system
- Compatible with dual-fluid mist (simultaneous spray of oil and water)



■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of Items
Deep Hole Drilling	MDW□□□□XHGS10	ø2.1 to 16.0	up to 10	76 items in stock
	MDW□□□□XHGS12	ø2.5 to 16.0	up to 12	28 items in stock
	MDW□□□□XHGS15	ø2.1 to 16.0	up to 15	76 items in stock
	MDW□□□□XHGS20	ø2.1 to 14.0	up to 20	72 items in stock
	MDW□□□□XHGS25	ø2.1 to 12.0	up to 25	68 items in stock
	MDW□□□□XHGS30	ø2.1 to 10.0	up to 30	64 items in stock
For Guide Hole	MDW□□□□PHT	ø2.1 to 16.0	up to 2	76 items in stock

■ Application Examples

● Automotive Component (equivalent to C35E)

Tool	: ø5.0x115mm (PHT series), ø5.0x170mm (XHGS series)
Machine	: Horizontal Single-Spindle NC Machine
Coolant	: MQL (Air Pressure 0.5MPa, Volume approx. 4cc/h)
Cutting Conditions	: vc = 80m/min, f = 0.28mm/rev, H = 85mm per hole (3 holes per unit)
Tool Life	: 500 units (113m)

● Automotive Component (equivalent to C45)

Tool	: ø6.0x170mm (PHT series), ø6.0x230mm (XHGS series)
Machine	: Horizontal Single-Spindle NC Machine
Coolant	: MQL (Air Pressure 0.5MPa, Volume approx. 40cc/h)
Cutting Conditions	: vc = 80m/min, f = 0.18mm/rev, H = 110mm per hole (4 holes per unit)
Tool Life	: 150 units (113m)

● Automotive Component (equivalent to EN-GJS-700-2)

Tool	: ø5.0x105mm (PHT series), ø5.0x155mm (XHGS series)
Machine	: Horizontal Single-Spindle NC Machine
Coolant	: MQL (Air Pressure 0.4MPa, Volume approx. 4cc/h)
Cutting Conditions	: vc = 50m/min, f = 0.18mm/rev, H = 60mm per hole (5 holes per unit)
Tool Life	: 400 units (120m)

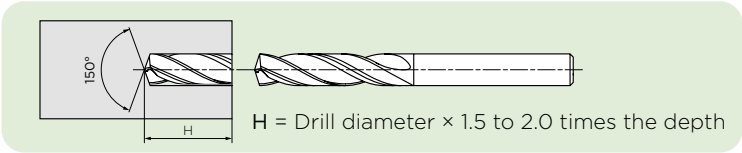
● Machine Component (equivalent to C45)

Tool	: ø6.0x90mm (PHT series), ø6.0x145mm (XHGS series)
Machine	: Horizontal Single-Spindle NC Machine
Coolant	: MQL (Air Pressure 0.5MPa, Volume approx. 60cc/h)
Cutting Conditions	: vc = 80m/min, f = 0.20mm/rev, H = 62mm per hole (3 holes per unit)
Tool Life	: 550 units (104m)

■ Recommended Drilling Method

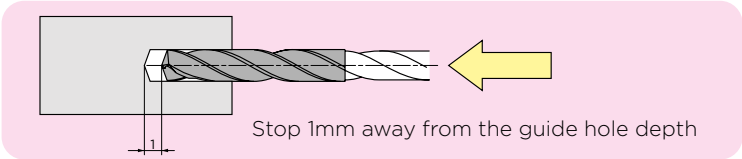
(1) Make a guide hole using the PHT series

● Select the same nominal diameter for the PHT series dedicated guide hole drill as the XHGS series deep hole drill. (The guide drill diameter is designed to be 0.02mm to 0.05mm larger than the long drill diameter.)



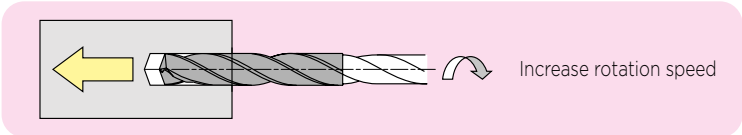
(2) Feed the XHGS series deep hole drill through the guide hole at low rotation speed

● Spindle Speed: 500min^{-1}
● Feed Rate: 1,000 to 2,000mm/min



* If the drill is inserted into the guide hole at the set cutting speed, peripheral run-out may cause damage to the drill's peripheral edges.

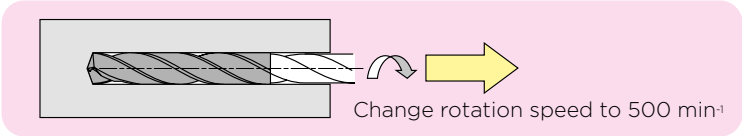
(3) Increase rotation speed until the set cutting speed is reached, then start normal drilling operation



* On some NC machines, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

(4) After drilling, rotation speed is reduced and the drill is retracted from the work material

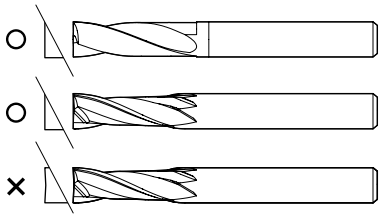
● Spindle Speed: 500min^{-1} Feed Rate: 1,000 to 2,000mm/min



* Retracting the drill from the work material at a high rotation speed is dangerous as doing so may result in breakage due to runout.

(5) Other notes

● Spot facing should be performed first if the entry surface is non-flat (e.g., slanted or cylindrical).



Perform spot facing using an endmill or Flat MULTIDRILL MDF series (see page J26).

Concave ended endmills cannot be used.

● If the exit side is a non-flat surface, reduce the feed rate to f=0.05mm/rev immediately before the breakthrough point to prevent the drill from fracturing or burrs from forming.

■ Coolant

(1) Internal coolant supply

● Use coolant equivalent to JIS A1-1 (emulsion).
● Pump Pressure Steel: 1.5 to 2.0MPa (higher pressure results in a stronger cooling effect, which affects chips and wear)
Cast iron and aluminum alloy: 4.0 to 6.0MPa (prioritize cooling performance)

(2) Internal MQL

● Air pressure : 0.5MPa or greater
● Evacuation volume : It is recommended to set the maximum evacuation volume for your equipment.
*Consult the manufacturer if you intend to machine aluminum alloy.

(3) Internal dual-fluid mist

● Air pressure : 0.5MPa or greater
● Evacuation volume : It is recommended to use the optimal setting for your equipment.

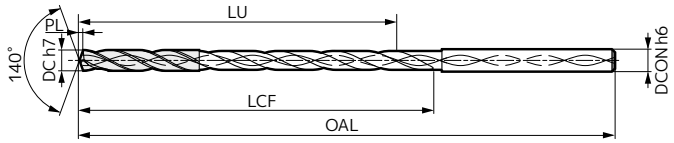
XHGS series - HAK type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 12D | 15D | 20D | 25D | 30D

*For tolerances, refer to Chapter N - References.

Fig1 (XHGS series)



Diameter ø3.0 to 7.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	12	★	MDW 0300XHGS12 HAK	57	85	0.5	4.0	1
	15	★	0300XHGS15 HAK	66	94	0.5	4.0	1
	20	★	0300XHGS20 HAK	81	109	0.5	4.0	1
	25	★	0300XHGS25 HAK	96	124	0.5	4.0	1
	30	★	0300XHGS30 HAK	111	139	0.5	4.0	1
3.5	12	★	MDW 0350XHGS12 HAK	61	89	0.6	4.0	1
	15	★	0350XHGS15 HAK	72	100	0.6	4.0	1
	20	★	0350XHGS20 HAK	89	117	0.6	4.0	1
	25	★	0350XHGS25 HAK	107	135	0.6	4.0	1
	30	★	0350XHGS30 HAK	124	152	0.6	4.0	1
4.0	12	★	MDW 0400XHGS12 HAK	67	95	0.7	4.0	1
	15	★	0400XHGS15 HAK	79	107	0.7	4.0	1
	20	★	0400XHGS20 HAK	99	127	0.7	4.0	1
	25	★	0400XHGS25 HAK	119	147	0.7	4.0	1
	30	★	0400XHGS30 HAK	139	167	0.7	4.0	1
4.5	12	★	MDW 0450XHGS12 HAK	76	104	0.8	5.0	1
	15	★	0450XHGS15 HAK	90	118	0.8	5.0	1
	20	★	0450XHGS20 HAK	112	140	0.8	5.0	1
	25	★	0450XHGS25 HAK	135	163	0.8	5.0	1
	30	★	0450XHGS30 HAK	156	184	0.8	5.0	1
5.0	12	★	MDW 0500XHGS12 HAK	80	108	0.9	5.0	1
	15	★	0500XHGS15 HAK	95	123	0.9	5.0	1
	20	★	0500XHGS20 HAK	120	148	0.9	5.0	1
	25	★	0500XHGS25 HAK	145	173	0.9	5.0	1
	30	★	0500XHGS30 HAK	170	198	0.9	5.0	1
5.0	12	★	MDW 0500XHGS12 HAK	80	116	0.9	6.0	1
	15	★	0500XHGS15 HAK	95	131	0.9	6.0	1
	20	★	0500XHGS20 HAK	120	156	0.9	6.0	1
	25	★	0500XHGS25 HAK	145	181	0.9	6.0	1
	30	★	0500XHGS30 HAK	170	206	0.9	6.0	1
5.5	12	★	MDW 0550XHGS12 HAK	88	124	1.0	6.0	1
	15	★	0550XHGS15 HAK	105	141	1.0	6.0	1
	20	★	0550XHGS20 HAK	132	168	1.0	6.0	1
	25	★	0550XHGS25 HAK	160	196	1.0	6.0	1
	30	★	0550XHGS30 HAK	187	223	1.0	6.0	1
6.0	12	★	MDW 0600XHGS12 HAK	94	130	1.1	6.0	1
	15	★	0600XHGS15 HAK	112	148	1.1	6.0	1
	20	★	0600XHGS20 HAK	142	178	1.1	6.0	1
	25	★	0600XHGS25 HAK	172	208	1.1	6.0	1
	30	★	0600XHGS30 HAK	202	238	1.1	6.0	1
6.5	12	★	MDW 0650XHGS12 HAK	102	138	1.2	8.0	1
	15	★	0650XHGS15 HAK	122	158	1.2	8.0	1
	20	★	0650XHGS20 HAK	154	190	1.2	8.0	1
	25	★	0650XHGS25 HAK	187	223	1.2	8.0	1
	30	★	0650XHGS30 HAK	219	255	1.2	8.0	1
6.8	12	★	MDW 0680XHGS12 HAK	108	144	1.2	8.0	1
	15	★	0680XHGS15 HAK	128	164	1.2	8.0	1
	20	★	0680XHGS20 HAK	162	198	1.2	8.0	1
	25	★	0680XHGS25 HAK	200	236	1.2	8.0	1
	30	★	0680XHGS30 HAK	230	266	1.2	8.0	1
7.0	12	★	MDW 0700XHGS12 HAK	109	145	1.3	8.0	1
	15	★	0700XHGS15 HAK	130	166	1.3	8.0	1
	20	★	0700XHGS20 HAK	165	201	1.3	8.0	1
	25	★	0700XHGS25 HAK	200	236	1.3	8.0	1
	30	★	0700XHGS30 HAK	235	271	1.3	8.0	1

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

Diameter ø7.5 to 12.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.5	12		MDW 0750XHGS12 HAK	115	151	1.4	8.0	1
	15	★	0750XHGS15 HAK	138	174	1.4	8.0	1
	20		0750XHGS20 HAK	175	211	1.4	8.0	1
	25	★	0750XHGS25 HAK	213	249	1.4	8.0	1
	30		0750XHGS30 HAK	250	286	1.4	8.0	1
8.0	12	★	MDW 0800XHGS12 HAK	121	157	1.5	8.0	1
	15	★	0800XHGS15 HAK	145	181	1.5	8.0	1
	20	★	0800XHGS20 HAK	185	221	1.5	8.0	1
	25	★	0800XHGS25 HAK	225	261	1.5	8.0	1
	30	★	0800XHGS30 HAK	265	301	1.5	8.0	1
8.5	12	★	MDW 0850XHGS12 HAK	131	171	1.5	10.0	1
	15	★	0850XHGS15 HAK	157	197	1.5	10.0	1
	20	★	0850XHGS20 HAK	199	239	1.5	10.0	1
	25	★	0850XHGS25 HAK	242	282	1.5	10.0	1
	30	★	0850XHGS30 HAK	284	324	1.5	10.0	1
9.0	12	★	MDW 0900XHGS12 HAK	137	177	1.6	10.0	1
	15	★	0900XHGS15 HAK	164	204	1.6	10.0	1
	20	★	0900XHGS20 HAK	209	249	1.6	10.0	1
	25	★	0900XHGS25 HAK	254	294	1.6	10.0	1
	30	★	0900XHGS30 HAK	299	339	1.6	10.0	1
9.5	12	★	MDW 0950XHGS12 HAK	143	183	1.7	10.0	1
	15	★	0950XHGS15 HAK	172	212	1.7	10.0	1
	20	★	0950XHGS20 HAK	219	259	1.7	10.0	1
	25		0950XHGS25 HAK	265	305	1.7	10.0	1
	30		0950XHGS30 HAK	312	352	1.7	10.0	1
10.0	12	★	MDW 1000XHGS12 HAK	147	187	1.8	10.0	1
	15	★	1000XHGS15 HAK	177	217	1.8	10.0	1
	20	★	1000XHGS20 HAK	227	267	1.8	10.0	1
	25	★	1000XHGS25 HAK	277	317	1.8	10.0	1
	30	★	1000XHGS30 HAK	327	367	1.8	10.0	1
10.5	12	★	MDW 1050XHGS12 HAK	157	202	1.9	12.0	1
	15	★	1050XHGS15 HAK	189	234	1.9	12.0	1
	20	★	1050XHGS20 HAK	241	286	1.9	12.0	1
	25	★	1050XHGS25 HAK	294	339	1.9	12.0	1
11.0	12	★	MDW 1100XHGS12 HAK	163	208	2.0	12.0	1
	15	★	1100XHGS15 HAK	196	241	2.0	12.0	1
	20	★	1100XHGS20 HAK	251	296	2.0	12.0	1
	25	★	1100XHGS25 HAK	306	351	2.0	12.0	1
11.5	12	★	MDW 1150XHGS12 HAK	168	213	2.1	12.0	1
	15	★	1150XHGS15 HAK	203	248	2.1	12.0	1
	20	★	1150XHGS20 HAK	260	305	2.1	12.0	1
	25	★	1150XHGS25 HAK	318	363	2.1	12.0	1
12.0	12	★	MDW 1200XHGS12 HAK	174	219	2.2	12.0	1
	15	★	1200XHGS15 HAK	210	255	2.2	12.0	1
	20	★	1200XHGS20 HAK	270	315	2.2	12.0	1
	25	★	1200XHGS25 HAK	330	375	2.2	12.0	1

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

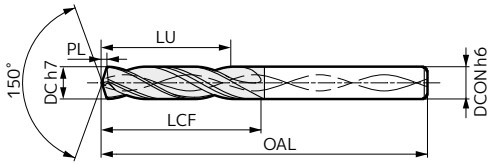
PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)



Diameter ø3.03 to 12.03mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.03	3	★	**MDW 0303 PHT**	9	22	52	0.5	4.0	2
3.53	3	★	**0353 PHT**	9	22	52	0.6	4.0	2
4.03	3	★	**MDW 0403 PHT**	12	29	59	0.7	5.0	2
4.53	3	★	**0453 PHT**	12	29	59	0.8	5.0	2
5.03	3	★	**MDW 0503 PHT**	15	33	71	0.9	6.0	2
5.53	3	★	**0553 PHT**	15	33	71	1.0	6.0	2
6.03	3	★	**MDW 0603 PHT**	18	38	76	1.1	8.0	2
6.53	3	★	**0653 PHT**	18	38	76	1.2	8.0	2
6.83	3	★	**0683 PHT**	18	38	76	1.2	8.0	2
7.03	3	★	**0703 PHT**	21	43	82	1.3	8.0	2
7.53	3	★	**0753 PHT**	21	43	82	1.4	8.0	2
8.03	3	★	**MDW 0803 PHT**	24	46	88	1.5	10.0	2
8.53	3	★	**0853 PHT**	24	46	88	1.5	10.0	2
9.03	3	★	**0903 PHT**	24	46	88	1.6	10.0	2
9.53	3	★	**0953 PHT**	24	46	88	1.7	10.0	2
10.03	3	★	**MDW 1003 PHT**	30	55	104	1.8	12.0	2
10.53	3	★	**1053 PHT**	30	55	104	1.9	12.0	2
11.03	3	★	**1103 PHT**	30	55	104	2.0	12.0	2
11.53	3	★	**1153 PHT**	30	55	104	2.1	12.0	2
12.03	3	★	**MDW 1203 PHT**	42	68	117	2.2	14.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

XHGS series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)

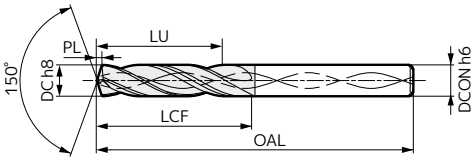
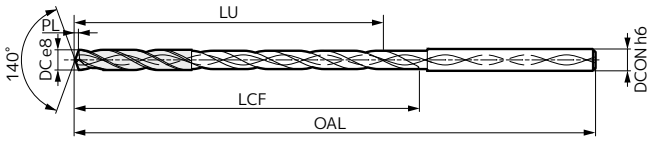


Fig 2 (XHGS series)



Diameter ø2.1 to 2.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.1	3	★	MDW 0210PHT	12.2	15.3	68.3	0.3	3.0	1
	10	★	0210XHGS10	35.3	38.4	88.4	0.4	3.0	2
	15	★	0210XHGS15	45.3	48.4	98.4	0.4	3.0	2
	20	★	0210XHGS20	58.3	61.4	111.4	0.4	3.0	2
	25	★	0210XHGS25	70.3	73.4	123.4	0.4	3.0	2
	30	★	0210XHGS30	83.3	86.4	136.4	0.4	3.0	2
2.2	3	★	MDW 0220PHT	12.0	15.3	68.3	0.3	3.0	1
	10	★	0220XHGS10	35.1	38.4	88.4	0.4	3.0	2
	15	★	0220XHGS15	45.1	48.4	98.4	0.4	3.0	2
	20	★	0220XHGS20	58.1	61.4	111.4	0.4	3.0	2
	25	★	0220XHGS25	70.1	73.4	123.4	0.4	3.0	2
	30	★	0220XHGS30	83.1	86.4	136.4	0.4	3.0	2
2.3	3	★	MDW 0230PHT	11.9	15.3	68.3	0.3	3.0	1
	10	★	0230XHGS10	35.0	38.4	88.4	0.4	3.0	2
	15	★	0230XHGS15	45.0	48.4	98.4	0.4	3.0	2
	20	★	0230XHGS20	58.0	61.4	111.4	0.4	3.0	2
	25	★	0230XHGS25	70.0	73.4	123.4	0.4	3.0	2
	30	★	0230XHGS30	83.0	86.4	136.4	0.4	3.0	2
2.4	3	★	MDW 0240PHT	11.7	15.3	68.3	0.3	3.0	1
	10	★	0240XHGS10	34.8	38.4	88.4	0.4	3.0	2
	15	★	0240XHGS15	44.8	48.4	98.4	0.4	3.0	2
	20	★	0240XHGS20	57.8	61.4	111.4	0.4	3.0	2
	25	★	0240XHGS25	69.8	73.4	123.4	0.4	3.0	2
	30	★	0240XHGS30	82.8	86.4	136.4	0.4	3.0	2
2.5	3	★	MDW 0250PHT	11.6	15.3	68.3	0.3	3.0	1
	10	★	0250XHGS10	34.8	38.5	88.5	0.5	3.0	2
	12	★	0250XHGS12	37.8	41.5	91.5	0.5	3.0	2
	15	★	0250XHGS15	44.8	48.5	98.5	0.5	3.0	2
	20	★	0250XHGS20	57.8	61.5	111.5	0.5	3.0	2
	25	★	0250XHGS25	69.8	73.5	123.5	0.5	3.0	2
	30	★	0250XHGS30	82.8	86.5	136.5	0.5	3.0	2
2.6	3	★	MDW 0260PHT	13.9	17.8	68.3	0.3	3.0	1
	10	★	0260XHGS10	41.6	45.5	93.5	0.5	3.0	2
	12		0260XHGS12	47.6	51.5	99.5	0.5	3.0	2
	15	★	0260XHGS15	56.6	60.5	108.5	0.5	3.0	2
	20	★	0260XHGS20	71.6	75.5	123.5	0.5	3.0	2
	25	★	0260XHGS25	86.6	90.5	138.5	0.5	3.0	2
	30	★	0260XHGS30	101.6	105.5	153.5	0.5	3.0	2
2.7	3	★	MDW 0270PHT	13.9	17.9	68.4	0.4	3.0	1
	10	★	0270XHGS10	41.5	45.5	93.5	0.5	3.0	2
	12		0270XHGS12	47.5	51.5	99.5	0.5	3.0	2
	15	★	0270XHGS15	56.5	60.5	108.5	0.5	3.0	2
	20	★	0270XHGS20	71.5	75.5	123.5	0.5	3.0	2
	25	★	0270XHGS25	86.5	90.5	138.5	0.5	3.0	2
	30	★	0270XHGS30	101.5	105.5	153.5	0.5	3.0	2
2.8	3	★	MDW 0280PHT	13.7	17.9	68.4	0.4	3.0	1
	10	★	0280XHGS10	41.3	45.5	93.5	0.5	3.0	2
	12		0280XHGS12	47.3	51.5	99.5	0.5	3.0	2
	15	★	0280XHGS15	56.3	60.5	108.5	0.5	3.0	2
	20	★	0280XHGS20	71.3	75.5	123.5	0.5	3.0	2
	25	★	0280XHGS25	86.3	90.5	138.5	0.5	3.0	2
	30	★	0280XHGS30	101.3	105.5	153.5	0.5	3.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

Diameter ø2.9 to 3.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.9	3	★	MDW 0290PHT	13.6	17.9	68.4	0.4	3.0	1
	10	★	0290XHGS10	41.2	45.5	93.5	0.5	3.0	2
	12		0290XHGS12	47.2	51.5	99.5	0.5	3.0	2
	15	★	0290XHGS15	56.2	60.5	108.5	0.5	3.0	2
	20	★	0290XHGS20	71.2	75.5	123.5	0.5	3.0	2
	25	★	0290XHGS25	86.2	90.5	138.5	0.5	3.0	2
	30	★	0290XHGS30	101.2	105.5	153.5	0.5	3.0	2
3.0	3	★	MDW 0300PHT	13.4	17.9	68.4	0.4	3.0	1
	10	★	0300XHGS10	41.0	45.5	93.5	0.5	3.0	2
	12	★	0300XHGS12	47.0	51.5	99.5	0.5	3.0	2
	15	★	0300XHGS15	56.0	60.5	108.5	0.5	3.0	2
	20	★	0300XHGS20	71.0	75.5	123.5	0.5	3.0	2
	25	★	0300XHGS25	86.0	90.5	138.5	0.5	3.0	2
	30	★	0300XHGS30	101.0	105.5	153.5	0.5	3.0	2
3.1	3	★	MDW 0310PHT	15.8	20.4	72.4	0.4	4.0	1
	10	★	0310XHGS10	49.0	53.6	103.6	0.6	4.0	2
	12		0310XHGS12	54.0	58.6	108.6	0.6	4.0	2
	15	★	0310XHGS15	64.0	68.6	118.6	0.6	4.0	2
	20	★	0310XHGS20	82.0	86.6	136.6	0.6	4.0	2
	25	★	0310XHGS25	99.0	103.6	153.6	0.6	4.0	2
	30	★	0310XHGS30	117.0	121.6	171.6	0.6	4.0	2
3.2	3	★	MDW 0320PHT	15.6	20.4	72.4	0.4	4.0	1
	10	★	0320XHGS10	48.8	53.6	103.6	0.6	4.0	2
	12		0320XHGS12	53.8	58.6	108.6	0.6	4.0	2
	15	★	0320XHGS15	63.8	68.6	118.6	0.6	4.0	2
	20	★	0320XHGS20	81.8	86.6	136.6	0.6	4.0	2
	25	★	0320XHGS25	98.8	103.6	153.6	0.6	4.0	2
	30	★	0320XHGS30	116.8	121.6	171.6	0.6	4.0	2
3.3	3	★	MDW 0330PHT	15.5	20.4	72.4	0.4	4.0	1
	10	★	0330XHGS10	48.7	53.6	103.6	0.6	4.0	2
	12		0330XHGS12	53.7	58.6	108.6	0.6	4.0	2
	15	★	0330XHGS15	63.7	68.6	118.6	0.6	4.0	2
	20	★	0330XHGS20	81.7	86.6	136.6	0.6	4.0	2
	25	★	0330XHGS25	98.7	103.6	153.6	0.6	4.0	2
	30	★	0330XHGS30	116.7	121.6	171.6	0.6	4.0	2
3.4	3	★	MDW 0340PHT	15.4	20.5	72.5	0.5	4.0	1
	10	★	0340XHGS10	48.5	53.6	103.6	0.6	4.0	2
	12		0340XHGS12	53.5	58.6	108.6	0.6	4.0	2
	15	★	0340XHGS15	63.5	68.6	118.6	0.6	4.0	2
	20	★	0340XHGS20	81.5	86.6	136.6	0.6	4.0	2
	25	★	0340XHGS25	98.5	103.6	153.6	0.6	4.0	2
	30	★	0340XHGS30	116.5	121.6	171.6	0.6	4.0	2
3.5	3	★	MDW 0350PHT	15.3	20.5	72.5	0.5	4.0	1
	10	★	0350XHGS10	48.4	53.6	103.6	0.6	4.0	2
	12	★	0350XHGS12	53.4	58.6	108.6	0.6	4.0	2
	15	★	0350XHGS15	63.4	68.6	118.6	0.6	4.0	2
	20	★	0350XHGS20	81.4	86.6	136.6	0.6	4.0	2
	25	★	0350XHGS25	98.4	103.6	153.6	0.6	4.0	2
	30	★	0350XHGS30	116.4	121.6	171.6	0.6	4.0	2
3.6	3	★	MDW 0360PHT	17.6	23.0	72.5	0.5	4.0	1
	10	★	0360XHGS10	55.3	60.7	108.7	0.7	4.0	2
	12		0360XHGS12	63.3	68.7	116.7	0.7	4.0	2
	15	★	0360XHGS15	75.3	80.7	128.7	0.7	4.0	2
	20	★	0360XHGS20	95.3	100.7	148.7	0.7	4.0	2
	25	★	0360XHGS25	115.3	120.7	168.7	0.7	4.0	2
	30	★	0360XHGS30	135.3	140.7	188.7	0.7	4.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

XHGS series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)

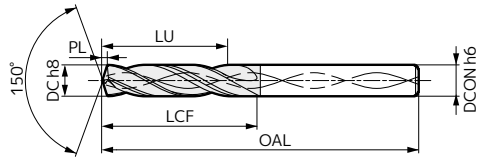
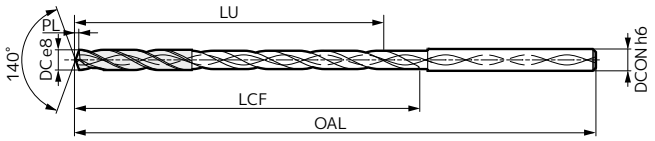


Fig 2 (XHGS series)



Diameter ø3.7 to 4.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW 0370PHT**	17.5	23.0	72.5	0.5	4.0	1
	10	★	**0370XHGS10**	55.2	60.7	108.7	0.7	4.0	2
	12		**0370XHGS12**	63.2	68.7	116.7	0.7	4.0	2
3.7	15	★	**0370XHGS15**	75.2	80.7	128.7	0.7	4.0	2
	20	★	**0370XHGS20**	95.2	100.7	148.7	0.7	4.0	2
	25	★	**0370XHGS25**	115.2	120.7	168.7	0.7	4.0	2
	30	★	**0370XHGS30**	135.2	140.7	188.7	0.7	4.0	2
	3	★	**MDW 0380PHT**	17.3	23.0	72.5	0.5	4.0	1
	10	★	**0380XHGS10**	55.0	60.7	108.7	0.7	4.0	2
	12		**0380XHGS12**	63.0	68.7	116.7	0.7	4.0	2
3.8	15	★	**0380XHGS15**	75.0	80.7	128.7	0.7	4.0	2
	20	★	**0380XHGS20**	95.0	100.7	148.7	0.7	4.0	2
	25	★	**0380XHGS25**	115.0	120.7	168.7	0.7	4.0	2
	30	★	**0380XHGS30**	135.0	140.7	188.7	0.7	4.0	2
	3	★	**MDW 0390PHT**	17.2	23.0	72.5	0.5	4.0	1
	10	★	**0390XHGS10**	54.9	60.7	108.7	0.7	4.0	2
	12		**0390XHGS12**	62.9	68.7	116.7	0.7	4.0	2
3.9	15	★	**0390XHGS15**	74.9	80.7	128.7	0.7	4.0	2
	20	★	**0390XHGS20**	94.9	100.7	148.7	0.7	4.0	2
	25	★	**0390XHGS25**	114.9	120.7	168.7	0.7	4.0	2
	30	★	**0390XHGS30**	134.9	140.7	188.7	0.7	4.0	2
	3	★	**MDW 0400PHT**	17.0	23.0	72.5	0.5	4.0	1
	10	★	**0400XHGS10**	54.7	60.7	108.7	0.7	4.0	2
	12	★	**0400XHGS12**	62.7	68.7	116.7	0.7	4.0	2
4.0	15	★	**0400XHGS15**	74.7	80.7	128.7	0.7	4.0	2
	20	★	**0400XHGS20**	94.7	100.7	148.7	0.7	4.0	2
	25	★	**0400XHGS25**	114.7	120.7	168.7	0.7	4.0	2
	30	★	**0400XHGS30**	134.7	140.7	188.7	0.7	4.0	2
	3	★	**MDW 0410PHT**	19.4	25.5	80.5	0.5	5.0	1
	10	★	**0410XHGS10**	62.6	68.7	120.7	0.7	5.0	2
	12		**0410XHGS12**	69.6	75.7	127.7	0.7	5.0	2
4.1	15	★	**0410XHGS15**	82.6	88.7	140.7	0.7	5.0	2
	20	★	**0410XHGS20**	105.6	111.7	163.7	0.7	5.0	2
	25	★	**0410XHGS25**	127.6	133.7	185.7	0.7	5.0	2
	30	★	**0410XHGS30**	150.6	156.7	208.7	0.7	5.0	2
	3	★	**MDW 0420PHT**	19.3	25.6	80.6	0.6	5.0	1
	10	★	**0420XHGS10**	62.5	68.8	120.8	0.8	5.0	2
	12		**0420XHGS12**	69.5	75.8	127.8	0.8	5.0	2
4.2	15	★	**0420XHGS15**	82.5	88.8	140.8	0.8	5.0	2
	20	★	**0420XHGS20**	105.5	111.8	163.8	0.8	5.0	2
	25	★	**0420XHGS25**	127.5	133.8	185.8	0.8	5.0	2
	30	★	**0420XHGS30**	150.5	156.8	208.8	0.8	5.0	2
	3	★	**MDW 0430PHT**	19.2	25.6	80.6	0.6	5.0	1
	10	★	**0430XHGS10**	62.4	68.8	120.8	0.8	5.0	2
	12		**0430XHGS12**	69.4	75.8	127.8	0.8	5.0	2
4.3	15	★	**0430XHGS15**	82.4	88.8	140.8	0.8	5.0	2
	20	★	**0430XHGS20**	105.4	111.8	163.8	0.8	5.0	2
	25	★	**0430XHGS25**	127.4	133.8	185.8	0.8	5.0	2
	30	★	**0430XHGS30**	150.4	156.8	208.8	0.8	5.0	2
	3	★	**MDW 0440PHT**	19.0	25.6	80.6	0.6	5.0	1
	10	★	**0440XHGS10**	62.2	68.8	120.8	0.8	5.0	2
	12		**0440XHGS12**	69.2	75.8	127.8	0.8	5.0	2
4.4	15	★	**0440XHGS15**	82.2	88.8	140.8	0.8	5.0	2
	20	★	**0440XHGS20**	105.2	111.8	163.8	0.8	5.0	2
	25	★	**0440XHGS25**	127.2	133.8	185.8	0.8	5.0	2
	30	★	**0440XHGS30**	150.2	156.8	208.8	0.8	5.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

Diameter ø4.5 to 5.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW 0450PHT**	18.9	25.6	80.6	0.6	5.0	1
	10	★	**0450XHGS10**	62.1	68.8	120.8	0.8	5.0	2
	12	★	**0450XHGS12**	69.1	75.8	127.8	0.8	5.0	2
4.5	15	★	**0450XHGS15**	82.1	88.8	140.8	0.8	5.0	2
	20	★	**0450XHGS20**	105.1	111.8	163.8	0.8	5.0	2
	25	★	**0450XHGS25**	127.1	133.8	185.8	0.8	5.0	2
	30	★	**0450XHGS30**	150.1	156.8	208.8	0.8	5.0	2
	3	★	**MDW 0460PHT**	21.2	28.1	80.6	0.6	5.0	1
	10	★	**0460XHGS10**	68.9	75.8	125.8	0.8	5.0	2
	12		**0460XHGS12**	78.9	85.8	135.8	0.8	5.0	2
4.6	15	★	**0460XHGS15**	93.9	100.8	150.8	0.8	5.0	2
	20	★	**0460XHGS20**	118.9	125.8	175.8	0.8	5.0	2
	25	★	**0460XHGS25**	143.9	150.8	200.8	0.8	5.0	2
	30	★	**0460XHGS30**	168.9	175.8	225.8	0.8	5.0	2
	3	★	**MDW 0470PHT**	21.1	28.1	80.6	0.6	5.0	1
	10	★	**0470XHGS10**	68.9	75.9	125.9	0.9	5.0	2
	12		**0470XHGS12**	78.9	85.9	135.9	0.9	5.0	2
4.7	15	★	**0470XHGS15**	93.9	100.9	150.9	0.9	5.0	2
	20	★	**0470XHGS20**	118.9	125.9	175.9	0.9	5.0	2
	25	★	**0470XHGS25**	143.9	150.9	200.9	0.9	5.0	2
	30	★	**0470XHGS30**	168.9	175.9	225.9	0.9	5.0	2
	3	★	**MDW 0480PHT**	20.9	28.1	80.6	0.6	5.0	1
	10	★	**0480XHGS10**	68.7	75.9	125.9	0.9	5.0	2
	12		**0480XHGS12**	78.7	85.9	135.9	0.9	5.0	2
4.8	15	★	**0480XHGS15**	93.7	100.9	150.9	0.9	5.0	2
	20	★	**0480XHGS20**	118.7	125.9	175.9	0.9	5.0	2
	25	★	**0480XHGS25**	143.7	150.9	200.9	0.9	5.0	2
	30	★	**0480XHGS30**	168.7	175.9	225.9	0.9	5.0	2
	3	★	**MDW 0490PHT**	20.9	28.2	80.7	0.7	5.0	1
	10	★	**0490XHGS10**	68.6	75.9	125.9	0.9	5.0	2
	12		**0490XHGS12**	78.6	85.9	135.9	0.9	5.0	2
4.9	15	★	**0490XHGS15**	93.6	100.9	150.9	0.9	5.0	2
	20	★	**0490XHGS20**	118.6	125.9	175.9	0.9	5.0	2
	25	★	**0490XHGS25**	143.6	150.9	200.9	0.9	5.0	2
	30	★	**0490XHGS30**	168.6	175.9	225.9	0.9	5.0	2
	3	★	**MDW 0500PHT**	20.7	28.2	80.7	0.7	5.0	1
	10	★	**0500XHGS10**	68.4	75.9	125.9	0.9	5.0	2
	12	★	**0500XHGS12**	78.4	85.9	135.9	0.9	5.0	2
5.0	15	★	**0500XHGS15**	93.4	100.9	150.9	0.9	5.0	2
	20	★	**0500XHGS20**	118.4	125.9	175.9	0.9	5.0	2
	25	★	**0500XHGS25**	143.4	150.9	200.9	0.9	5.0	2
	30	★	**0500XHGS30**	168.4	175.9	225.9	0.9	5.0	2
	3	★	**MDW 0510PHT**	20.6	28.2	82.7	0.7	6.0	1
	10	★	**0510XHGS10**	76.3	83.9	137.9	0.9	6.0	2
	12		**0510XHGS12**	85.3	92.9	146.9	0.9	6.0	2
5.1	15	★	**0510XHGS15**	101.3	108.9	162.9	0.9	6.0	2
	20	★	**0510XHGS20**	131.3	138.9	192.9	0.9	6.0	2
	25	★	**0510XHGS25**	156.3	163.9	217.9	0.9	6.0	2
	30	★	**0510XHGS30**	184.3	191.9	245.9	0.9	6.0	2
	3	★	**MDW 0520PHT**	20.4	28.2	82.7	0.7	6.0	1
	10	★	**0520XHGS10**	76.1	83.9	137.9	0.9	6.0	2
	12		**0520XHGS12**	85.1	92.9	146.9	0.9	6.0	2
5.2	15	★	**0520XHGS15**	101.1	108.9	162.9	0.9	6.0	2
	20	★	**0520XHGS20**	131.1	138.9	192.9	0.9	6.0	2
	25	★	**0520XHGS25**	156.1	163.9	217.9	0.9	6.0	2
	30	★	**0520XHGS30**	184.1	191.9	245.9	0.9	6.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

XHGS series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)

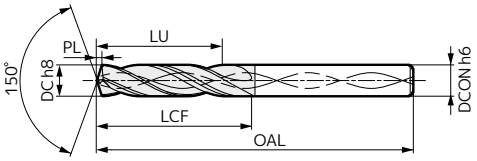
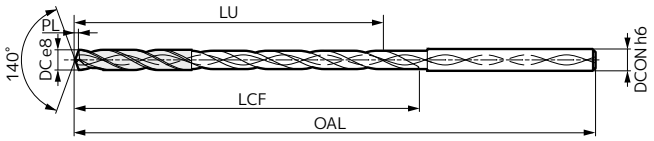


Fig 2 (XHGS series)



Diameter ø5.3 to 5.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.3	3	★	**MDW 0530PHT**	20.3	28.2	82.7	0.7	6.0	1
	10	★	**0530XHGS10**	76.1	84.0	138.0	1.0	6.0	2
	12		**0530XHGS12**	85.1	93.0	147.0	1.0	6.0	2
	15	★	**0530XHGS15**	101.1	109.0	163.0	1.0	6.0	2
	20	★	**0530XHGS20**	131.1	139.0	193.0	1.0	6.0	2
	25	★	**0530XHGS25**	156.1	164.0	218.0	1.0	6.0	2
	30	★	**0530XHGS30**	184.1	192.0	246.0	1.0	6.0	2
5.4	3	★	**MDW 0540PHT**	20.1	28.2	82.7	0.7	6.0	1
	10	★	**0540XHGS10**	75.9	84.0	138.0	1.0	6.0	2
	12		**0540XHGS12**	84.9	93.0	147.0	1.0	6.0	2
	15	★	**0540XHGS15**	100.9	109.0	163.0	1.0	6.0	2
	20	★	**0540XHGS20**	130.9	139.0	193.0	1.0	6.0	2
	25	★	**0540XHGS25**	155.9	164.0	218.0	1.0	6.0	2
	30	★	**0540XHGS30**	183.9	192.0	246.0	1.0	6.0	2
5.5	3	★	**MDW 0550PHT**	20.0	28.2	82.7	0.7	6.0	1
	10	★	**0550XHGS10**	75.8	84.0	138.0	1.0	6.0	2
	12	★	**0550XHGS12**	84.8	93.0	147.0	1.0	6.0	2
	15	★	**0550XHGS15**	100.8	109.0	163.0	1.0	6.0	2
	20	★	**0550XHGS20**	130.8	139.0	193.0	1.0	6.0	2
	25	★	**0550XHGS25**	155.8	164.0	218.0	1.0	6.0	2
	30	★	**0550XHGS30**	183.8	192.0	246.0	1.0	6.0	2
5.6	3	★	**MDW 0560PHT**	22.4	30.8	82.8	0.8	6.0	1
	10	★	**0560XHGS10**	82.6	91.0	143.0	1.0	6.0	2
	12		**0560XHGS12**	94.6	103.0	155.0	1.0	6.0	2
	15	★	**0560XHGS15**	112.6	121.0	173.0	1.0	6.0	2
	20	★	**0560XHGS20**	142.6	151.0	203.0	1.0	6.0	2
	25	★	**0560XHGS25**	172.6	181.0	233.0	1.0	6.0	2
	30	★	**0560XHGS30**	202.6	211.0	263.0	1.0	6.0	2
5.7	3	★	**MDW 0570PHT**	22.3	30.8	82.8	0.8	6.0	1
	10	★	**0570XHGS10**	82.5	91.0	143.0	1.0	6.0	2
	12		**0570XHGS12**	94.5	103.0	155.0	1.0	6.0	2
	15	★	**0570XHGS15**	112.5	121.0	173.0	1.0	6.0	2
	20	★	**0570XHGS20**	142.5	151.0	203.0	1.0	6.0	2
	25	★	**0570XHGS25**	172.5	181.0	233.0	1.0	6.0	2
	30	★	**0570XHGS30**	202.5	211.0	263.0	1.0	6.0	2
5.8	3	★	**MDW 0580PHT**	22.1	30.8	82.8	0.8	6.0	1
	10	★	**0580XHGS10**	82.4	91.1	143.1	1.1	6.0	2
	12		**0580XHGS12**	94.4	103.1	155.1	1.1	6.0	2
	15	★	**0580XHGS15**	112.4	121.1	173.1	1.1	6.0	2
	20	★	**0580XHGS20**	142.4	151.1	203.1	1.1	6.0	2
	25	★	**0580XHGS25**	172.4	181.1	233.1	1.1	6.0	2
	30	★	**0580XHGS30**	202.4	211.1	263.1	1.1	6.0	2
5.9	3	★	**MDW 0590PHT**	22.0	30.8	82.8	0.8	6.0	1
	10	★	**0590XHGS10**	82.3	91.1	143.1	1.1	6.0	2
	12		**0590XHGS12**	94.3	103.1	155.1	1.1	6.0	2
	15	★	**0590XHGS15**	112.3	121.1	173.1	1.1	6.0	2
	20	★	**0590XHGS20**	142.3	151.1	203.1	1.1	6.0	2
	25	★	**0590XHGS25**	172.3	181.1	233.1	1.1	6.0	2
	30	★	**0590XHGS30**	202.3	211.1	263.1	1.1	6.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

Diameter ø6.0 to 6.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.0	3	★	**MDW 0600PHT**	21.8	30.8	82.8	0.8	6.0	1
	10	★	**0600XHGS10**	82.1	91.1	143.1	1.1	6.0	2
	12	★	**0600XHGS12**	94.1	103.1	155.1	1.1	6.0	2
	15	★	**0600XHGS15**	112.1	121.1	173.1	1.1	6.0	2
	20	★	**0600XHGS20**	142.1	151.1	203.1	1.1	6.0	2
	25	★	**0600XHGS25**	172.1	181.1	233.1	1.1	6.0	2
	30	★	**0600XHGS30**	202.1	211.1	263.1	1.1	6.0	2
6.1	3	★	**MDW 0610PHT**	24.2	33.3	88.8	0.8	7.0	1
	10	★	**0610XHGS10**	90.0	99.1	154.1	1.1	7.0	2
	12		**0610XHGS12**	101.0	110.1	165.1	1.1	7.0	2
	15	★	**0610XHGS15**	120.0	129.1	184.1	1.1	7.0	2
	20	★	**0610XHGS20**	153.0	162.1	217.1	1.1	7.0	2
	25	★	**0610XHGS25**	185.0	194.1	249.1	1.1	7.0	2
	30	★	**0610XHGS30**	218.0	227.1	282.1	1.1	7.0	2
6.2	3	★	**MDW 0620PHT**	24.0	33.3	88.8	0.8	7.0	1
	10	★	**0620XHGS10**	89.8	99.1	154.1	1.1	7.0	2
	12		**0620XHGS12**	100.8	110.1	165.1	1.1	7.0	2
	15	★	**0620XHGS15**	119.8	129.1	184.1	1.1	7.0	2
	20	★	**0620XHGS20**	152.8	162.1	217.1	1.1	7.0	2
	25	★	**0620XHGS25**	184.8	194.1	249.1	1.1	7.0	2
	30	★	**0620XHGS30**	217.8	227.1	282.1	1.1	7.0	2
6.3	3	★	**MDW 0630PHT**	23.9	33.3	88.8	0.8	7.0	1
	10	★	**0630XHGS10**	89.7	99.1	154.1	1.1	7.0	2
	12		**0630XHGS12**	100.7	110.1	165.1	1.1	7.0	2
	15	★	**0630XHGS15**	119.7	129.1	184.1	1.1	7.0	2
	20	★	**0630XHGS20**	152.7	162.1	217.1	1.1	7.0	2
	25	★	**0630XHGS25**	184.7	194.1	249.1	1.1	7.0	2
	30	★	**0630XHGS30**	217.7	227.1	282.1	1.1	7.0	2
6.4	3	★	**MDW 0640PHT**	23.8	33.4	88.9	0.9	7.0	1
	10	★	**0640XHGS10**	89.6	99.2	154.2	1.2	7.0	2
	12		**0640XHGS12**	100.6	110.2	165.2	1.2	7.0	2
	15	★	**0640XHGS15**	119.6	129.2	184.2	1.2	7.0	2
	20	★	**0640XHGS20**	152.6	162.2	217.2	1.2	7.0	2
	25	★	**0640XHGS25**	184.6	194.2	249.2	1.2	7.0	2
	30	★	**0640XHGS30**	217.6	227.2	282.2	1.2	7.0	2
6.5	3	★	**MDW 0650PHT**	23.7	33.4	88.9	0.9	7.0	1
	10	★	**0650XHGS10**	89.5	99.2	154.2	1.2	7.0	2
	12	★	**0650XHGS12**	100.5	110.2	165.2	1.2	7.0	2
	15	★	**0650XHGS15**	119.5	129.2	184.2	1.2	7.0	2
	20	★	**0650XHGS20**	152.5	162.2	217.2	1.2	7.0	2
	25	★	**0650XHGS25**	184.5	194.2	249.2	1.2	7.0	2
	30	★	**0650XHGS30**	217.5	227.2	282.2	1.2	7.0	2
6.6	3	★	**MDW 0660PHT**	26.0	35.9	88.9	0.9	7.0	1
	10	★	**0660XHGS10**	96.3	106.2	159.2	1.2	7.0	2
	12		**0660XHGS12**	110.3	120.2	173.2	1.2	7.0	2
	15	★	**0660XHGS15**	131.3	141.2	194.2	1.2	7.0	2
	20	★	**0660XHGS20**	166.3	176.2	229.2	1.2	7.0	2
	25	★	**0660XHGS25**	201.3	211.2	264.2	1.2	7.0	2
	30	★	**0660XHGS30**	236.3	246.2	299.2	1.2	7.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

XHGS series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)

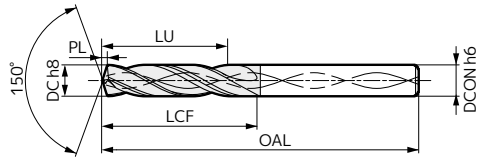
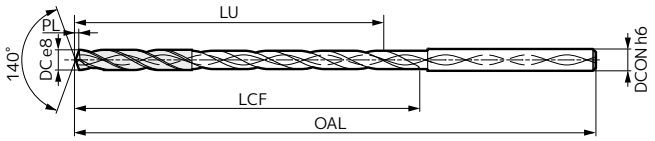


Fig 2 (XHGS series)



Diameter ø6.7 to 7.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.7	3	★	**MDW 0670PHT**	25.9	35.9	88.9	0.9	7.0	1
	10	★	**0670XHGS10**	96.2	106.2	159.2	1.2	7.0	2
	12		**0670XHGS12**	110.2	120.2	173.2	1.2	7.0	2
	15	★	**0670XHGS15**	131.2	141.2	194.2	1.2	7.0	2
	20	★	**0670XHGS20**	166.2	176.2	229.2	1.2	7.0	2
	25	★	**0670XHGS25**	201.2	211.2	264.2	1.2	7.0	2
	30	★	**0670XHGS30**	236.2	246.2	299.2	1.2	7.0	2
6.8	3	★	**MDW 0680PHT**	25.7	35.9	88.9	0.9	7.0	1
	10	★	**0680XHGS10**	96.0	106.2	159.2	1.2	7.0	2
	12		**0680XHGS12**	110.0	120.2	173.2	1.2	7.0	2
	15	★	**0680XHGS15**	131.0	141.2	194.2	1.2	7.0	2
	20	★	**0680XHGS20**	166.0	176.2	229.2	1.2	7.0	2
	25	★	**0680XHGS25**	201.0	211.2	264.2	1.2	7.0	2
	30	★	**0680XHGS30**	236.0	246.2	299.2	1.2	7.0	2
6.9	3	★	**MDW 0690PHT**	25.6	35.9	88.9	0.9	7.0	1
	10	★	**0690XHGS10**	96.0	106.3	159.3	1.3	7.0	2
	12		**0690XHGS12**	110.0	120.3	173.3	1.3	7.0	2
	15	★	**0690XHGS15**	131.0	141.3	194.3	1.3	7.0	2
	20	★	**0690XHGS20**	166.0	176.3	229.3	1.3	7.0	2
	25	★	**0690XHGS25**	201.0	211.3	264.3	1.3	7.0	2
	30	★	**0690XHGS30**	236.0	246.3	299.3	1.3	7.0	2
7.0	3	★	**MDW 0700PHT**	25.4	35.9	88.9	0.9	7.0	1
	10	★	**0700XHGS10**	95.8	106.3	159.3	1.3	7.0	2
	12	★	**0700XHGS12**	109.8	120.3	173.3	1.3	7.0	2
	15	★	**0700XHGS15**	130.8	141.3	194.3	1.3	7.0	2
	20	★	**0700XHGS20**	165.8	176.3	229.3	1.3	7.0	2
	25	★	**0700XHGS25**	200.8	211.3	264.3	1.3	7.0	2
	30	★	**0700XHGS30**	235.8	246.3	299.3	1.3	7.0	2
7.1	3	★	**MDW 0710PHT**	27.9	38.5	95.0	1.0	8.0	1
	10	★	**0710XHGS10**	103.7	114.3	170.3	1.3	8.0	2
	12		**0710XHGS12**	116.7	127.3	183.3	1.3	8.0	2
	15	★	**0710XHGS15**	138.7	149.3	205.3	1.3	8.0	2
	20	★	**0710XHGS20**	176.7	187.3	243.3	1.3	8.0	2
	25	★	**0710XHGS25**	213.7	224.3	280.3	1.3	8.0	2
	30	★	**0710XHGS30**	251.7	262.3	318.3	1.3	8.0	2
7.2	3	★	**MDW 0720PHT**	27.7	38.5	95.0	1.0	8.0	1
	10	★	**0720XHGS10**	103.5	114.3	170.3	1.3	8.0	2
	12		**0720XHGS12**	116.5	127.3	183.3	1.3	8.0	2
	15	★	**0720XHGS15**	138.5	149.3	205.3	1.3	8.0	2
	20	★	**0720XHGS20**	176.5	187.3	243.3	1.3	8.0	2
	25	★	**0720XHGS25**	213.5	224.3	280.3	1.3	8.0	2
	30	★	**0720XHGS30**	251.5	262.3	318.3	1.3	8.0	2
7.3	3	★	**MDW 0730PHT**	27.6	38.5	95.0	1.0	8.0	1
	10	★	**0730XHGS10**	103.4	114.3	170.3	1.3	8.0	2
	12		**0730XHGS12**	116.4	127.3	183.3	1.3	8.0	2
	15	★	**0730XHGS15**	138.4	149.3	205.3	1.3	8.0	2
	20	★	**0730XHGS20**	176.4	187.3	243.3	1.3	8.0	2
	25	★	**0730XHGS25**	213.4	224.3	280.3	1.3	8.0	2
	30	★	**0730XHGS30**	251.4	262.3	318.3	1.3	8.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

Diameter ø7.4 to 8.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.4	3	★	**MDW 0740PHT**	27.4	38.5	95.0	1.0	8.0	1
	10	★	**0740XHGS10**	103.2	114.3	170.3	1.3	8.0	2
	12		**0740XHGS12**	116.2	127.3	183.3	1.3	8.0	2
	15	★	**0740XHGS15**	138.2	149.3	205.3	1.3	8.0	2
	20	★	**0740XHGS20**	176.2	187.3	243.3	1.3	8.0	2
	25	★	**0740XHGS25**	213.2	224.3	280.3	1.3	8.0	2
	30	★	**0740XHGS30**	251.2	262.3	318.3	1.3	8.0	2
7.5	3	★	**MDW 0750PHT**	27.3	38.5	95.0	1.0	8.0	1
	10	★	**0750XHGS10**	103.2	114.4	170.4	1.4	8.0	2
	12	★	**0750XHGS12**	116.2	127.4	183.4	1.4	8.0	2
	15	★	**0750XHGS15**	138.2	149.4	205.4	1.4	8.0	2
	20	★	**0750XHGS20**	176.2	187.4	243.4	1.4	8.0	2
	25	★	**0750XHGS25**	213.2	224.4	280.4	1.4	8.0	2
	30	★	**0750XHGS30**	251.2	262.4	318.4	1.4	8.0	2
7.6	3	★	**MDW 0760PHT**	29.6	41.0	95.0	1.0	8.0	1
	10	★	**0760XHGS10**	110.0	121.4	175.4	1.4	8.0	2
	12		**0760XHGS12**	126.0	137.4	191.4	1.4	8.0	2
	15	★	**0760XHGS15**	150.0	161.4	215.4	1.4	8.0	2
	20	★	**0760XHGS20**	190.0	201.4	255.4	1.4	8.0	2
	25	★	**0760XHGS25**	230.0	241.4	295.4	1.4	8.0	2
	30	★	**0760XHGS30**	270.0	281.4	335.4	1.4	8.0	2
7.7	3	★	**MDW 0770PHT**	29.5	41.0	95.0	1.0	8.0	1
	10	★	**0770XHGS10**	109.9	121.4	175.4	1.4	8.0	2
	12		**0770XHGS12**	125.9	137.4	191.4	1.4	8.0	2
	15	★	**0770XHGS15**	149.9	161.4	215.4	1.4	8.0	2
	20	★	**0770XHGS20**	189.9	201.4	255.4	1.4	8.0	2
	25	★	**0770XHGS25**	229.9	241.4	295.4	1.4	8.0	2
	30	★	**0770XHGS30**	269.9	281.4	335.4	1.4	8.0	2
7.8	3	★	**MDW 0780PHT**	29.3	41.0	95.0	1.0	8.0	1
	10	★	**0780XHGS10**	109.7	121.4	175.4	1.4	8.0	2
	12		**0780XHGS12**	125.7	137.4	191.4	1.4	8.0	2
	15	★	**0780XHGS15**	149.7	161.4	215.4	1.4	8.0	2
	20	★	**0780XHGS20**	189.7	201.4	255.4	1.4	8.0	2
	25	★	**0780XHGS25**	229.7	241.4	295.4	1.4	8.0	2
	30	★	**0780XHGS30**	269.7	281.4	335.4	1.4	8.0	2
7.9	3	★	**MDW 0790PHT**	29.3	41.1	95.1	1.1	8.0	1
	10	★	**0790XHGS10**	109.6	121.4	175.4	1.4	8.0	2
	12		**0790XHGS12**	125.6	137.4	191.4	1.4	8.0	2
	15	★	**0790XHGS15**	149.6	161.4	215.4	1.4	8.0	2
	20	★	**0790XHGS20**	189.6	201.4	255.4	1.4	8.0	2
	25	★	**0790XHGS25**	229.6	241.4	295.4	1.4	8.0	2
	30	★	**0790XHGS30**	269.6	281.4	335.4	1.4	8.0	2
8.0	3	★	**MDW 0800PHT**	29.1	41.1	95.1	1.1	8.0	1
	10	★	**0800XHGS10**	109.5	121.5	175.5	1.5	8.0	2
	12	★	**0800XHGS12**	125.5	137.5	191.5	1.5	8.0	2
	15	★	**0800XHGS15**	149.5	161.5	215.5	1.5	8.0	2
	20	★	**0800XHGS20**	189.5	201.5	255.5	1.5	8.0	2
	25	★	**0800XHGS25**	229.5	241.5	295.5	1.5	8.0	2
	30	★	**0800XHGS30**	269.5	281.5	335.5	1.5	8.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

XHGS series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)

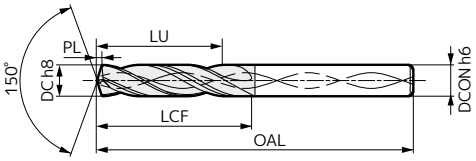
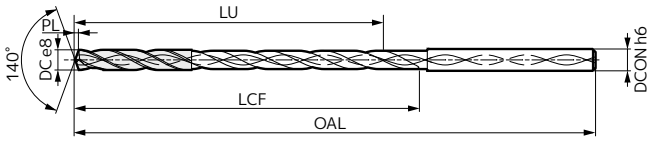


Fig 2 (XHGS series)



Diameter ø8.5 to 11.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.5	3	★	MDW 0850PHT	30.9	43.6	101.1	1.1	9.0	1
	10	★	0850XHGS10	116.8	129.5	186.5	1.5	9.0	2
	12	★	0850XHGS12	131.8	144.5	201.5	1.5	9.0	2
	15	★	0850XHGS15	156.8	169.5	226.5	1.5	9.0	2
	20	★	0850XHGS20	199.8	212.5	269.5	1.5	9.0	2
	25	★	0850XHGS25	241.8	254.5	311.5	1.5	9.0	2
	30	★	0850XHGS30	284.8	297.5	354.5	1.5	9.0	2
9.0	3	★	MDW 0900PHT	32.7	46.2	101.2	1.2	9.0	1
	10	★	0900XHGS10	123.1	136.6	191.6	1.6	9.0	2
	12	★	0900XHGS12	141.1	154.6	209.6	1.6	9.0	2
	15	★	0900XHGS15	168.1	181.6	236.6	1.6	9.0	2
	20	★	0900XHGS20	213.1	226.6	281.6	1.6	9.0	2
	25	★	0900XHGS25	258.1	271.6	326.6	1.6	9.0	2
	30	★	0900XHGS30	303.1	316.6	371.6	1.6	9.0	2
9.5	3	★	MDW 0950PHT	34.6	48.8	107.3	1.3	10.0	1
	10	★	0950XHGS10	130.5	144.7	202.7	1.7	10.0	2
	12	★	0950XHGS12	147.5	161.7	219.7	1.7	10.0	2
	15	★	0950XHGS15	175.5	189.7	247.7	1.7	10.0	2
	20	★	0950XHGS20	223.5	237.7	295.7	1.7	10.0	2
	25	★	0950XHGS25	270.5	284.7	342.7	1.7	10.0	2
	30	★	0950XHGS30	318.5	332.7	390.7	1.7	10.0	2
10.0	3	★	MDW 1000PHT	36.3	51.3	107.3	1.3	10.0	1
	10	★	1000XHGS10	136.8	151.8	207.8	1.8	10.0	2
	12	★	1000XHGS12	156.8	171.8	227.8	1.8	10.0	2
	15	★	1000XHGS15	186.8	201.8	257.8	1.8	10.0	2
	20	★	1000XHGS20	236.8	251.8	307.8	1.8	10.0	2
	25	★	1000XHGS25	286.8	301.8	357.8	1.8	10.0	2
	30	★	1000XHGS30	336.8	351.8	407.8	1.8	10.0	2
10.5	3	★	MDW 1050PHT	38.2	53.9	117.4	1.4	11.0	1
	10	★	1050XHGS10	144.2	159.9	222.9	1.9	11.0	2
	12	★	1050XHGS12	163.2	178.9	241.9	1.9	11.0	2
	15	★	1050XHGS15	194.2	209.9	272.9	1.9	11.0	2
	20	★	1050XHGS20	247.2	262.9	325.9	1.9	11.0	2
	25	★	1050XHGS25	299.2	314.9	377.9	1.9	11.0	2
11.0	3	★	MDW 1100PHT	40.0	56.5	117.5	1.5	11.0	1
	10	★	1100XHGS10	150.5	167.0	228.0	2.0	11.0	2
	12	★	1100XHGS12	172.5	189.0	250.0	2.0	11.0	2
	15	★	1100XHGS15	205.5	222.0	283.0	2.0	11.0	2
	20	★	1100XHGS20	260.5	277.0	338.0	2.0	11.0	2
	25	★	1100XHGS25	315.5	332.0	393.0	2.0	11.0	2
11.5	3	★	MDW 1150PHT	41.8	59.0	123.5	1.5	12.0	1
	10	★	1150XHGS10	157.9	175.1	239.1	2.1	12.0	2
	12	★	1150XHGS12	178.9	196.1	260.1	2.1	12.0	2
	15	★	1150XHGS15	212.9	230.1	294.1	2.1	12.0	2
	20	★	1150XHGS20	270.9	288.1	352.1	2.1	12.0	2
	25	★	1150XHGS25	327.9	345.1	409.1	2.1	12.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

Diameter ø12.0 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.0	3	★	MDW 1200PHT	43.6	61.6	123.6	1.6	12.0	1
	10	★	1200XHGS10	164.2	182.2	244.2	2.2	12.0	2
	12	★	1200XHGS12	188.2	206.2	268.2	2.2	12.0	2
	15	★	1200XHGS15	224.2	242.2	304.2	2.2	12.0	2
	20	★	1200XHGS20	284.2	302.2	364.2	2.2	12.0	2
	25	★	1200XHGS25	344.2	362.2	424.2	2.2	12.0	2
12.5	3	★	MDW 1250PHT	45.5	64.2	129.7	1.7	13.0	1
	10	★	1250XHGS10	171.6	190.3	255.3	2.3	13.0	2
	12	★	1250XHGS12	194.6	213.3	278.3	2.3	13.0	2
	15	★	1250XHGS15	231.6	250.3	315.3	2.3	13.0	2
	20	★	1250XHGS20	294.6	313.3	378.3	2.3	13.0	2
13.0	3	★	MDW 1300PHT	47.2	66.7	129.7	1.7	13.0	1
	10	★	1300XHGS10	177.9	197.4	260.4	2.4	13.0	2
	12	★	1300XHGS12	203.9	223.4	286.4	2.4	13.0	2
	15	★	1300XHGS15	242.9	262.4	325.4	2.4	13.0	2
	20	★	1300XHGS20	307.9	327.4	390.4	2.4	13.0	2
13.5	3	★	MDW 1350PHT	49.1	69.3	135.8	1.8	14.0	1
	10	★	1350XHGS10	185.3	205.5	271.5	2.5	14.0	2
	12	★	1350XHGS12	210.3	230.5	296.5	2.5	14.0	2
	15	★	1350XHGS15	250.3	270.5	336.5	2.5	14.0	2
	20	★	1350XHGS20	318.3	338.5	404.5	2.5	14.0	2
14.0	3	★	MDW 1400PHT	50.9	71.9	135.9	1.9	14.0	1
	10	★	1400XHGS10	191.5	212.5	276.5	2.5	14.0	2
	12	★	1400XHGS12	219.5	240.5	304.5	2.5	14.0	2
	15	★	1400XHGS15	261.5	282.5	346.5	2.5	14.0	2
	20	★	1400XHGS20	331.5	352.5	416.5	2.5	14.0	2
14.5	3	★	MDW 1450PHT	52.7	74.4	141.9	1.9	15.0	1
	10	★	1450XHGS10	198.9	220.6	287.6	2.6	15.0	2
	12	★	1450XHGS12	225.9	247.6	314.6	2.6	15.0	2
	15	★	1450XHGS15	268.9	290.6	357.6	2.6	15.0	2
15.0	3	★	MDW 1500PHT	54.5	77.0	142.0	2.0	15.0	1
	10	★	1500XHGS10	205.2	227.7	292.7	2.7	15.0	2
	12	★	1500XHGS12	235.2	257.7	322.7	2.7	15.0	2
	15	★	1500XHGS15	280.2	302.7	367.7	2.7	15.0	2
15.5	3	★	MDW 1550PHT	56.4	79.6	148.1	2.1	16.0	1
	10	★	1550XHGS10	212.6	235.8	303.8	2.8	16.0	2
	12	★	1550XHGS12	241.6	264.8	332.8	2.8	16.0	2
	15	★	1550XHGS15	287.6	310.8	378.8	2.8	16.0	2
16.0	3	★	MDW 1600PHT	58.1	82.1	148.1	2.1	16.0	1
	10	★	1600XHGS10	218.9	242.9	308.9	2.9	16.0	2
	12	★	1600XHGS12	248.9	272.9	340.9	2.9	16.0	2
	15	★	1600XHGS15	298.9	322.9	388.9	2.9	16.0	2

Part Number Suffix - PHT: For Guide Hole
Grade: ACX70 (XHGS series) / ACX20 (PHT series)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

XHGS series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (PHT series)

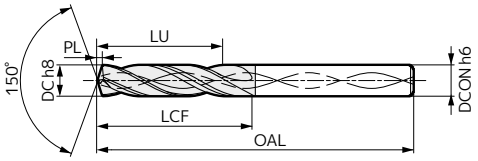
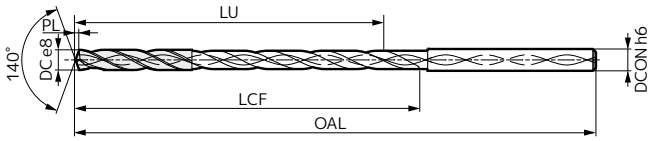


Fig 2 (XHGS series)



Made-to-order items: Inquire about production of drills in tool diameters and lengths that are not listed in the dimensions at left or not in stock.

Recommended Cutting Conditions (For 10D/12D/15D/20D/25D/30D)

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel (up to 200HB)	General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 40HRC)	Grey Cast Iron Ductile Cast Iron
ø3.0	n	6,400	8,500	5,800	4,200	5,800
	vc	50 - **60** - 80	60 - **80** - 100	40 - **55** - 70	30 - **40** - 50	40 - **55** - 70
	f	0.12 - **0.15** - 0.20	0.12 - **0.15** - 0.20	0.10 - **0.13** - 0.16	0.06 - **0.08** - 0.12	0.15 - **0.18** - 0.23
ø5.0	n	3,800	5,100	3,800	2,900	3,800
	vc	50 - **60** - 80	60 - **80** - 100	50 - **60** - 70	30 - **45** - 55	50 - **60** - 70
	f	0.15 - **0.20** - 0.25	0.15 - **0.23** - 0.30	0.12 - **0.15** - 0.20	0.08 - **0.10** - 0.14	0.17 - **0.25** - 0.35
ø10.0	n	2,200	2,500	2,100	1,600	2,100
	vc	50 - **70** - 90	60 - **80** - 110	50 - **65** - 80	30 - **50** - 60	50 - **65** - 80
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.32	0.15 - **0.20** - 0.25	0.10 - **0.15** - 0.20	0.25 - **0.28** - 0.35
ø16.0	n	1,600	1,800	1,300	1,100	1,300
	vc	60 - **80** - 100	60 - **90** - 120	50 - **65** - 80	40 - **55** - 70	50 - **65** - 80
	f	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.15 - **0.23** - 0.27	0.12 - **0.15** - 0.23	0.25 - **0.30** - 0.35

Note: Use lower speed when using MQL coolant, and higher speed when using internal coolant supply or dual-liquid mist.

Min. - **Optimum** - Max.

MDA series

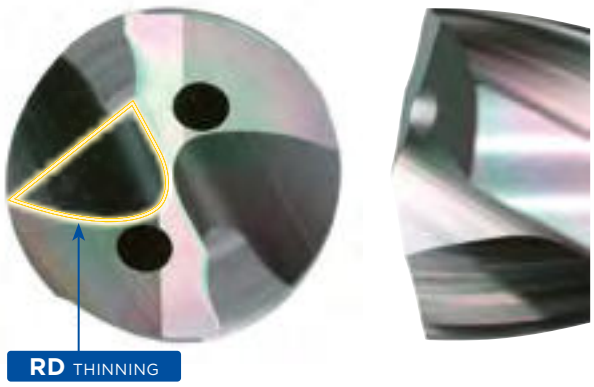


■ Features

- Venturing into new regions of aluminum alloy drilling Covers a wide application range from high-precision to high-efficiency drilling
- New DLC Coat and AURORA Coat X adopted

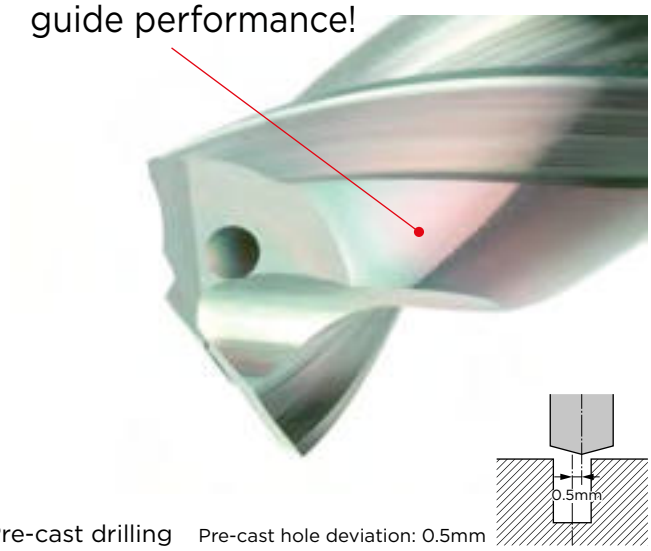
RD THINNING

Outstanding centring with special web thinning effect!



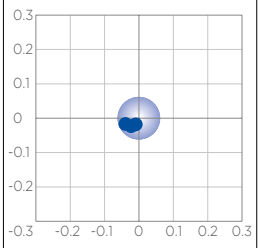
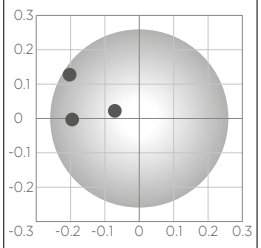
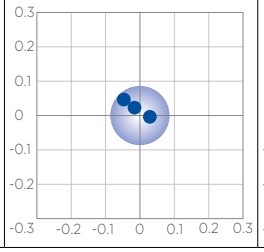
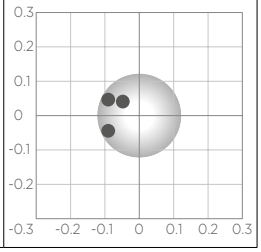
Wide Double Margin *Diameter: 3.1mm up

Hole precision is improved with wide double margin providing excellent guide performance!



■ Hole Position Accuracy

Direct drilling

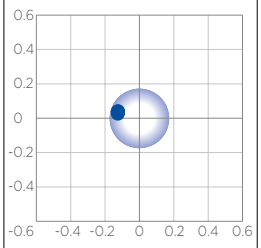
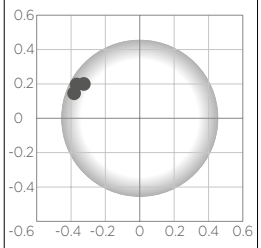
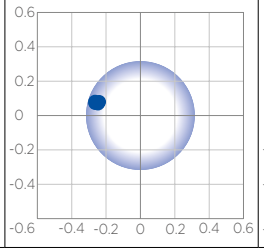
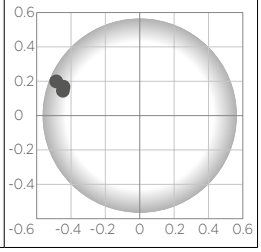
Cutting Speed	vc=180m/min	
Feed Rate	MDA series	Competitor's Product
f=0.6mm/rev		
f=1.2mm/rev		

Unit (mm)

Work Material: G-AlSi12(Cu) Tool: MDA0600S06H05 (ø6mm × 5D) Wet

Hole position stable even under high-efficiency conditions

Pre-cast drilling Pre-cast hole deviation: 0.5mm

Cutting Speed	vc=180m/min	
Feed Rate	MDA series	Competitor's Product
f=0.4mm/rev		
f=1.2mm/rev		

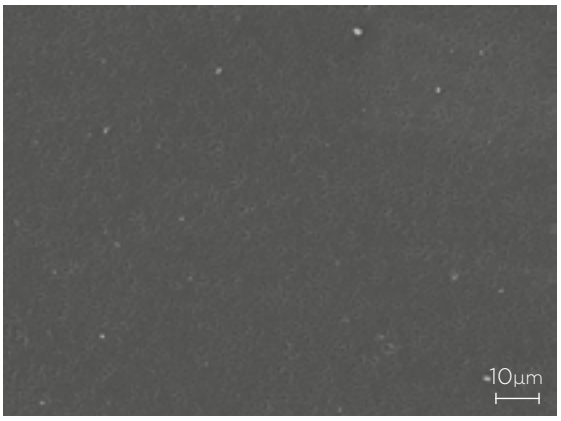
Unit (mm)

Work Material: G-AlSi12(Cu) Tool: MDA0600S06H05 (ø6mm × 5D) Wet

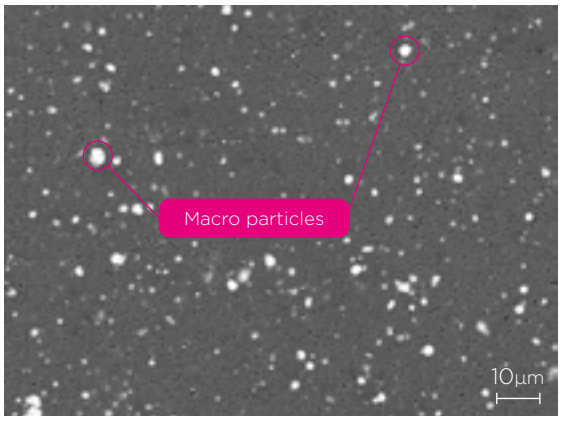
Significantly reduces the effects of pre-cast hole misalignment

AURORA Coat X DLC Coat

● Coating Surface Properties (SEM image)



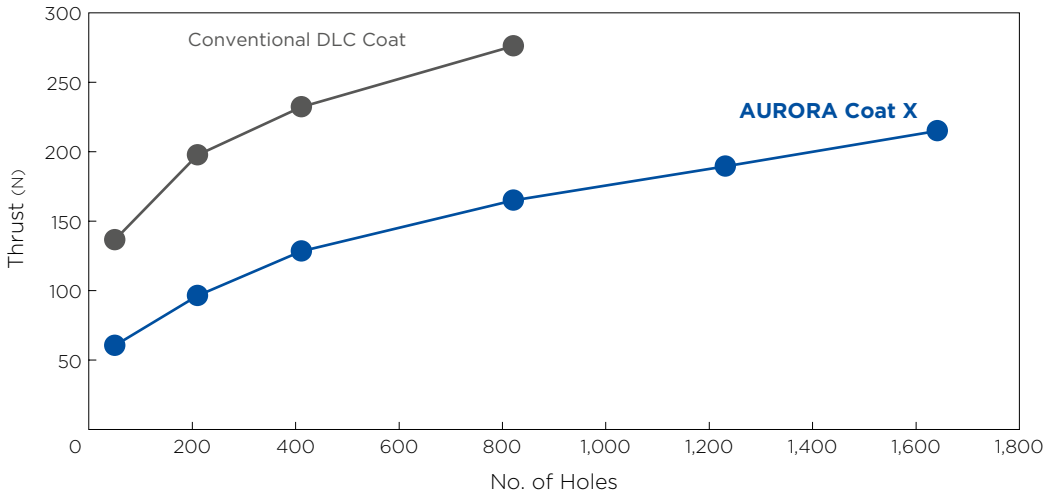
AURORA Coat X



Conventional DLC Coat

New technology significantly improves smoothness

● Cutting Force



Work Material: G-AlSi12(Cu) Machine: Vertical Machining Centre BT30
Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

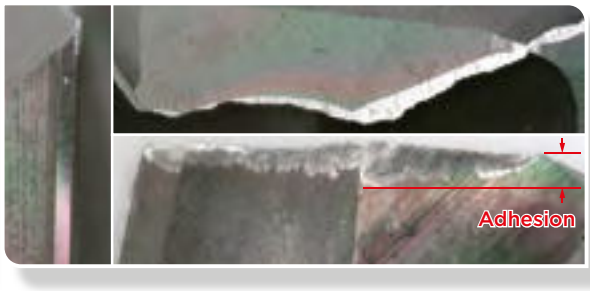
Improved coating surface smoothness keeps resistance low at the initial stage, then transitions to a gradual rise in resistance for a longer tool life

● Adhesion Resistance

AURORA Coat X



Conventional DLC Coat



Work Material: G-AlSi12(Cu) Machine: Vertical Machining Centre BT30
Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

Excellent smoothness significantly reduces adhesion

MDA series

Aluminum Alloy | Copper Alloy

AURORA Coat X DLC | 3D | 5D | 10D | 15D | 20D

*For tolerances, refer to Chapter N - References.

Fig 1 L/D = 3/5D single margin

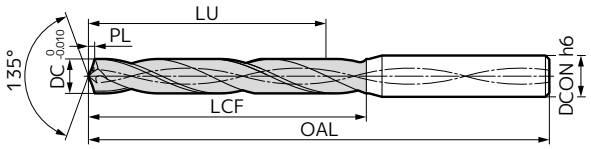
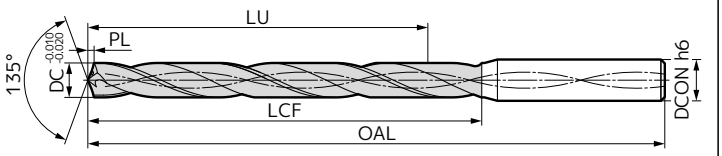


Fig 2 L/D = 10/15/20D single margin



Diameter ø1.0 to 2.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	3	★	MDA 0100S03H03	4.5	6.0	45.0	0.2	3.0	1
	5	★	0100S03H05	8.5	10.0	50.0	0.2	3.0	1
	10	★	0100S03H10	12.5	14.0	55.0	0.2	3.0	2
	15	★	0100S03H15	17.5	19.0	60.0	0.2	3.0	2
	20	★	0100S03H20	22.5	24.0	65.0	0.2	3.0	2
1.1	3	★	MDA 0110S03H03	6.4	8.0	45.0	0.2	3.0	1
	5	★	0110S03H05	10.4	12.0	50.0	0.2	3.0	1
	10	★	0110S03H10	16.4	18.0	55.0	0.2	3.0	2
	15	★	0110S03H15	19.4	21.0	65.0	0.2	3.0	2
	20	★	0110S03H20	24.4	26.0	70.0	0.2	3.0	2
1.2	3	★	MDA 0120S03H03	6.2	8.0	48.0	0.2	3.0	1
	5	★	0120S03H05	10.2	12.0	55.0	0.2	3.0	1
	10	★	0120S03H10	16.2	18.0	60.0	0.2	3.0	2
	15	★	0120S03H15	21.2	23.0	65.0	0.2	3.0	2
	20	★	0120S03H20	27.2	29.0	70.0	0.2	3.0	2
1.3	3	★	MDA 0130S03H03	6.1	8.0	48.0	0.3	3.0	1
	5	★	0130S03H05	12.1	14.0	55.0	0.3	3.0	1
	10	★	0130S03H10	18.1	20.0	60.0	0.3	3.0	2
	15	★	0130S03H15	23.1	25.0	65.0	0.3	3.0	2
	20	★	0130S03H20	29.1	31.0	75.0	0.3	3.0	2
1.4	3	★	MDA 0140S03H03	5.9	8.0	48.0	0.3	3.0	1
	5	★	0140S03H05	11.9	14.0	55.0	0.3	3.0	1
	10	★	0140S03H10	17.9	20.0	60.0	0.3	3.0	2
	15	★	0140S03H15	25.9	28.0	70.0	0.3	3.0	2
	20	★	0140S03H20	31.9	34.0	75.0	0.3	3.0	2
1.5	3	★	MDA 0150S03H03	5.8	8.0	48.0	0.3	3.0	1
	5	★	0150S03H05	13.8	16.0	55.0	0.3	3.0	1
	10	★	0150S03H10	20.8	23.0	65.0	0.3	3.0	2
	15	★	0150S03H15	25.8	28.0	70.0	0.3	3.0	2
	20	★	0150S03H20	33.8	36.0	75.0	0.3	3.0	2
1.6	3	★	MDA 0160S03H03	7.6	10.0	50.0	0.3	3.0	1
	5	★	0160S03H05	13.6	16.0	55.0	0.3	3.0	1
	10	★	0160S03H10	22.6	25.0	65.0	0.3	3.0	2
	15	★	0160S03H15	29.6	32.0	75.0	0.3	3.0	2
	20	★	0160S03H20	35.6	38.0	80.0	0.3	3.0	2
1.7	3	★	MDA 0170S03H03	7.5	10.0	50.0	0.4	3.0	1
	5	★	0170S03H05	15.5	18.0	60.0	0.4	3.0	1
	10	★	0170S03H10	22.5	25.0	65.0	0.4	3.0	2
	15	★	0170S03H15	29.5	32.0	75.0	0.4	3.0	2
	20	★	0170S03H20	38.5	41.0	80.0	0.4	3.0	2
1.8	3	★	MDA 0180S03H03	7.3	10.0	50.0	0.4	3.0	1
	5	★	0180S03H05	15.3	18.0	60.0	0.4	3.0	1
	10	★	0180S03H10	25.3	28.0	70.0	0.4	3.0	2
	15	★	0180S03H15	32.3	35.0	75.0	0.4	3.0	2
	20	★	0180S03H20	40.3	43.0	85.0	0.4	3.0	2
1.9	3	★	MDA 0190S03H03	7.2	10.0	50.0	0.4	3.0	1
	5	★	0190S03H05	17.2	20.0	60.0	0.4	3.0	1
	10	★	0190S03H10	25.2	28.0	70.0	0.4	3.0	2
	15	★	0190S03H15	32.2	35.0	75.0	0.4	3.0	2
	20	★	0190S03H20	43.2	46.0	85.0	0.4	3.0	2
2.0	3	★	MDA 0200S03H03	7.0	10.0	50.0	0.4	3.0	1
	5	★	0200S03H05	17.0	20.0	60.0	0.4	3.0	1
	10	★	0200S03H10	27.0	30.0	70.0	0.4	3.0	2
	15	★	0200S03H15	37.0	40.0	80.0	0.4	3.0	2
	20	★	0200S03H20	45.0	48.0	90.0	0.4	3.0	2

Grade: DLX1700

Diameter ø2.1 to 3.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.1	3	★	MDA 0210S03H03	9.9	13.0	55.0	0.4	3.0	1
	5	★	0210S03H05	18.9	22.0	65.0	0.4	3.0	1
	10	★	0210S03H10	26.9	30.0	70.0	0.4	3.0	2
	15	★	0210S03H15	36.9	40.0	80.0	0.4	3.0	2
	20	★	0210S03H20	46.9	50.0	95.0	0.4	3.0	2
2.2	3	★	MDA 0220S03H03	9.7	13.0	55.0	0.5	3.0	1
	5	★	0220S03H05	18.7	22.0	65.0	0.5	3.0	1
	10	★	0220S03H10	28.7	32.0	75.0	0.5	3.0	2
	15	★	0220S03H15	38.7	42.0	85.0	0.5	3.0	2
	20	★	0220S03H20	47.7	51.0	95.0	0.5	3.0	2
2.3	3	★	MDA 0230S03H03	9.6	13.0	55.0	0.5	3.0	1
	5	★	0230S03H05	20.6	24.0	65.0	0.5	3.0	1
	10	★	0230S03H10	28.6	32.0	75.0	0.5	3.0	2
	15	★	0230S03H15	41.6	45.0	85.0	0.5	3.0	2
	20	★	0230S03H20	49.6	53.0	100.0	0.5	3.0	2
2.4	3	★	MDA 0240S03H03	9.4	13.0	55.0	0.5	3.0	1
	5	★	0240S03H05	20.4	24.0	65.0	0.5	3.0	1
	10	★	0240S03H10	31.4	35.0	75.0	0.5	3.0	2
	15	★	0240S03H15	41.4	45.0	85.0	0.5	3.0	2
	20	★	0240S03H20	52.4	56.0	100.0	0.5	3.0	2
2.5	3	★	MDA 0250S03H03	9.3	13.0	55.0	0.5	3.0	1
	5	★	0250S03H05	22.3	26.0	65.0	0.5	3.0	1
	10	★	0250S03H10	31.3	35.0	75.0	0.5	3.0	2
	15	★	0250S03H15	41.3	45.0	85.0	0.5	3.0	2
	20	★	0250S03H20	56.3	60.0	105.0	0.5	3.0	2
2.6	3	★	MDA 0260S03H03	11.1	15.0	60.0	0.5	3.0	1
	5	★	0260S03H05	22.1	26.0	70.0	0.5	3.0	1
	10	★	0260S03H10	34.1	38.0	80.0	0.5	3.0	2
	15	★	0260S03H15	46.1	50.0	90.0	0.5	3.0	2
	20	★	0260S03H20	57.1	61.0	105.0	0.5	3.0	2
2.7	3	★	MDA 0270S03H03	11.0	15.0	60.0	0.6	3.0	1
	5	★	0270S03H05	24.0	28.0	70.0	0.6	3.0	1
	10	★	0270S03H10	34.0	38.0	80.0	0.6	3.0	2
	15	★	0270S03H15	46.0	50.0	90.0	0.6	3.0	2
	20	★	0270S03H20	59.0	63.0	105.0	0.6	3.0	2
2.8	3	★	MDA 0280S03H03	10.8	15.0	60.0	0.6	3.0	1
	5	★	0280S03H05	23.8	28.0	70.0	0.6	3.0	1
	10	★	0280S03H10	35.8	40.0	80.0	0.6	3.0	2
	15	★	0280S03H15	50.8	55.0	95.0	0.6	3.0	2
	20	★	0280S03H20	60.8	65.0	110.0	0.6	3.0	2
2.9	3	★	MDA 0290S03H03	10.7	15.0	60.0	0.6	3.0	1
	5	★	0290S03H05	25.7	30.0	70.0	0.6	3.0	1
	10	★	0290S03H10	35.7	40.0	80.0	0.6	3.0	2
	15	★	0290S03H15	50.7	55.0	95.0	0.6	3.0	2
	20	★	0290S03H20	62.7	67.0	110.0	0.6	3.0	2
3.0	3	★	MDA 0300S03H03	10.5	15.0	60.0	0.6	3.0	1
	5	★	0300S03H05	25.5	30.0	70.0	0.6	3.0	1
	10	★	0300S03H10	37.5	42.0	82.0	0.6	3.0	2
	15	★	0300S03H15	53.5	58.0	98.0	0.6	3.0	2
	20	★	0300S03H20	64.5	69.0	110.0	0.6	3.0	2

Grade: DLX1700

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDA series

Aluminum Alloy | Copper Alloy

AURORA Coat X DLC | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 L/D = 3/5D double margin

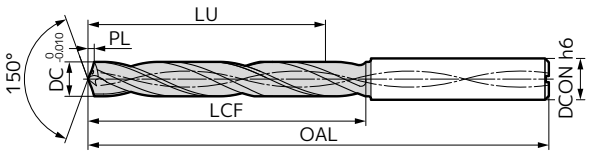
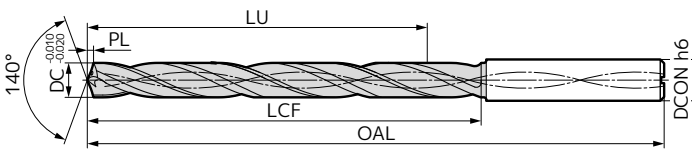


Fig 2 L/D = 10D double margin



Diameter ø3.1 to 4.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.1	3	★	MDA 0310S04H03	15.8	20.4	72.4	0.4	4.0	1
	5	★	0310S04H05	27.8	32.4	86.4	0.4	4.0	1
	10	★	0310S04H10	44.9	49.6	106.6	0.6	4.0	2
3.2	3	★	MDA 0320S04H03	15.6	20.4	72.4	0.4	4.0	1
	5	★	0320S04H05	27.6	32.4	86.4	0.4	4.0	1
	10	★	0320S04H10	44.8	49.6	106.6	0.6	4.0	2
3.3	3	★	MDA 0330S04H03	15.5	20.4	72.4	0.4	4.0	1
	5	★	0330S04H05	27.5	32.4	86.4	0.4	4.0	1
	10		0330S04H10	44.7	49.6	106.6	0.6	4.0	2
3.4	3		MDA 0340S04H03	15.4	20.5	72.5	0.5	4.0	1
	5	★	0340S04H05	27.4	32.5	86.5	0.5	4.0	1
	10	★	0340S04H10	44.5	49.6	106.6	0.6	4.0	2
3.5	3	★	MDA 0350S04H03	15.2	20.5	72.5	0.5	4.0	1
	5	★	0350S04H05	27.2	32.5	86.5	0.5	4.0	1
	10	★	0350S04H10	44.4	49.6	106.6	0.6	4.0	2
3.6	3		MDA 0360S04H03	17.6	23.0	72.5	0.5	4.0	1
	5	★	0360S04H05	31.1	36.5	86.5	0.5	4.0	1
	10	★	0360S04H10	51.3	56.7	106.7	0.7	4.0	2
3.65	3	★	MDA 0365S04H03	17.4	23.0	72.5	0.5	4.0	1
	5	★	0365S04H05	30.9	36.5	86.5	0.5	4.0	1
3.66	5	★	MDA 0366S04H05	30.9	36.5	86.5	0.5	4.0	1
3.7	3		MDA 0370S04H03	17.4	23.0	72.5	0.5	4.0	1
	5	★	0370S04H05	30.9	36.5	86.5	0.5	4.0	1
	10		0370S04H10	51.1	56.7	106.7	0.7	4.0	2
3.8	3		MDA 0380S04H03	17.3	23.0	72.5	0.5	4.0	1
	5	★	0380S04H05	30.8	36.5	86.5	0.5	4.0	1
	10		0380S04H10	51.0	56.7	106.7	0.7	4.0	2
3.9	3		MDA 0390S04H03	17.2	23.0	72.5	0.5	4.0	1
	5	★	0390S04H05	30.7	36.5	86.5	0.5	4.0	1
	10		0390S04H10	50.9	56.7	106.7	0.7	4.0	2
4.0	3	★	MDA 0400S04H03	17.0	23.0	72.5	0.5	4.0	1
	5	★	0400S04H05	30.5	36.5	86.5	0.5	4.0	1
	10	★	0400S04H10	50.7	56.7	106.7	0.7	4.0	2
4.1	3	★	MDA 0410S06H03	19.4	25.5	80.5	0.5	6.0	1
	5	★	0410S06H05	34.4	40.5	98.5	0.5	6.0	1
	10		0410S06H10	57.6	63.7	121.7	0.7	6.0	2
4.2	3	★	MDA 0420S06H03	19.3	25.6	80.6	0.6	6.0	1
	5	★	0420S06H05	34.3	40.6	98.6	0.6	6.0	1
	10		0420S06H10	57.5	63.8	121.8	0.8	6.0	2
4.3	3		MDA 0430S06H03	19.1	25.6	80.6	0.6	6.0	1
	5	★	0430S06H05	34.1	40.6	98.6	0.6	6.0	1
	10		0430S06H10	57.3	63.8	121.8	0.8	6.0	2
4.4	3		MDA 0440S06H03	19.0	25.6	80.6	0.6	6.0	1
	5	★	0440S06H05	34.0	40.6	98.6	0.6	6.0	1
	10		0440S06H10	57.2	63.8	121.8	0.8	6.0	2
4.5	3	★	MDA 0450S06H03	18.9	25.6	80.6	0.6	6.0	1
	5	★	0450S06H05	33.9	40.6	98.6	0.6	6.0	1
	10	★	0450S06H10	57.1	63.8	121.8	0.8	6.0	2

Grade: DLX1700

Diameter ø4.6 to 6.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.6	3	★	MDA 0460S06H03	20.7	27.6	80.6	0.6	6.0	1
	5	★	0460S06H05	37.7	44.6	98.6	0.6	6.0	1
	10		0460S06H10	61.9	68.8	121.8	0.8	6.0	2
4.7	3		MDA 0470S06H03	20.6	27.6	80.6	0.6	6.0	1
	5	★	0470S06H05	37.6	44.6	98.6	0.6	6.0	1
	10		0470S06H10	61.8	68.9	121.9	0.9	6.0	2
4.8	3		MDA 0480S06H03	20.4	27.6	80.6	0.6	6.0	1
	5	★	0480S06H05	37.4	44.6	98.6	0.6	6.0	1
	10	★	0480S06H10	61.7	68.9	121.9	0.9	6.0	2
4.9	3		MDA 0490S06H03	20.5	27.7	80.7	0.7	6.0	1
	5	★	0490S06H05	37.5	44.7	98.7	0.7	6.0	1
	10	★	0490S06H10	61.7	68.9	121.9	0.9	6.0	2
5.0	3	★	MDA 0500S06H03	20.2	27.7	80.7	0.7	6.0	1
	5	★	0500S06H05	37.2	44.7	98.7	0.7	6.0	1
	10	★	0500S06H10	61.4	68.9	121.9	0.9	6.0	2
5.1	3		MDA 0510S06H03	20.5	28.2	82.7	0.7	6.0	1
	5	★	0510S06H05	37.0	44.7	100.7	0.7	6.0	1
	10	★	0510S06H10	70.3	77.9	136.9	0.9	6.0	2
5.2	3	★	MDA 0520S06H03	20.4	28.2	82.7	0.7	6.0	1
	5	★	0520S06H05	36.9	44.7	100.7	0.7	6.0	1
	10		0520S06H10	70.1	77.9	136.9	0.9	6.0	2
5.3	3	★	MDA 0530S06H03	20.3	28.2	82.7	0.7	6.0	1
	5	★	0530S06H05	36.8	44.7	100.7	0.7	6.0	1
	10		0530S06H10	70.0	78.0	137.0	1.0	6.0	2
5.4	3		MDA 0540S06H03	20.1	28.2	82.7	0.7	6.0	1
	5	★	0540S06H05	36.6	44.7	100.7	0.7	6.0	1
	10		0540S06H10	69.9	78.0	137.0	1.0	6.0	2
5.5	3	★	MDA 0550S06H03	20.0	28.2	82.7	0.7	6.0	1
	5	★	0550S06H05	36.5	44.7	100.7	0.7	6.0	1
	10	★	0550S06H10	69.8	78.0	137.0	1.0	6.0	2
5.6	3		MDA 0560S06H03	22.3	30.7	82.7	0.8	6.0	1
	5	★	0560S06H05	40.3	48.7	100.7	0.8	6.0	1
	10	★	0560S06H10	76.6	85.0	137.0	1.0	6.0	2
5.7	3		MDA 0570S06H03	22.2	30.8	82.8	0.8	6.0	1
	5	★	0570S06H05	40.2	48.8	100.8	0.8	6.0	1
	10		0570S06H10	76.5	85.0	137.0	1.0	6.0	2
5.8	3		MDA 0580S06H03	22.1	30.8	82.8	0.8	6.0	1
	5	★	0580S06H05	40.1	48.8	100.8	0.8	6.0	1
	10	★	0580S06H10	76.4	85.1	137.1	1.1	6.0	2
5.9	3	★	MDA 0590S06H03	21.9	30.8	82.8	0.8	6.0	1
	5	★	0590S06H05	39.9	48.8	100.8	0.8	6.0	1
	10	★	0590S06H10	76.2	85.1	137.1	1.1	6.0	2
6.0	3	★	MDA 0600S06H03	21.8	30.8	82.8	0.8	6.0	1
	5	★	0600S06H05	39.8	48.8	100.8	0.8	6.0	1
	10	★	0600S06H10	76.1	85.1	137.1	1.1	6.0	2

Grade: DLX1700

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

MDA series

Aluminum Alloy | Copper Alloy

AURORA Coat X DLC | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 L/D = 3/5D double margin

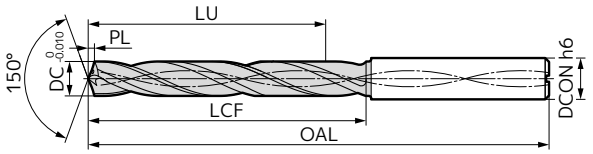
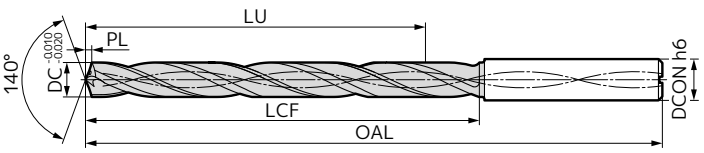


Fig 2 L/D = 10D double margin



Diameter ø6.1 to 7.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.1	3		**MDA 0610S08H03**	24.2	33.3	88.8	0.8	8.0	1
	5	★	**0610S08H05**	43.7	52.8	109.8	0.8	8.0	1
	10	★	**0610S08H10**	83.0	92.1	152.1	1.1	8.0	2
6.2	3		**MDA 0620S08H03**	24.0	33.3	88.8	0.8	8.0	1
	5	★	**0620S08H05**	43.5	52.8	109.8	0.8	8.0	1
	10		**0620S08H10**	82.8	92.1	152.1	1.1	8.0	2
6.3	3		**MDA 0630S08H03**	23.9	33.3	88.8	0.8	8.0	1
	5	★	**0630S08H05**	43.4	52.8	109.8	0.8	8.0	1
	10		**0630S08H10**	82.7	92.1	152.1	1.1	8.0	2
6.4	3		**MDA 0640S08H03**	23.8	33.4	88.9	0.9	8.0	1
	5	★	**0640S08H05**	43.3	52.9	109.9	0.9	8.0	1
	10		**0640S08H10**	82.6	92.2	152.2	1.2	8.0	2
6.5	3	★	**MDA 0650S08H03**	23.6	33.4	88.9	0.9	8.0	1
	5	★	**0650S08H05**	43.1	52.9	109.9	0.9	8.0	1
	10	★	**0650S08H10**	82.4	92.2	152.2	1.2	8.0	2
6.6	3		**MDA 0660S08H03**	24.0	33.9	88.9	0.9	8.0	1
	5	★	**0660S08H05**	45.0	54.9	109.9	0.9	8.0	1
	10		**0660S08H10**	87.3	97.2	152.2	1.2	8.0	2
6.7	3	★	**MDA 0670S08H03**	24.0	33.9	88.9	0.9	8.0	1
	5	★	**0670S08H05**	45.0	54.9	109.9	0.9	8.0	1
	10		**0670S08H10**	87.3	97.2	152.2	1.2	8.0	2
6.8	3	★	**MDA 0680S08H03**	23.7	33.9	88.9	0.9	8.0	1
	5	★	**0680S08H05**	44.7	54.9	109.9	0.9	8.0	1
	10	★	**0680S08H10**	87.0	97.2	152.2	1.2	8.0	2
6.9	3		**MDA 0690S08H03**	23.6	33.9	88.9	0.9	8.0	1
	5		**0690S08H05**	44.6	54.9	109.9	0.9	8.0	1
	10		**0690S08H10**	86.9	97.3	152.3	1.3	8.0	2
7.0	3	★	**MDA 0700S08H03**	23.4	33.9	88.9	0.9	8.0	1
	5	★	**0700S08H05**	44.4	54.9	109.9	0.9	8.0	1
	10	★	**0700S08H10**	86.8	97.3	152.3	1.3	8.0	2
7.1	3		**MDA 0710S08H03**	27.8	38.4	94.9	1.0	8.0	1
	5	★	**0710S08H05**	50.3	60.9	118.9	1.0	8.0	1
	10		**0710S08H10**	95.6	106.3	167.3	1.3	8.0	2
7.2	3		**MDA 0720S08H03**	27.7	38.5	95.0	1.0	8.0	1
	5	★	**0720S08H05**	50.2	61.0	119.0	1.0	8.0	1
	10		**0720S08H10**	95.5	106.3	167.3	1.3	8.0	2
7.3	3		**MDA 0730S08H03**	27.5	38.5	95.0	1.0	8.0	1
	5	★	**0730S08H05**	50.0	61.0	119.0	1.0	8.0	1
	10		**0730S08H10**	95.4	106.3	167.3	1.3	8.0	2
7.35	3	★	**MDA 0735S08H03**	27.4	38.5	95.0	1.0	8.0	1
	5	★	**0735S08H05**	49.9	61.0	119.0	1.0	8.0	1
7.4	3	★	**MDA 0740S08H03**	27.4	38.5	95.0	1.0	8.0	1
	5	★	**0740S08H05**	49.9	61.0	119.0	1.0	8.0	1
	10		**0740S08H10**	95.2	106.3	167.3	1.3	8.0	2
7.5	3	★	**MDA 0750S08H03**	27.3	38.5	95.0	1.0	8.0	1
	5	★	**0750S08H05**	49.8	61.0	119.0	1.0	8.0	1
	10	★	**0750S08H10**	95.1	106.4	167.4	1.4	8.0	2

Grade: DLX1700

Diameter ø7.6 to 9.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.6	3		**MDA 0760S08H03**	29.6	41.0	95.0	1.0	8.0	1
	5	★	**0760S08H05**	53.6	65.0	119.0	1.0	8.0	1
	10		**0760S08H10**	102.0	113.4	167.4	1.4	8.0	2
7.7	3		**MDA 0770S08H03**	29.5	41.0	95.0	1.0	8.0	1
	5	★	**0770S08H05**	53.5	65.0	119.0	1.0	8.0	1
	10		**0770S08H10**	101.9	113.4	167.4	1.4	8.0	2
7.8	3	★	**MDA 0780S08H03**	29.3	41.0	95.0	1.0	8.0	1
	5	★	**0780S08H05**	53.3	65.0	119.0	1.0	8.0	1
	10	★	**0780S08H10**	101.7	113.4	167.4	1.4	8.0	2
7.9	3		**MDA 0790S08H03**	29.2	41.1	95.1	1.1	8.0	1
	5	★	**0790S08H05**	53.2	65.1	119.1	1.1	8.0	1
	10		**0790S08H10**	101.6	113.4	167.4	1.4	8.0	2
8.0	3	★	**MDA 0800S08H03**	29.1	41.1	95.1	1.1	8.0	1
	5	★	**0800S08H05**	53.1	65.1	119.1	1.1	8.0	1
	10	★	**0800S08H10**	101.5	113.5	167.5	1.5	8.0	2
8.1	3		**MDA 0810S10H03**	31.4	43.6	101.1	1.1	10.0	1
	5	★	**0810S10H05**	56.9	69.1	128.1	1.1	10.0	1
	10	★	**0810S10H10**	108.3	120.5	182.5	1.5	10.0	2
8.2	3		**MDA 0820S10H03**	31.3	43.6	101.1	1.1	10.0	1
	5	★	**0820S10H05**	56.8	69.1	128.1	1.1	10.0	1
	10	★	**0820S10H10**	108.2	120.5	182.5	1.5	10.0	2
8.3	3		**MDA 0830S10H03**	31.2	43.6	101.1	1.1	10.0	1
	5	★	**0830S10H05**	56.7	69.1	128.1	1.1	10.0	1
	10		**0830S10H10**	108.1	120.5	182.5	1.5	10.0	2
8.4	3		**MDA 0840S10H03**	31.0	43.6	101.1	1.1	10.0	1
	5	★	**0840S10H05**	56.5	69.1	128.1	1.1	10.0	1
	10		**0840S10H10**	107.9	120.5	182.5	1.5	10.0	2
8.5	3	★	**MDA 0850S10H03**	31.0	43.6	101.1	1.1	10.0	1
	5	★	**0850S10H05**	56.5	69.1	128.1	1.1	10.0	1
	10	★	**0850S10H10**	107.9	120.5	182.5	1.5	10.0	2
8.6	3	★	**MDA 0860S10H03**	31.2	44.1	101.1	1.2	10.0	1
	5	★	**0860S10H05**	58.2	71.1	128.1	1.2	10.0	1
	10		**0860S10H10**	112.7	125.6	182.6	1.6	10.0	2
8.7	3		**MDA 0870S10H03**	31.1	44.2	101.2	1.2	10.0	1
	5	★	**0870S10H05**	58.1	71.2	128.2	1.2	10.0	1
	10		**0870S10H10**	112.5	125.6	182.6	1.6	10.0	2
8.8	3	★	**MDA 0880S10H03**	31.0	44.2	101.2	1.2	10.0	1
	5	★	**0880S10H05**	58.0	71.2	128.2	1.2	10.0	1
	10		**0880S10H10**	112.4	125.6	182.6	1.6	10.0	2
8.9	3		**MDA 0890S10H03**	30.8	44.2	101.2	1.2	10.0	1
	5	★	**0890S10H05**	57.8	71.2	128.2	1.2	10.0	1
	10		**0890S10H10**	112.3	125.6	182.6	1.6	10.0	2
9.0	3	★	**MDA 0900S10H03**	30.7	44.2	101.2	1.2	10.0	1
	5	★	**0900S10H05**	57.7	71.2	128.2	1.2	10.0	1
	10	★	**0900S10H10**	112.1	125.6	182.6	1.6	10.0	2

Grade: DLX1700

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDA series

Aluminum Alloy | Copper Alloy

AURORA Coat X DLC | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 L/D = 3/5D double margin

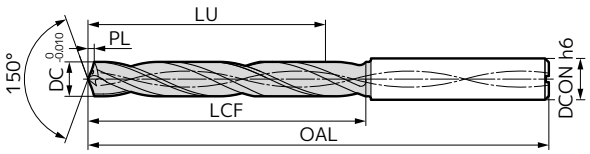
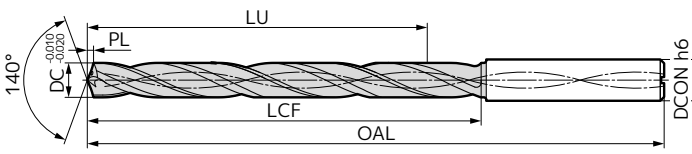


Fig 2 L/D = 10D double margin



Diameter ø9.1 to 10.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.1	3		MDA 0910S10H03	35.1	48.7	107.2	1.2	10.0	1
	5	★	0910S10H05	63.6	77.2	137.2	1.2	10.0	1
	10		0910S10H10	121.0	134.7	197.7	1.7	10.0	2
9.2	3		MDA 0920S10H03	34.9	48.7	107.2	1.2	10.0	1
	5	★	0920S10H05	63.4	77.2	137.2	1.2	10.0	1
	10		0920S10H10	120.9	134.7	197.7	1.7	10.0	2
9.21	5	★	MDA 0921S10H05	63.3	77.2	137.2	1.2	10.0	1
9.3	3		MDA 0930S10H03	34.8	48.7	107.2	1.2	10.0	1
	5	★	0930S10H05	63.3	77.2	137.2	1.2	10.0	1
	10	★	0930S10H10	120.7	134.7	197.7	1.7	10.0	2
9.4	3	★	MDA 0940S10H03	34.7	48.8	107.3	1.3	10.0	1
	5	★	0940S10H05	63.2	77.3	137.3	1.3	10.0	1
	10		0940S10H10	120.6	134.7	197.7	1.7	10.0	2
9.5	3	★	MDA 0950S10H03	34.5	48.8	107.3	1.3	10.0	1
	5	★	0950S10H05	63.0	77.3	137.3	1.3	10.0	1
	10	★	0950S10H10	120.5	134.7	197.7	1.7	10.0	2
9.6	3	★	MDA 0960S10H03	36.9	51.3	107.3	1.3	10.0	1
	5	★	0960S10H05	66.9	81.3	137.3	1.3	10.0	1
	10		0960S10H10	127.3	141.7	197.7	1.7	10.0	2
9.7	3		MDA 0970S10H03	36.7	51.3	107.3	1.3	10.0	1
	5		0970S10H05	66.7	81.3	137.3	1.3	10.0	1
	10		0970S10H10	127.2	141.8	197.8	1.8	10.0	2
9.8	3		MDA 0980S10H03	36.6	51.3	107.3	1.3	10.0	1
	5	★	0980S10H05	66.6	81.3	137.3	1.3	10.0	1
	10	★	0980S10H10	127.1	141.8	197.8	1.8	10.0	2
9.9	3		MDA 0990S10H03	36.5	51.3	107.3	1.3	10.0	1
	5		0990S10H05	66.5	81.3	137.3	1.3	10.0	1
	10		0990S10H10	127.0	141.8	197.8	1.8	10.0	2
10.0	3	★	MDA 1000S10H03	36.3	51.3	107.3	1.3	10.0	1
	5	★	1000S10H05	66.3	81.3	137.3	1.3	10.0	1
	10	★	1000S10H10	126.8	141.8	197.8	1.8	10.0	2
10.1	3	★	MDA 1010S12H03	38.7	53.8	117.3	1.4	12.0	1
	5	★	1010S12H05	70.2	85.3	150.3	1.4	12.0	1
	10		1010S12H10	133.7	148.8	216.8	1.8	12.0	2
10.2	3		MDA 1020S12H03	38.6	53.9	117.4	1.4	12.0	1
	5		1020S12H05	70.1	85.4	150.4	1.4	12.0	1
	10		1020S12H10	133.6	148.9	216.9	1.9	12.0	2
10.3	3	★	MDA 1030S12H03	38.6	53.9	117.4	1.4	12.0	1
	5	★	1030S12H05	70.1	85.4	150.4	1.4	12.0	1
	10		1030S12H10	133.6	148.9	216.9	1.9	12.0	2
10.4	3	★	MDA 1040S12H03	38.3	53.9	117.4	1.4	12.0	1
	5	★	1040S12H05	69.8	85.4	150.4	1.4	12.0	1
	10		1040S12H10	133.3	148.9	216.9	1.9	12.0	2
10.5	3	★	MDA 1050S12H03	38.2	53.9	117.4	1.4	12.0	1
	5	★	1050S12H05	69.7	85.4	150.4	1.4	12.0	1
	10	★	1050S12H10	133.2	148.9	216.9	1.9	12.0	2

Grade: DLX1700

Diameter ø10.6 to 12.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.6	3	★	MDA 1060S12H03	38.5	54.4	117.4	1.4	12.0	1
	5	★	1060S12H05	71.5	87.4	150.4	1.4	12.0	1
	10		1060S12H10	138.0	153.9	216.9	1.9	12.0	2
10.7	3		MDA 1070S12H03	38.4	54.4	117.4	1.4	12.0	1
	5		1070S12H05	71.4	87.4	150.4	1.4	12.0	1
	10		1070S12H10	137.9	153.9	216.9	1.9	12.0	2
10.8	3		MDA 1080S12H03	38.2	54.4	117.4	1.4	12.0	1
	5	★	1080S12H05	71.2	87.4	150.4	1.4	12.0	1
	10	★	1080S12H10	137.8	154.0	217.0	2.0	12.0	2
10.9	3		MDA 1090S12H03	38.1	54.5	117.5	1.5	12.0	1
	5		1090S12H05	71.1	87.5	150.5	1.5	12.0	1
	10		1090S12H10	137.6	154.0	217.0	2.0	12.0	2
11.0	3	★	MDA 1100S12H03	38.0	54.5	117.5	1.5	12.0	1
	5	★	1100S12H05	71.0	87.5	150.5	1.5	12.0	1
	10	★	1100S12H10	137.5	154.0	217.0	2.0	12.0	2
11.1	3	★	MDA 1110S12H03	42.3	59.0	123.5	1.5	12.0	1
	5	★	1110S12H05	76.8	93.5	159.5	1.5	12.0	1
	10		1110S12H10	146.4	163.0	232.0	2.0	12.0	2
11.2	3		MDA 1120S12H03	42.2	59.0	123.5	1.5	12.0	1
	5	★	1120S12H05	76.7	93.5	159.5	1.5	12.0	1
	10		1120S12H10	146.2	163.0	232.0	2.0	12.0	2
11.3	3		MDA 1130S12H03	42.1	59.0	123.5	1.5	12.0	1
	5		1130S12H05	76.6	93.5	159.5	1.5	12.0	1
	10		1130S12H10	146.1	163.1	232.1	2.1	12.0	2
11.4	3		MDA 1140S12H03	41.9	59.0	123.5	1.5	12.0	1
	5	★	1140S12H05	76.4	93.5	159.5	1.5	12.0	1
	10		1140S12H10	146.0	163.1	232.1	2.1	12.0	2
11.5	3	★	MDA 1150S12H03	41.8	59.0	123.5	1.5	12.0	1
	5	★	1150S12H05	76.3	93.5	159.5	1.5	12.0	1
	10	★	1150S12H10	145.8	163.1	232.1	2.1	12.0	2
11.6	3		MDA 1160S12H03	44.1	61.5	123.5	1.6	12.0	1
	5		1160S12H05	80.1	97.5	159.5	1.6	12.0	1
	10		1160S12H10	152.7	170.1	232.1	2.1	12.0	2
11.7	3		MDA 1170S12H03	44.0	61.6	123.6	1.6	12.0	1
	5		1170S12H05	80.0	97.6	159.6	1.6	12.0	1
	10		1170S12H10	152.6	170.1	232.1	2.1	12.0	2
11.8	3		MDA 1180S12H03	43.9	61.6	123.6	1.6	12.0	1
	5	★	1180S12H05	79.9	97.6	159.6	1.6	12.0	1
	10		1180S12H10	152.4	170.1	232.1	2.1	12.0	2
11.9	3		MDA 1190S12H03	43.7	61.6	123.6	1.6	12.0	1
	5		1190S12H05	79.7	97.6	159.6	1.6	12.0	1
	10		1190S12H10	152.3	170.2	232.2	2.2	12.0	2
12.0	3	★	MDA 1200S12H03	43.6	61.6	123.6	1.6	12.0	1
	5	★	1200S12H05	79.6	97.6	159.6	1.6	12.0	1
	10	★	1200S12H10	152.2	170.2	232.2	2.2	12.0	2

Grade: DLX1700

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions (L/D = 3D, 5D)

Work Material	Aluminum alloy casting/Aluminum alloy die cast material ADC, AC		Duralumin-based aluminum alloy Al-Zn-Mg type (7075)		Wrought aluminum alloy Al-Mg type (5052)	
Dia. (mm)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
Up to ø2.00	50 - 120	0.05 - 0.40	40 - 90	0.05 - 0.20	50 - 120	0.04 - 0.08
Up to ø3.00	60 - 150	0.10 - 0.60	50 - 100	0.10 - 0.30	60 - 150	0.04 - 0.08
Up to ø4.00	60 - 150	0.15 - 0.80	50 - 120	0.15 - 0.40	60 - 150	0.05 - 0.12
Up to ø6.00	80 - 200	0.20 - 1.20	80 - 180	0.20 - 0.60	80 - 200	0.08 - 0.18
Up to ø8.00	100 - 200	0.20 - 1.20	80 - 180	0.20 - 0.80	100 - 200	0.10 - 0.20
Up to ø10.00	100 - 200	0.20 - 1.20	100 - 180	0.20 - 0.80	100 - 200	0.10 - 0.25
Up to ø12.00	120 - 250	0.20 - 1.20	120 - 200	0.20 - 0.80	120 - 250	0.10 - 0.30

· The recommended cutting conditions above are for cases where a water-soluble coolant is used.
· Use with internal coolant supply.
· Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
· Keep the drill runout at 0.02mm or lower.
· If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
· When drilling with pre-cast holes, we recommend the lower-limit end of the recommended conditions.

Recommended Cutting Conditions (L/D = 10D or longer)

Work Material	Aluminum alloy casting/Aluminum alloy die cast material ADC, AC		Duralumin-based aluminum alloy Al-Zn-Mg type (7075)		Wrought aluminum alloy Al-Mg type (5052)	
Dia. (mm)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
Up to ø2.00	50 - 100	0.05 - 0.20	40 - 60	0.05 - 0.15	50 - 100	0.04 - 0.08
Up to ø3.00	60 - 120	0.10 - 0.30	50 - 80	0.10 - 0.20	60 - 120	0.04 - 0.08
Up to ø4.00	60 - 120	0.15 - 0.40	50 - 100	0.10 - 0.25	60 - 120	0.04 - 0.10
Up to ø6.00	80 - 150	0.20 - 0.60	60 - 120	0.15 - 0.30	80 - 150	0.06 - 0.12
Up to ø8.00	80 - 180	0.20 - 0.60	80 - 150	0.20 - 0.40	80 - 180	0.08 - 0.15
Up to ø10.00	100 - 180	0.20 - 0.60	100 - 150	0.20 - 0.40	100 - 180	0.10 - 0.20
Up to ø12.00	120 - 200	0.20 - 0.60	120 - 180	0.20 - 0.40	120 - 200	0.10 - 0.25

· The recommended cutting conditions above are for cases where a water-soluble coolant is used.
· Use with internal coolant supply.
· Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
· Keep the drill runout at 0.02mm or lower.
· If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
· For drilling with pre-cast holes, drills of 10D (or longer) are not recommended.
· Drilling holes 10D or longer may lead to abnormalities; drill a guide hole (hole depth 1D to 2D) in advance.
· A 3D (5D) drill can be used for guide hole drilling. (For guide hole drilling, use conditions lower than the "Recommended feed for 10D or longer")

MEMO

Super MULTIDRILL

NHGS series



■ Features

● **High-efficiency drilling**
AURORA Coat (DLC Coat) and low resistance WL (Wide L) THINNING drastically reduce cutting force.

● **Stable drilling performance**
Special cutting edge design and WW (Wide W) margin improve hole quality.

● **Long tool life**
With AURORA Coat coupled with the cutting edge shape, a long and stable tool life is achieved.

● **Deep hole drilling**
Drills for deep hole drilling can be made to order.
(Production range: Diameters: ø3.0 to ø16.0mm
Overall length: Available on inquiry)

■ Product Range (Stocked Sizes)

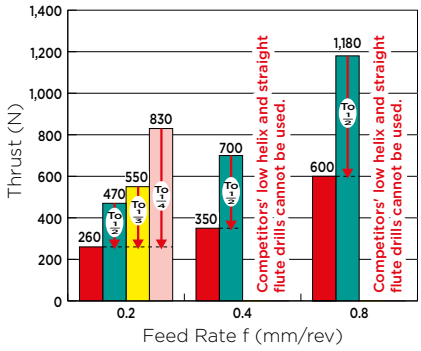
Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
Internal	MDW□□□□NHGS3	ø3.0 to 16.0	up to 3
	MDW□□□□NHGS5		up to 5
	MDW□□□□NHGS10	ø3.0 to 13.0	up to 10

■ Performance

Cutting Force

● **Low cutting force, achieving 2 to 4 times the feed rate**
The cutting force of the NHGS series is
1/2 that of competitors' 30° helix drills ⇨ double the feed rate!
1/3 that of competitors' low helix drills ⇨ 3x the feed rate!
1/4 that of straight flute drills ⇨ 4x the feed rate!

Thrust

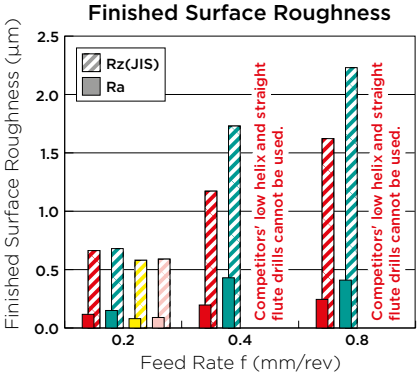


Tool: MDW 0800NHGS5 (DL1300)	Work Material: G-AlSi12(Cu)
Cutting Speed: vc=200m/min	Machine: Vertical Machining Centre (BT30)
Coolant: Internal Coolant Supply (1.5MPa)	Coolant: Emulsion (Diluted to approx. 25x)

Machined Surface Quality

● **Achieves good surface roughness over a wide range of feed rates**
Good surface roughness from low to high feed rates:
Ra=0.11 to 0.25
Rz (JIS)=0.66 to 1.62

Finished Surface Roughness



Legend (common)

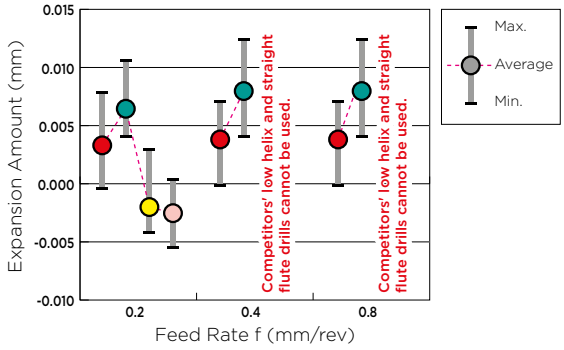


Tool: MDW 0800NHGS5 (DL1300)	Work Material: G-AlSi12(Cu)
Cutting Speed: vc=200m/min	Machine: Vertical Machining Centre (BT30)
Coolant: Internal Coolant Supply (1.5MPa)	Coolant: Emulsion (Diluted to approx. 25x)

Drilled hole accuracy (hole expansion)

● **Stable hole accuracy with hole expansion within 0.01mm**
Achieves minimal expansion and stable machining from low to high feed rates

Hole Diameter Expansion



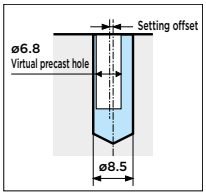
Tool: MDW 0800NHGS5 (DL1300)	Work Material: G-AlSi12(Cu)
Cutting Speed: vc=200m/min	Machine: Vertical Machining Centre (BT30)
Coolant: Internal Coolant Supply (1.5MPa)	Coolant: Emulsion (Diluted to approx. 25x)

Drilled hole accuracy (hole position accuracy)

● **Pre-cast hole accuracy within ±1/10 to ±1/5 of axial offset**

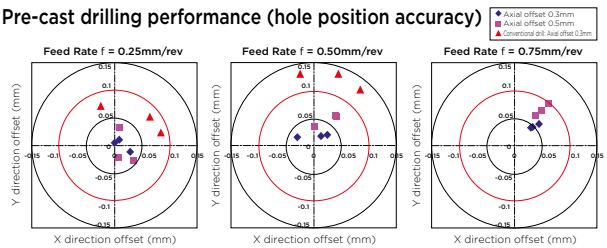
Pre-cast hole accuracy (hole position accuracy)

Offset \ Feed Rate	0.25mm/rev	0.50mm/rev	0.75mm/rev
0.3mm	±0.03mm	±0.04mm	±0.06mm
0.5mm	±0.05mm	±0.07mm	±0.10mm
Conventional drill: 0.3mm	±0.09mm	±0.19mm	



● **Test method**
An axial offset of 0.3mm to 0.5mm is set for a virtual pre-cast hole (ø6.8) and a hole is drilled with an ø8.5 drill before measuring the deviation from the target position.

Pre-cast drilling performance (hole position accuracy)



Tool: MDW 0850NHGS5 (DL1300)	Work Material: AC-AlSi7Mg0.3
Cutting Speed: vc = 200m/min (n = 7, 489min⁻¹)	Machine: Vertical Machining Centre (BT30)
Coolant: Internal Coolant Supply	

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

AURORA Coat DLC | Coolant Hole | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

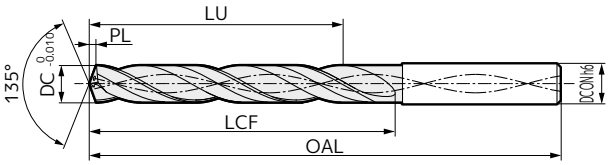
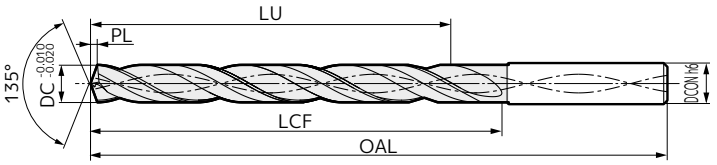


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



Diameter ø3.0 to 4.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW 0300NHGS3**	13.6	18.1	68.6	0.6	3.0	1
3.0	5	★	**0300NHGS5**	24.1	28.6	78.6	0.6	3.0	1
	10	★	**0300NHGS10**	38.1	42.6	92.6	0.6	3.0	2
	3		**MDW 0310NHGS3**	16.0	20.6	72.6	0.6	4.0	1
3.1	5	★	**0310NHGS5**	28.0	32.6	86.6	0.6	4.0	1
	10		**0310NHGS10**	45.0	49.6	106.6	0.6	4.0	2
	3	★	**MDW 0320NHGS3**	15.9	20.7	72.7	0.7	4.0	1
3.2	5	★	**0320NHGS5**	27.9	32.7	86.7	0.7	4.0	1
	10	★	**0320NHGS10**	44.9	49.7	106.7	0.7	4.0	2
	3	★	**MDW 0330NHGS3**	15.8	20.7	72.7	0.7	4.0	1
3.3	5	★	**0330NHGS5**	27.8	32.7	86.7	0.7	4.0	1
	10		**0330NHGS10**	44.8	49.7	106.7	0.7	4.0	2
	3		**MDW 0340NHGS3**	15.6	20.7	72.7	0.7	4.0	1
3.4	5	★	**0340NHGS5**	27.6	32.7	86.7	0.7	4.0	1
	10	★	**0340NHGS10**	44.6	49.7	106.7	0.7	4.0	2
	3	★	**MDW 0350NHGS3**	15.5	20.7	72.7	0.7	4.0	1
3.5	5	★	**0350NHGS5**	27.5	32.7	86.7	0.7	4.0	1
	10	★	**0350NHGS10**	44.5	49.7	106.7	0.7	4.0	2
	3		**MDW 0360NHGS3**	17.8	23.2	72.7	0.7	4.0	1
3.6	5	★	**0360NHGS5**	31.3	36.7	86.7	0.7	4.0	1
	10	★	**0360NHGS10**	51.3	56.7	106.7	0.7	4.0	2
	3	★	**MDW 0365NHGS3**	17.8	23.3	72.8	0.8	4.0	1
3.65	5	★	**0365NHGS5**	31.3	36.8	86.8	0.8	4.0	1
	10		**0365NHGS10**	51.3	56.8	106.8	0.8	4.0	2
	3		**MDW 0366NHGS3**	17.8	23.3	72.8	0.8	4.0	1
3.66	5	★	**0366NHGS5**	31.3	36.8	86.8	0.8	4.0	1
	10		**0366NHGS10**	51.3	56.8	106.8	0.8	4.0	2
	3		**MDW 0370NHGS3**	17.8	23.3	72.8	0.8	4.0	1
3.7	5	★	**0370NHGS5**	31.3	36.8	86.8	0.8	4.0	1
	10		**0370NHGS10**	51.3	56.8	106.8	0.8	4.0	2
	3		**MDW 0380NHGS3**	17.6	23.3	72.8	0.8	4.0	1
3.8	5	★	**0380NHGS5**	31.1	36.8	86.8	0.8	4.0	1
	10		**0380NHGS10**	51.1	56.8	106.8	0.8	4.0	2
	3		**MDW 0390NHGS3**	17.5	23.3	72.8	0.8	4.0	1
3.9	5	★	**0390NHGS5**	31.0	36.8	86.8	0.8	4.0	1
	10	★	**0390NHGS10**	51.0	56.8	106.8	0.8	4.0	2
	3	★	**MDW 0400NHGS3**	17.3	23.3	72.8	0.8	4.0	1
4.0	5	★	**0400NHGS5**	30.8	36.8	86.8	0.8	4.0	1
	10	★	**0400NHGS10**	50.8	56.8	106.8	0.8	4.0	2
	3	★	**MDW 0410NHGS3**	19.7	25.8	80.8	0.8	5.0	1
4.1	5	★	**0410NHGS5**	34.7	40.8	98.8	0.8	5.0	1
	10		**0410NHGS10**	57.7	63.8	121.8	0.8	5.0	2
	3	★	**MDW 0420NHGS3**	19.6	25.9	80.9	0.9	5.0	1
4.2	5	★	**0420NHGS5**	34.6	40.9	98.9	0.9	5.0	1
	10		**0420NHGS10**	57.6	63.9	121.9	0.9	5.0	2
	3		**MDW 0430NHGS3**	19.5	25.9	80.9	0.9	5.0	1
4.3	5	★	**0430NHGS5**	34.5	40.9	98.9	0.9	5.0	1
	10		**0430NHGS10**	57.5	63.9	121.9	0.9	5.0	2
	3		**MDW 0440NHGS3**	19.3	25.9	80.9	0.9	5.0	1
4.4	5	★	**0440NHGS5**	34.3	40.9	98.9	0.9	5.0	1
	10		**0440NHGS10**	57.3	63.9	121.9	0.9	5.0	2
	3	★	**MDW 0450NHGS3**	19.2	25.9	80.9	0.9	5.0	1
4.5	5	★	**0450NHGS5**	34.2	40.9	98.9	0.9	5.0	1
	10	★	**0450NHGS10**	57.2	63.9	121.9	0.9	5.0	2

Grade: DL1300

Diameter ø4.6 to 6.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW 0460NHGS3**	21.6	28.5	81.0	1.0	5.0	1
4.6	5	★	**0460NHGS5**	38.1	45.0	99.0	1.0	5.0	1
	10		**0460NHGS10**	64.1	71.0	122.0	1.0	5.0	2
	3		**MDW 0470NHGS3**	21.5	28.5	81.0	1.0	5.0	1
4.7	5	★	**0470NHGS5**	38.0	45.0	99.0	1.0	5.0	1
	10		**0470NHGS10**	64.0	71.0	122.0	1.0	5.0	2
	3		**MDW 0480NHGS3**	21.3	28.5	81.0	1.0	5.0	1
4.8	5	★	**0480NHGS5**	37.8	45.0	99.0	1.0	5.0	1
	10		**0480NHGS10**	63.8	71.0	122.0	1.0	5.0	2
	3		**MDW 0490NHGS3**	21.2	28.5	81.0	1.0	5.0	1
4.9	5	★	**0490NHGS5**	37.7	45.0	99.0	1.0	5.0	1
	10	★	**0490NHGS10**	63.7	71.0	122.0	1.0	5.0	2
	3	★	**MDW 0500NHGS3**	21.0	28.5	81.0	1.0	5.0	1
5.0	5	★	**0500NHGS5**	37.5	45.0	99.0	1.0	5.0	1
	10	★	**0500NHGS10**	63.5	71.0	122.0	1.0	5.0	2
	3		**MDW 0510NHGS3**	21.0	28.6	83.1	1.1	6.0	1
5.1	5	★	**0510NHGS5**	37.5	45.1	101.1	1.1	6.0	1
	10	★	**0510NHGS10**	70.5	78.1	137.1	1.1	6.0	2
	3	★	**MDW 0520NHGS3**	20.8	28.6	83.1	1.1	6.0	1
5.2	5	★	**0520NHGS5**	37.3	45.1	101.1	1.1	6.0	1
	10		**0520NHGS10**	70.3	78.1	137.1	1.1	6.0	2
	3	★	**MDW 0530NHGS3**	20.7	28.6	83.1	1.1	6.0	1
5.3	5	★	**0530NHGS5**	37.2	45.1	101.1	1.1	6.0	1
	10		**0530NHGS10**	70.2	78.1	137.1	1.1	6.0	2
	3		**MDW 0540NHGS3**	20.5	28.6	83.1	1.1	6.0	1
5.4	5	★	**0540NHGS5**	37.0	45.1	101.1	1.1	6.0	1
	10		**0540NHGS10**	70.0	78.1	137.1	1.1	6.0	2
	3	★	**MDW 0550NHGS3**	20.4	28.6	83.1	1.1	6.0	1
5.5	5	★	**0550NHGS5**	36.9	45.1	101.1	1.1	6.0	1
	10	★	**0550NHGS10**	69.9	78.1	137.1	1.1	6.0	2
	3		**MDW 0560NHGS3**	22.8	31.2	83.2	1.2	6.0	1
5.6	5	★	**0560NHGS5**	40.8	49.2	101.2	1.2	6.0	1
	10		**0560NHGS10**	76.8	85.2	137.2	1.2	6.0	2
	3		**MDW 0570NHGS3**	22.7	31.2	83.2	1.2	6.0	1
5.7	5	★	**0570NHGS5**	40.7	49.2	101.2	1.2	6.0	1
	10		**0570NHGS10**	76.7	85.2	137.2	1.2	6.0	2
	3		**MDW 0580NHGS3**	22.5	31.2	83.2	1.2	6.0	1
5.8	5	★	**0580NHGS5**	40.5	49.2	101.2	1.2	6.0	1
	10		**0580NHGS10**	76.5	85.2	137.2	1.2	6.0	2
	3	★	**MDW 0590NHGS3**	22.4	31.2	83.2	1.2	6.0	1
5.9	5	★	**0590NHGS5**	40.4	49.2	101.2	1.2	6.0	1
	10		**0590NHGS10**	76.4	85.2	137.2	1.2	6.0	2
	3	★	**MDW 0600NHGS3**	22.2	31.2	83.2	1.2	6.0	1
6.0	5	★	**0600NHGS5**	40.2	49.2	101.2	1.2	6.0	1
	10	★	**0600NHGS10**	76.2	85.2	137.2	1.2	6.0	2
	3		**MDW 0610NHGS3**	24.7	33.8	89.3	1.3	7.0	1
6.1	5	★	**0610NHGS5**	44.2	53.3	110.3	1.3	7.0	1
	10	★	**0610NHGS10**	83.2	92.3	152.3	1.3	7.0	2
	3		**MDW 0620NHGS3**	24.5	33.8	89.3	1.3	7.0	1
6.2	5	★	**0620NHGS5**	44.0	53.3	110.3	1.3	7.0	1
	10		**0620NHGS10**	83.0	92.3	152.3	1.3	7.0	2
	3		**MDW 0630NHGS3**	24.4	33.8	89.3	1.3	7.0	1
6.3	5	★	**0630NHGS5**	43.9	53.3	110.3	1.3	7.0	1
	10		**0630NHGS10**	82.9	92.3	152.3	1.3	7.0	2

Grade: DL1300

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

AURORA Coat DLC | Coolant Hole | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

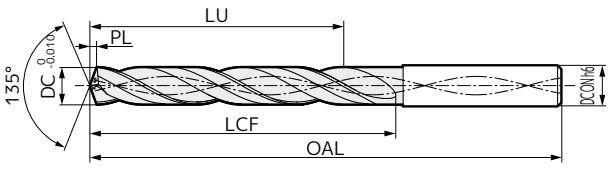
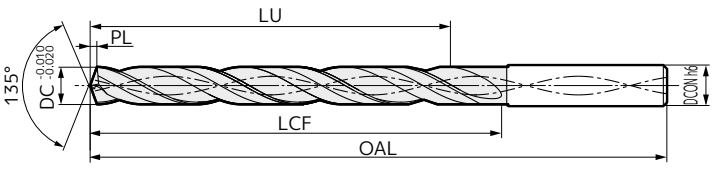


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



Diameter ø6.4 to 8.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.4	3		MDW 0640NHGS3	24.2	33.8	89.3	1.3	7.0	1
	5	★	0640NHGS5	43.7	53.3	110.3	1.3	7.0	1
	10		0640NHGS10	82.7	92.3	152.3	1.3	7.0	2
6.5	3	★	MDW 0650NHGS3	24.1	33.8	89.3	1.3	7.0	1
	5	★	0650NHGS5	43.6	53.3	110.3	1.3	7.0	1
	10	★	0650NHGS10	82.6	92.3	152.3	1.3	7.0	2
6.6	3		MDW 0660NHGS3	26.5	36.4	89.4	1.4	7.0	1
	5	★	0660NHGS5	47.5	57.4	110.4	1.4	7.0	1
	10		0660NHGS10	89.5	99.4	152.4	1.4	7.0	2
6.7	3	★	MDW 0670NHGS3	26.4	36.4	89.4	1.4	7.0	1
	5	★	0670NHGS5	47.4	57.4	110.4	1.4	7.0	1
	10	★	0670NHGS10	89.4	99.4	152.4	1.4	7.0	2
6.8	3	★	MDW 0680NHGS3	26.2	36.4	89.4	1.4	7.0	1
	5	★	0680NHGS5	47.2	57.4	110.4	1.4	7.0	1
	10	★	0680NHGS10	89.2	99.4	152.4	1.4	7.0	2
6.9	3		MDW 0690NHGS3	26.1	36.4	89.4	1.4	7.0	1
	5	★	0690NHGS5	47.1	57.4	110.4	1.4	7.0	1
	10		0690NHGS10	89.1	99.4	152.4	1.4	7.0	2
7.0	3	★	MDW 0700NHGS3	25.9	36.4	89.4	1.4	7.0	1
	5	★	0700NHGS5	46.9	57.4	110.4	1.4	7.0	1
	10	★	0700NHGS10	88.9	99.4	152.4	1.4	7.0	2
7.1	3		MDW 0710NHGS3	28.4	39.0	95.5	1.5	8.0	1
	5	★	0710NHGS5	50.9	61.5	119.5	1.5	8.0	1
	10		0710NHGS10	95.9	106.5	167.5	1.5	8.0	2
7.2	3		MDW 0720NHGS3	28.2	39.0	95.5	1.5	8.0	1
	5	★	0720NHGS5	50.7	61.5	119.5	1.5	8.0	1
	10	★	0720NHGS10	95.7	106.5	167.5	1.5	8.0	2
7.3	3		MDW 0730NHGS3	28.1	39.0	95.5	1.5	8.0	1
	5	★	0730NHGS5	50.6	61.5	119.5	1.5	8.0	1
	10		0730NHGS10	95.6	106.5	167.5	1.5	8.0	2
7.35	3	★	MDW 0735NHGS3	28.0	39.0	95.5	1.5	8.0	1
	5	★	0735NHGS5	50.5	61.5	119.5	1.5	8.0	1
	10		0735NHGS10	95.5	106.5	167.5	1.5	8.0	2
7.4	3	★	MDW 0740NHGS3	27.9	39.0	95.5	1.5	8.0	1
	5	★	0740NHGS5	50.4	61.5	119.5	1.5	8.0	1
	10		0740NHGS10	95.4	106.5	167.5	1.5	8.0	2
7.5	3	★	MDW 0750NHGS3	27.9	39.1	95.6	1.6	8.0	1
	5	★	0750NHGS5	50.4	61.6	119.6	1.6	8.0	1
	10	★	0750NHGS10	95.4	106.6	167.6	1.6	8.0	2
7.6	3		MDW 0760NHGS3	30.2	41.6	95.6	1.6	8.0	1
	5	★	0760NHGS5	54.2	65.6	119.6	1.6	8.0	1
	10		0760NHGS10	102.2	113.6	167.6	1.6	8.0	2
7.7	3		MDW 0770NHGS3	30.1	41.6	95.6	1.6	8.0	1
	5	★	0770NHGS5	54.1	65.6	119.6	1.6	8.0	1
	10		0770NHGS10	102.1	113.6	167.6	1.6	8.0	2
7.8	3	★	MDW 0780NHGS3	29.9	41.6	95.6	1.6	8.0	1
	5	★	0780NHGS5	53.9	65.6	119.6	1.6	8.0	1
	10	★	0780NHGS10	101.9	113.6	167.6	1.6	8.0	2
7.9	3		MDW 0790NHGS3	29.8	41.6	95.6	1.6	8.0	1
	5	★	0790NHGS5	53.8	65.6	119.6	1.6	8.0	1
	10		0790NHGS10	101.8	113.6	167.6	1.6	8.0	2
8.0	3	★	MDW 0800NHGS3	29.7	41.7	95.7	1.7	8.0	1
	5	★	0800NHGS5	53.7	65.7	119.7	1.7	8.0	1
	10	★	0800NHGS10	101.7	113.7	167.7	1.7	8.0	2

Grade: DL1300

Diameter ø8.1 to 9.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.1	3		MDW 0810NHGS3	32.1	44.2	101.7	1.7	9.0	1
	5	★	0810NHGS5	57.6	69.7	128.7	1.7	9.0	1
	10		0810NHGS10	108.6	120.7	182.7	1.7	9.0	2
8.2	3		MDW 0820NHGS3	31.9	44.2	101.7	1.7	9.0	1
	5	★	0820NHGS5	57.4	69.7	128.7	1.7	9.0	1
	10		0820NHGS10	108.4	120.7	182.7	1.7	9.0	2
8.3	3		MDW 0830NHGS3	31.8	44.2	101.7	1.7	9.0	1
	5	★	0830NHGS5	57.3	69.7	128.7	1.7	9.0	1
	10		0830NHGS10	108.3	120.7	182.7	1.7	9.0	2
8.4	3		MDW 0840NHGS3	31.6	44.2	101.7	1.7	9.0	1
	5	★	0840NHGS5	57.1	69.7	128.7	1.7	9.0	1
	10		0840NHGS10	108.1	120.7	182.7	1.7	9.0	2
8.5	3	★	MDW 0850NHGS3	31.6	44.3	101.8	1.8	9.0	1
	5	★	0850NHGS5	57.1	69.8	128.8	1.8	9.0	1
	10	★	0850NHGS10	108.1	120.8	182.8	1.8	9.0	2
8.6	3	★	MDW 0860NHGS3	33.9	46.8	101.8	1.8	9.0	1
	5	★	0860NHGS5	60.9	73.8	128.8	1.8	9.0	1
	10		0860NHGS10	114.9	127.8	182.8	1.8	9.0	2
8.7	3		MDW 0870NHGS3	33.8	46.8	101.8	1.8	9.0	1
	5	★	0870NHGS5	60.8	73.8	128.8	1.8	9.0	1
	10		0870NHGS10	114.8	127.8	182.8	1.8	9.0	2
8.8	3	★	MDW 0880NHGS3	33.6	46.8	101.8	1.8	9.0	1
	5	★	0880NHGS5	60.6	73.8	128.8	1.8	9.0	1
	10		0880NHGS10	114.6	127.8	182.8	1.8	9.0	2
8.9	3		MDW 0890NHGS3	33.5	46.8	101.8	1.8	9.0	1
	5	★	0890NHGS5	60.5	73.8	128.8	1.8	9.0	1
	10		0890NHGS10	114.5	127.8	182.8	1.8	9.0	2
9.0	3	★	MDW 0900NHGS3	33.4	46.9	101.9	1.9	9.0	1
	5	★	0900NHGS5	60.4	73.9	128.9	1.9	9.0	1
	10	★	0900NHGS10	114.4	127.9	182.9	1.9	9.0	2
9.1	3		MDW 0910NHGS3	35.8	49.4	107.9	1.9	10.0	1
	5	★	0910NHGS5	64.3	77.9	137.9	1.9	10.0	1
	10		0910NHGS10	121.3	134.9	197.9	1.9	10.0	2
9.2	3		MDW 0920NHGS3	35.6	49.4	107.9	1.9	10.0	1
	5	★	0920NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		0920NHGS10	121.1	134.9	197.9	1.9	10.0	2
9.21	3	★	MDW 0921NHGS3	35.6	49.4	107.9	1.9	10.0	1
	5	★	0921NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		0921NHGS10	121.1	134.9	197.9	1.9	10.0	2
9.3	3		MDW 0930NHGS3	35.5	49.4	107.9	1.9	10.0	1
	5	★	0930NHGS5	64.0	77.9	137.9	1.9	10.0	1
	10		0930NHGS10	121.0	134.9	197.9	1.9	10.0	2
9.4	3	★	MDW 0940NHGS3	35.3	49.4	107.9	1.9	10.0	1
	5	★	0940NHGS5	63.8	77.9	137.9	1.9	10.0	1
	10		0940NHGS10	120.8	134.9	197.9	1.9	10.0	2
9.5	3	★	MDW 0950NHGS3	35.3	49.5	108.0	2.0	10.0	1
	5	★	0950NHGS5	63.8	78.0	138.0	2.0	10.0	1
	10	★	0950NHGS10	120.8	135.0	198.0	2.0	10.0	2
9.6	3		MDW 0960NHGS3	37.6	52.0	108.0	2.0	10.0	1
	5	★	0960NHGS5	67.6	82.0	138.0	2.0	10.0	1
	10		0960NHGS10	127.6	142.0	198.0	2.0	10.0	2
9.7	3		MDW 0970NHGS3	37.5	52.0	108.0	2.0	10.0	1
	5	★	0970NHGS5	67.5	82.0	138.0	2.0	10.0	1
	10		0970NHGS10	127.5	142.0	198.0	2.0	10.0	2

Grade: DL1300

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

AURORA Coat DLC | Coolant Hole | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

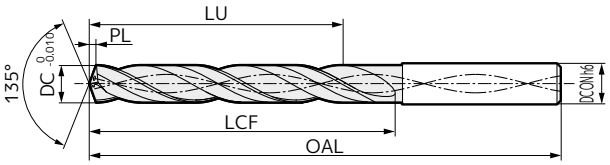
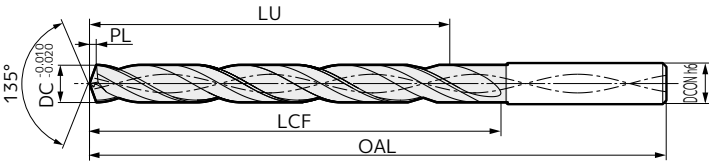


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



Diameter ø9.8 to 11.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.8	3		MDW 0980NHGS3	37.3	52.0	108.0	2.0	10.0	1
	5	★	0980NHGS5	67.3	82.0	138.0	2.0	10.0	1
	10	★	0980NHGS10	127.3	142.0	198.0	2.0	10.0	2
9.9	3		MDW 0990NHGS3	37.2	52.0	108.0	2.0	10.0	1
	5	★	0990NHGS5	67.2	82.0	138.0	2.0	10.0	1
	10		0990NHGS10	127.2	142.0	198.0	2.0	10.0	2
10.0	3	★	MDW 1000NHGS3	37.1	52.1	108.1	2.1	10.0	1
	5	★	1000NHGS5	67.1	82.1	138.1	2.1	10.0	1
	10	★	1000NHGS10	127.1	142.1	198.1	2.1	10.0	2
10.1	3	★	MDW 1010NHGS3	39.5	54.6	118.1	2.1	11.0	1
	5		1010NHGS5	71.0	86.1	151.1	2.1	11.0	1
	10		1010NHGS10	134.0	149.1	217.1	2.1	11.0	2
10.2	3		MDW 1020NHGS3	39.3	54.6	118.1	2.1	11.0	1
	5		1020NHGS5	70.8	86.1	151.1	2.1	11.0	1
	10		1020NHGS10	133.8	149.1	217.1	2.1	11.0	2
10.3	3	★	MDW 1030NHGS3	39.2	54.6	118.1	2.1	11.0	1
	5	★	1030NHGS5	70.7	86.1	151.1	2.1	11.0	1
	10		1030NHGS10	133.7	149.1	217.1	2.1	11.0	2
10.4	3		MDW 1040NHGS3	39.1	54.7	118.2	2.2	11.0	1
	5	★	1040NHGS5	70.6	86.2	151.2	2.2	11.0	1
	10		1040NHGS10	133.6	149.2	217.2	2.2	11.0	2
10.5	3	★	MDW 1050NHGS3	39.0	54.7	118.2	2.2	11.0	1
	5	★	1050NHGS5	70.5	86.2	151.2	2.2	11.0	1
	10	★	1050NHGS10	133.5	149.2	217.2	2.2	11.0	2
10.6	3	★	MDW 1060NHGS3	41.3	57.2	118.2	2.2	11.0	1
	5	★	1060NHGS5	74.3	90.2	151.2	2.2	11.0	1
	10		1060NHGS10	140.3	156.2	217.2	2.2	11.0	2
10.7	3		MDW 1070NHGS3	41.2	57.2	118.2	2.2	11.0	1
	5		1070NHGS5	74.2	90.2	151.2	2.2	11.0	1
	10		1070NHGS10	140.2	156.2	217.2	2.2	11.0	2
10.8	3		MDW 1080NHGS3	41.0	57.2	118.2	2.2	11.0	1
	5		1080NHGS5	74.0	90.2	151.2	2.2	11.0	1
	10		1080NHGS10	140.0	156.2	217.2	2.2	11.0	2
10.9	3		MDW 1090NHGS3	41.0	57.3	118.3	2.3	11.0	1
	5		1090NHGS5	74.0	90.3	151.3	2.3	11.0	1
	10		1090NHGS10	140.0	156.3	217.3	2.3	11.0	2
11.0	3	★	MDW 1100NHGS3	40.8	57.3	118.3	2.3	11.0	1
	5	★	1100NHGS5	73.8	90.3	151.3	2.3	11.0	1
	10	★	1100NHGS10	139.8	156.3	217.3	2.3	11.0	2
11.08	3	★	MDW 1108NHGS3	43.2	59.8	124.3	2.3	12.0	1
	5	★	1108NHGS5	77.7	94.3	160.3	2.3	12.0	1
	10		1108NHGS10	146.7	163.3	232.3	2.3	12.0	2
11.1	3	★	MDW 1110NHGS3	43.2	59.8	124.3	2.3	12.0	1
	5	★	1110NHGS5	77.7	94.3	160.3	2.3	12.0	1
	10		1110NHGS10	146.7	163.3	232.3	2.3	12.0	2
11.2	3	★	MDW 1120NHGS3	43.0	59.8	124.3	2.3	12.0	1
	5	★	1120NHGS5	77.5	94.3	160.3	2.3	12.0	1
	10		1120NHGS10	146.5	163.3	232.3	2.3	12.0	2
11.3	3		MDW 1130NHGS3	42.9	59.8	124.3	2.3	12.0	1
	5		1130NHGS5	77.4	94.3	160.3	2.3	12.0	1
	10		1130NHGS10	146.4	163.3	232.3	2.3	12.0	2
11.4	3	★	MDW 1140NHGS3	42.8	59.9	124.4	2.4	12.0	1
	5	★	1140NHGS5	77.3	94.4	160.4	2.4	12.0	1
	10		1140NHGS10	146.3	163.4	232.4	2.4	12.0	2

Grade: DL1300

Diameter ø11.5 to 13.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.5	3	★	MDW 1150NHGS3	42.7	59.9	124.4	2.4	12.0	1
	5	★	1150NHGS5	77.2	94.4	160.4	2.4	12.0	1
	10	★	1150NHGS10	146.2	163.4	232.4	2.4	12.0	2
11.6	3		MDW 1160NHGS3	45.0	62.4	124.4	2.4	12.0	1
	5		1160NHGS5	81.0	98.4	160.4	2.4	12.0	1
	10		1160NHGS10	153.0	170.4	232.4	2.4	12.0	2
11.7	3		MDW 1170NHGS3	44.9	62.4	124.4	2.4	12.0	1
	5		1170NHGS5	80.9	98.4	160.4	2.4	12.0	1
	10		1170NHGS10	152.9	170.4	232.4	2.4	12.0	2
11.8	3		MDW 1180NHGS3	44.7	62.4	124.4	2.4	12.0	1
	5		1180NHGS5	80.7	98.4	160.4	2.4	12.0	1
	10		1180NHGS10	152.7	170.4	232.4	2.4	12.0	2
11.9	3		MDW 1190NHGS3	44.7	62.5	124.5	2.5	12.0	1
	5		1190NHGS5	80.7	98.5	160.5	2.5	12.0	1
	10		1190NHGS10	152.7	170.5	232.5	2.5	12.0	2
12.0	3	★	MDW 1200NHGS3	44.5	62.5	124.5	2.5	12.0	1
	5	★	1200NHGS5	80.5	98.5	160.5	2.5	12.0	1
	10	★	1200NHGS10	152.5	170.5	232.5	2.5	12.0	2
12.1	3	★	MDW 1210NHGS3	46.9	65.0	130.5	2.5	13.0	1
	5	★	1210NHGS5	84.4	102.5	169.5	2.5	13.0	1
	10		1210NHGS10	159.4	177.5	247.5	2.5	13.0	2
12.2	3		MDW 1220NHGS3	46.7	65.0	130.5	2.5	13.0	1
	5		1220NHGS5	84.2	102.5	169.5	2.5	13.0	1
	10		1220NHGS10	159.2	177.5	247.5	2.5	13.0	2
12.3	3	★	MDW 1230NHGS3	46.6	65.0	130.5	2.5	13.0	1
	5	★	1230NHGS5	84.1	102.5	169.5	2.5	13.0	1
	10		1230NHGS10	159.1	177.5	247.5	2.5	13.0	2
12.4	3		MDW 1240NHGS3	46.5	65.1	130.6	2.6	13.0	1
	5		1240NHGS5	84.0	102.6	169.6	2.6	13.0	1
	10		1240NHGS10	159.0	177.6	247.6	2.6	13.0	2
12.5	3	★	MDW 1250NHGS3	46.4	65.1	130.6	2.6	13.0	1
	5	★	1250NHGS5	83.9	102.6	169.6	2.6	13.0	1
	10	★	1250NHGS10	158.9	177.6	247.6	2.6	13.0	2
12.6	3		MDW 1260NHGS3	48.7	67.6	130.6	2.6	13.0	1
	5		1260NHGS5	87.7	106.6	169.6	2.6	13.0	1
	10		1260NHGS10	165.7	184.6	247.6	2.6	13.0	2
12.7	3		MDW 1270NHGS3	48.6	67.6	130.6	2.6	13.0	1
	5		1270NHGS5	87.6	106.6	169.6	2.6	13.0	1
	10		1270NHGS10	165.6	184.6	247.6	2.6	13.0	2
12.8	3		MDW 1280NHGS3	48.4	67.6	130.6	2.6	13.0	1
	5		1280NHGS5	87.4	106.6	169.6	2.6	13.0	1
	10		1280NHGS10	165.4	184.6	247.6	2.6	13.0	2
12.9	3		MDW 1290NHGS3	48.4	67.7	130.7	2.7	13.0	1
	5		1290NHGS5	87.4	106.7	169.7	2.7	13.0	1
	10		1290NHGS10	165.4	184.7	247.7	2.7	13.0	2
12.96	3	★	MDW 1296NHGS3	48.3	67.7	130.7	2.7	13.0	1
	5	★	1296NHGS5	87.3	106.7	169.7	2.7	13.0	1
	10		1296NHGS10	165.3	184.7	247.7	2.7	13.0	2
13.0	3	★	MDW 1300NHGS3	48.2	67.7	130.7	2.7	13.0	1
	5	★	1300NHGS5	87.2	106.7	169.7	2.7	13.0	1
	10	★	1300NHGS10	165.2	184.7	247.7	2.7	13.0	2
13.1	3		MDW 1310NHGS3	50.6	70.2	136.7	2.7	14.0	1
	5		1310NHGS5	91.1	110.7	178.7	2.7	14.0	1
	10		1310NHGS10	172.1	191.7	262.7	2.7	14.0	2

Grade: DL1300

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

AURORA Coat DLC | Coolant Hole | 3D | 5D | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

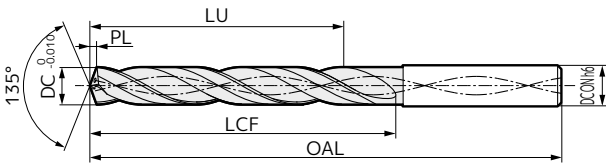
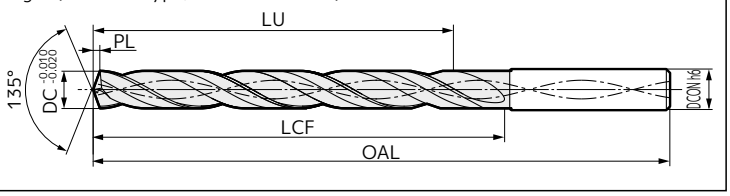


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



Diameter ø13.2 to 14.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.2	3		**MDW 1320NHGS3**	50.4	70.2	136.7	2.7	14.0	1
	5		**1320NHGS5**	90.9	110.7	178.7	2.7	14.0	1
	10		**1320NHGS10**	171.9	191.7	262.7	2.7	14.0	2
13.3	3		**MDW 1330NHGS3**	50.4	70.3	136.8	2.8	14.0	1
	5		**1330NHGS5**	90.9	110.8	178.8	2.8	14.0	1
	10		**1330NHGS10**	171.9	191.8	262.8	2.8	14.0	2
13.4	3		**MDW 1340NHGS3**	50.2	70.3	136.8	2.8	14.0	1
	5		**1340NHGS5**	90.7	110.8	178.8	2.8	14.0	1
	10		**1340NHGS10**	171.7	191.8	262.8	2.8	14.0	2
13.5	3	★	**MDW 1350NHGS3**	50.1	70.3	136.8	2.8	14.0	1
	5	★	**1350NHGS5**	90.6	110.8	178.8	2.8	14.0	1
	10		**1350NHGS10**	171.6	191.8	262.8	2.8	14.0	2
13.6	3		**MDW 1360NHGS3**	52.4	72.8	136.8	2.8	14.0	1
	5		**1360NHGS5**	94.4	114.8	178.8	2.8	14.0	1
	10		**1360NHGS10**	178.4	198.8	262.8	2.8	14.0	2
13.7	3		**MDW 1370NHGS3**	52.3	72.8	136.8	2.8	14.0	1
	5		**1370NHGS5**	94.3	114.8	178.8	2.8	14.0	1
	10		**1370NHGS10**	178.3	198.8	262.8	2.8	14.0	2
13.8	3		**MDW 1380NHGS3**	52.2	72.9	136.9	2.9	14.0	1
	5		**1380NHGS5**	94.2	114.9	178.9	2.9	14.0	1
	10		**1380NHGS10**	178.2	198.9	262.9	2.9	14.0	2
13.9	3		**MDW 1390NHGS3**	52.1	72.9	136.9	2.9	14.0	1
	5		**1390NHGS5**	94.1	114.9	178.9	2.9	14.0	1
	10		**1390NHGS10**	178.1	198.9	262.9	2.9	14.0	2
14.0	3	★	**MDW 1400NHGS3**	51.9	72.9	136.9	2.9	14.0	1
	5	★	**1400NHGS5**	93.9	114.9	178.9	2.9	14.0	1
	10		**1400NHGS10**	177.9	198.9	262.9	2.9	14.0	2
14.1	3	★	**MDW 1410NHGS3**	54.3	75.4	142.9	2.9	15.0	1
	5	★	**1410NHGS5**	97.8	118.9	187.9	2.9	15.0	1
	10		**1410NHGS10**	184.8	205.9	277.9	2.9	15.0	2
14.2	3		**MDW 1420NHGS3**	54.1	75.4	142.9	2.9	15.0	1
	5		**1420NHGS5**	97.6	118.9	187.9	2.9	15.0	1
	10		**1420NHGS10**	184.6	205.9	277.9	2.9	15.0	2
14.3	3		**MDW 1430NHGS3**	54.1	75.5	143.0	3.0	15.0	1
	5		**1430NHGS5**	97.6	119.0	188.0	3.0	15.0	1
	10		**1430NHGS10**	184.6	206.0	278.0	3.0	15.0	2
14.4	3		**MDW 1440NHGS3**	53.9	75.5	143.0	3.0	15.0	1
	5		**1440NHGS5**	97.4	119.0	188.0	3.0	15.0	1
	10		**1440NHGS10**	184.4	206.0	278.0	3.0	15.0	2
14.5	3	★	**MDW 1450NHGS3**	53.8	75.5	143.0	3.0	15.0	1
	5	★	**1450NHGS5**	97.3	119.0	188.0	3.0	15.0	1
	10		**1450NHGS10**	184.3	206.0	278.0	3.0	15.0	2
14.6	3		**MDW 1460NHGS3**	56.1	78.0	143.0	3.0	15.0	1
	5		**1460NHGS5**	101.1	123.0	188.0	3.0	15.0	1
	10		**1460NHGS10**	191.1	213.0	278.0	3.0	15.0	2
14.7	3		**MDW 1470NHGS3**	56.0	78.0	143.0	3.0	15.0	1
	5		**1470NHGS5**	101.0	123.0	188.0	3.0	15.0	1
	10		**1470NHGS10**	191.0	213.0	278.0	3.0	15.0	2
14.8	3		**MDW 1480NHGS3**	55.9	78.1	143.1	3.1	15.0	1
	5		**1480NHGS5**	100.9	123.1	188.1	3.1	15.0	1
	10		**1480NHGS10**	190.9	213.1	278.1	3.1	15.0	2
14.9	3	★	**MDW 1490NHGS3**	55.8	78.1	143.1	3.1	15.0	1
	5	★	**1490NHGS5**	100.8	123.1	188.1	3.1	15.0	1
	10		**1490NHGS10**	190.8	213.1	278.1	3.1	15.0	2

Grade: DL1300

Diameter ø14.96 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
14.96	3	★	**MDW 1496NHGS3**	55.7	78.1	143.1	3.1	15.0	1
	5	★	**1496NHGS5**	100.7	123.1	188.1	3.1	15.0	1
	10		**1496NHGS10**	190.7	213.1	278.1	3.1	15.0	2
15.0	3	★	**MDW 1500NHGS3**	55.6	78.1	143.1	3.1	15.0	1
	5	★	**1500NHGS5**	100.6	123.1	188.1	3.1	15.0	1
	10		**1500NHGS10**	190.6	213.1	278.1	3.1	15.0	2
15.1	3		**MDW 1510NHGS3**	58.0	80.6	149.1	3.1	16.0	1
	5		**1510NHGS5**	104.5	127.1	197.1	3.1	16.0	1
	10		**1510NHGS10**	197.5	220.1	293.1	3.1	16.0	2
15.2	3		**MDW 1520NHGS3**	57.8	80.6	149.1	3.1	16.0	1
	5		**1520NHGS5**	104.3	127.1	197.1	3.1	16.0	1
	10		**1520NHGS10**	197.3	220.1	293.1	3.1	16.0	2
15.3	3		**MDW 1530NHGS3**	57.8	80.7	149.2	3.2	16.0	1
	5		**1530NHGS5**	104.3	127.2	197.2	3.2	16.0	1
	10		**1530NHGS10**	197.3	220.2	293.2	3.2	16.0	2
15.4	3		**MDW 1540NHGS3**	57.6	80.7	149.2	3.2	16.0	1
	5		**1540NHGS5**	104.1	127.2	197.2	3.2	16.0	1
	10		**1540NHGS10**	197.1	220.2	293.2	3.2	16.0	2
15.5	3	★	**MDW 1550NHGS3**	57.5	80.7	149.2	3.2	16.0	1
	5	★	**1550NHGS5**	104.0	127.2	197.2	3.2	16.0	1
	10		**1550NHGS10**	197.0	220.2	293.2	3.2	16.0	2
15.6	3		**MDW 1560NHGS3**	59.8	83.2	149.2	3.2	16.0	1
	5		**1560NHGS5**	107.8	131.2	197.2	3.2	16.0	1
	10		**1560NHGS10**	203.8	227.2	293.2	3.2	16.0	2
15.7	3		**MDW 1570NHGS3**	59.7	83.2	149.2	3.2	16.0	1
	5		**1570NHGS5**	107.7	131.2	197.2	3.2	16.0	1
	10		**1570NHGS10**	203.7	227.2	293.2	3.2	16.0	2
15.8	3		**MDW 1580NHGS3**	59.6	83.3	149.3	3.3	16.0	1
	5		**1580NHGS5**	107.6	131.3	197.3	3.3	16.0	1
	10		**1580NHGS10**	203.6	227.3	293.3	3.3	16.0	2
15.9	3		**MDW 1590NHGS3**	59.5	83.3	149.3	3.3	16.0	1
	5		**1590NHGS5**	107.5	131.3	197.3	3.3	16.0	1
	10		**1590NHGS10**	203.5	227.3	293.3	3.3	16.0	2
16.0	3	★	**MDW 1600NHGS3**	59.3	83.3	149.3	3.3	16.0	1
	5	★	**1600NHGS5**	107.3	131.3	197.3	3.3	16.0	1
	10		**1600NHGS10**	203.3	227.3	293.3	3.3	16.0	2

Grade: DL1300

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Aluminum alloy castings/ aluminum alloy die castings	Wrought Aluminum Alloy
ø6.0	n	7,400	6,400
	vc	80 - **140** - 200	80 - **120** - 200
	f	0.2 - **0.4** - 0.6	0.2 - **0.3** - 0.4
ø10.0	n	5,700	4,800
	vc	100 - **180** - 250	100 - **150** - 250
	f	0.4 - **0.6** - 0.8	0.2 - **0.35** - 0.5
ø16.0	n	4,000	3,600
	vc	120 - **200** - 250	120 - **180** - 250
	f	0.4 - **0.7** - 1.0	0.3 - **0.45** - 0.6

Min. - **Optimum** - Max.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SDC series (External Coolant Supply)

Aluminum Alloy | Composite CFRP



■ General Features

SUMIDIA Coat SDC series drills for carbon fibre reinforced plastic (CFRP) employ our proprietary multi-stepped point angle. Combined with a diamond coating, improved drilled hole quality and long tool life can be achieved.

■ Product Range

Cat. No.	Diameter Range (mm)	Point Angle	Hole Depth (L/D)
MDS□□□□□SDC3	ø2.0 to ø4.0	90°	up to 3
	ø4.851 to ø10.0	130°	

■ Features and Applications

● **Excellent Drilled-Hole Quality**
- Sharp cutting edge shape reduces delamination of fibre layers and minimizes burrs.
- Continuously changing point angle, disperses the load placed on the cutting edge and preventing breakage.

● **Long Tool Life**
- Utilises high-strength diamond coating with excellent adhesion, delivering high quality and long tool life.

■ Performance

Comparison of Machined Surface Quality

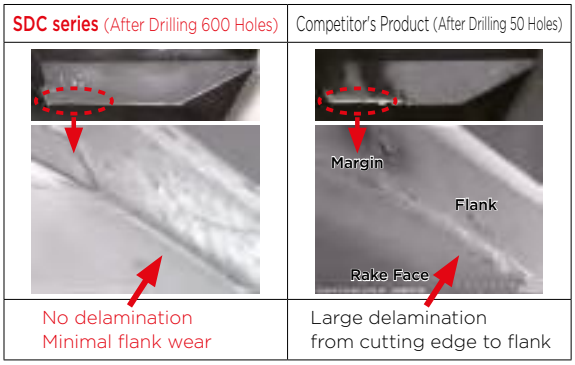
Excellent drilled hole surface quality
Prevents Delamination and Burrs



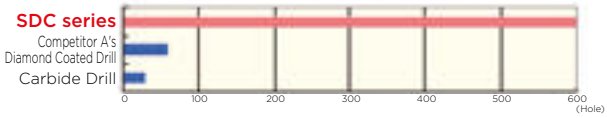
Tool : SUMIDIA Coat Drill SDC series ø6.35
Work Material : CFRP
Cutting Conditions : n =6,000min^{-1}, f =0.1mm/rev, H =28mm (Through), Dry

Tool Life Comparison

Effects of Diamond Coating



Stable diamond layer adhesion prevents delamination.
Excellent wear resistance enables high-quality drilling with long tool life.



Tool : SUMIDIA Coat Drill ø6.35
Work Material : CFRP
Cutting Conditions : n =6,000min^{-1}, f =0.075mm/rev, H =15mm (Through), Dry

SUMIDIA Coat 3D

*For tolerances, refer to Chapter N - References.

Fig 1 (Diameter ø2.0 to 4.0mm)

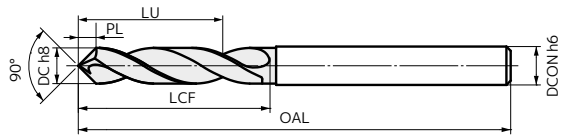
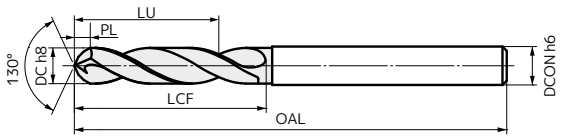


Fig 2 (Diameter ø4.851 to 10.0mm)



Diameter ø2.0 to 10.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.0	3	★	**MDS 02000SDC3**	10.50	13.5	50.0	1.0	2.0	1
2.489	3	★	**02489SDC3**	12.47	16.2	50.2	1.2	2.489	1
3.0	3	★	**03000SDC3**	14.5	19.0	50.5	1.5	3.0	1
3.300	3	★	**03300SDC3**	16.8	21.7	61.7	1.7	3.300	1
4.0	3	★	**04000SDC3**	18.5	24.5	62.0	2.0	4.0	1
4.851	3	★	**04851SDC3**	21.3	28.6	77.1	1.1	4.851	2
5.0	3	★	**05000SDC3**	21.2	28.7	77.2	1.2	5.0	2
5.6	3	★	**05600SDC3**	22.9	31.3	82.3	1.3	5.6	2
6.0	3	★	**06000SDC3**	22.4	31.4	82.4	1.4	6.0	2
6.375	3	★	**06375SDC3**	24.4	34.0	84.5	1.5	6.375	2
7.0	3	★	**07000SDC3**	26.1	36.6	84.6	1.6	7.0	2
7.938	3	★	**07938SDC3**	30.0	41.9	91.9	1.9	7.938	2
8.0	3	★	**08000SDC3**	29.9	41.9	91.9	1.9	8.0	2
9.0	3	★	**09000SDC3**	33.6	47.1	100.1	2.1	9.0	2
9.550	3	★	**09550SDC3**	37.9	52.2	107.2	2.2	9.550	2
10.0	3	★	**10000SDC3**	37.3	52.3	107.3	2.3	10.0	2

Grade: DCX20

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	CFRP Only (Dry Drilling)	Stacked Sheets of CFRP and Aluminum Alloys (Dry Drilling)
ø6.0	n	6,400	3,200
	vc	80 - **120** - 150	40 - **60** - 80
	f	0.05 - **0.08** - 0.10	0.03 - **0.05** - 0.10
ø12.0	n	2,700	1,600
	vc	80 - **100** - 120	40 - **60** - 80
	f	0.05 - **0.08** - 0.10	0.03 - **0.05** - 0.10

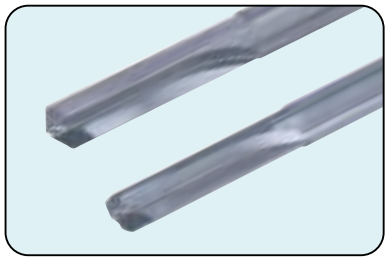
Min. - **Optimum** - Max.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DAL series/DDL series

Aluminum Alloy | Composite CFRP

PCD 3D



From General to High Precision Drilling of Aluminum Alloys

- High precision DAL series is able to produce holes of IT Class of 7 to 8.
- General DDL series is able to produce holes of IT class 11 to 12, mainly for pre-tap hole drilling.

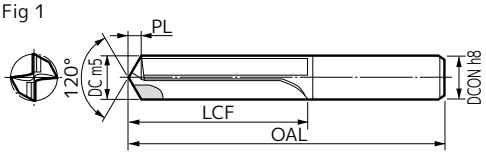
DAL series

*For tolerances, refer to Chapter N - References. Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	
	Roughing	

Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DAL 0500H to 0600H		ø5 ≤ DC ≤ ø6	31.6	81.6	1.6	1
0601H to 0700H		ø6 < DC ≤ ø7	36.9	91.9	1.9	1
0701H to 0800H		ø7 < DC ≤ ø8	37.2	92.2	2.2	1
0801H to 0900H		ø8 < DC ≤ ø9	42.5	102.5	2.5	1
0901H to 1000H		ø9 < DC ≤ ø10	42.8	102.8	2.8	1
1001H to 1100H		ø10 < DC ≤ ø11	53.1	113.1	3.1	1
1101H to 1200H		ø11 < DC ≤ ø12	53.4	113.4	3.4	1

Fig 1



Ordering numbers should be handled according to this example: ø6.05mm drill → DAL0605H.

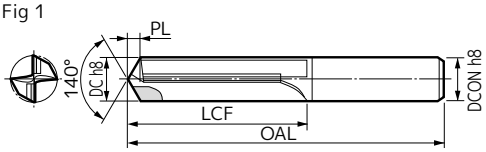
DDL series

*For tolerances, refer to Chapter N - References. Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	
	Roughing	

Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DDL 050V to 060V		ø5 ≤ DC ≤ ø6	31.5	81.0	1.0	1
061V to 070V		ø6 < DC ≤ ø7	36.2	91.2	1.2	1
071V to 080V		ø7 < DC ≤ ø8	36.4	91.4	1.4	1
081V to 090V		ø8 < DC ≤ ø9	41.6	101.6	1.6	1
091V to 100V		ø9 < DC ≤ ø10	41.7	101.7	1.7	1
101V to 110V		ø10 < DC ≤ ø11	51.9	111.9	1.9	1
111V to 120V		ø11 < DC ≤ ø12	52.1	112.1	2.1	1

Fig 1



Ordering numbers should be handled according to this example: ø10.5mm drill → DDL105V.

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	DAL series	DDL series	Depth of Cut	Oil
ø8.0	n	4,000	8,000	L/D= Below 3	Emulsion type
	vc	80 - **100** - 150	150 - **200** - 250		
	f	0.05 - **0.1** - 0.15	0.1 - **0.15** - 0.25		
ø12.0	n	2,700	5,300		
	vc	80 - **100** - 150	150 - **200** - 250		
	f	0.08 - **0.13** - 0.2	0.15 - **0.2** - 0.3		

Min. - **Optimum** - Max.

Important Notes

- When using DAL series for high-precision machining, select a high rigidity machine and high precision holder.
- Supply coolant generously at the entrance of the hole.

MLDH-L type/MLDH-P type



■ Features

Micro Long Drills are oil-hole drills for high-efficiency drilling developed for drilling deep, small-diameter holes. Featuring improved drill strength, often a problem area with small drills.

● **Deep hole drilling**

Flute shape ensures good drill rigidity and chip evacuation.
High-efficiency drilling to depths of over 20 times the diameter at over vf = 500mm/min
(for drill diameter ø1.3mm on SUS416 equivalent).
Optimal thinning and edge balance for stable chip control.

● **Long tool life**

Special coating provides long tool life with a wide variety of work materials.
Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring stable tool life.

■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of Items
Deep Hole Drilling	MLDH□□□□L5	ø0.8 to 2.0	up to 5	41 items in stock
	MLDH□□□□L12	ø0.8 to 2.0	up to 12	41 items in stock
	MLDH□□□□L20	ø0.8 to 2.0	up to 20	41 items in stock
	MLDH□□□□L30	ø0.8 to 2.0	up to 30	41 items in stock
For Guide Hole	MLDH□□□□P	ø0.8 to 2.0	up to 2	41 items in stock

■ Recommended Cutting Conditions

MLDH-P type / MLDH-L5 type

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Alloy
ø1.0	n	16,000	16,000	16,000	9,500	16,000	19,000	3,200
	vc	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.02 - **0.03** - 0.04	0.03 - **0.04** - 0.06	0.005 - **0.01** - 0.02
ø1.5	n	11,000	11,000	11,000	6,400	11,000	13,000	2,100
	vc	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.04 - **0.08** - 0.12	0.04 - **0.08** - 0.12	0.04 - **0.08** - 0.12	0.02 - **0.05** - 0.10	0.04 - **0.08** - 0.12	0.05 - **0.10** - 0.15	0.01 - **0.03** - 0.05
ø2.0	n	8,000	8,000	8,000	4,800	8,000	9,500	1,600
	vc	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.06 - **0.08** - 0.12	0.06 - **0.08** - 0.12	0.06 - **0.08** - 0.12	0.04 - **0.06** - 0.10	0.06 - **0.08** - 0.12	0.08 - **0.12** - 0.15	0.01 - **0.03** - 0.05

Min. - **Optimum** - Max.

MLDH-L12 type / MLDH-L20 type / MLDH-L30 type

Diameter DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Alloy
ø1.0	n	16,000	16,000	16,000	9,500	16,000	19,000	3,200
	vc	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.02 - **0.03** - 0.04	0.03 - **0.04** - 0.06	0.005 - **0.01** - 0.02
ø1.5	n	11,000	11,000	11,000	6,400	11,000	13,000	2,100
	vc	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07	0.02 - **0.04** - 0.07	0.04 - **0.07** - 0.10	0.05 - **0.08** - 0.12	0.01 - **0.02** - 0.03
ø2.0	n	8,000	8,000	8,000	4,800	8,000	9,500	1,600
	vc	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.07** - 0.10	0.05 - **0.08** - 0.12	0.01 - **0.02** - 0.03

* If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, the tool life may be shortened.

Min. - **Optimum** - Max.

■ Application Examples

● **Automotive component molds (equivalent to SUS416)**

Tool : MLDH 1400L20 (guide: MLDH1400P)
Machine : Vertical Machining Centre (HSKA63)
Coolant : Internal Coolant Supply (Emulsion type, pump source pressure: 4MPa)
Cutting Conditions : vc = 60m/min, f = 0.03mm/rev, H = 21mm
Tool Life : 600 holes (11.4m)



● **Tooling components (equivalent to SKD11)**

Tool : MLDH 1900L20 (guide: MLDH1900P)
Machine : Vertical Machining Centre (HSKA63)
Coolant : Internal Coolant Supply (Emulsion type, pump source pressure: 4MPa)
Cutting Conditions : vc = 60m/min, f = 0.10mm/rev, H = 27mm
Tool Life : 600 units (18m)



MLDH-L type/MLDH-P type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | Coolant Hole | 5D | 12D | 20D | 30D | Pilot 2D

Fig 1 (MLDH-P type)

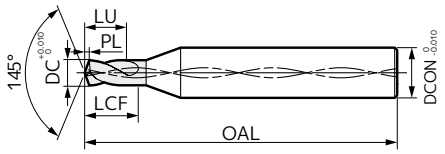
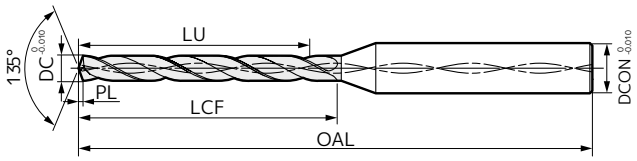


Fig 2 (MLDH-L type)



Diameter ø0.80 to 0.90mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.80	2	★	MLDH 0800P	2.0	3.2	45	0.1	3.0	1
	5	★	0800L5	6.8	8	50.0	0.2	3.0	2
	12	★	0800L12	12.8	14	55	0.2	3.0	2
	20	★	0800L20	17.8	19	60	0.2	3.0	2
	30	★	0800L30	26.8	28	70	0.2	3.0	2
0.81	2	★	MLDH 0810P	2.0	3.2	45	0.1	3.0	1
	5	★	0810L5	7.8	9	50.0	0.2	3.0	2
	12	★	0810L12	12.8	14	55	0.2	3.0	2
	20	★	0810L20	17.8	19	60	0.2	3.0	2
	30	★	0810L30	26.8	28	70	0.2	3.0	2
0.82	2	★	MLDH 0820P	2.1	3.3	45	0.1	3.0	1
	5	★	0820L5	7.8	9	50.0	0.2	3.0	2
	12	★	0820L12	12.8	14	55	0.2	3.0	2
	20	★	0820L20	18.8	20	60	0.2	3.0	2
	30	★	0820L30	26.8	28	70	0.2	3.0	2
0.83	2	★	MLDH 0830P	2.1	3.3	45	0.1	3.0	1
	5	★	0830L5	7.8	9	50.0	0.2	3.0	2
	12	★	0830L12	12.8	14	55	0.2	3.0	2
	20	★	0830L20	18.8	20	60	0.2	3.0	2
	30	★	0830L30	26.8	28	70	0.2	3.0	2
0.84	2	★	MLDH 0840P	2.1	3.4	45	0.1	3.0	1
	5	★	0840L5	7.7	9	50.0	0.2	3.0	2
	12	★	0840L12	12.7	14	55	0.2	3.0	2
	20	★	0840L20	18.7	20	60	0.2	3.0	2
	30	★	0840L30	27.7	29	70	0.2	3.0	2
0.85	2	★	MLDH 0850P	2.1	3.4	45	0.1	3.0	1
	5	★	0850L5	7.7	9	50.0	0.2	3.0	2
	12	★	0850L12	12.7	14	55	0.2	3.0	2
	20	★	0850L20	18.7	20	60	0.2	3.0	2
	30	★	0850L30	27.7	29	70	0.2	3.0	2
0.86	2	★	MLDH 0860P	2.1	3.4	45	0.1	3.0	1
	5	★	0860L5	7.7	9	50.0	0.2	3.0	2
	12	★	0860L12	13.7	15	55	0.2	3.0	2
	20	★	0860L20	19.7	21	65	0.2	3.0	2
	30	★	0860L30	27.7	29	70	0.2	3.0	2
0.87	2	★	MLDH 0870P	2.2	3.5	45	0.1	3.0	1
	5	★	0870L5	7.7	9	50.0	0.2	3.0	2
	12	★	0870L12	13.7	15	55	0.2	3.0	2
	20	★	0870L20	19.7	21	65	0.2	3.0	2
	30	★	0870L30	28.7	30	70	0.2	3.0	2
0.88	2	★	MLDH 0880P	2.2	3.5	45	0.1	3.0	1
	5	★	0880L5	7.7	9	50.0	0.2	3.0	2
	12	★	0880L12	13.7	15	55	0.2	3.0	2
	20	★	0880L20	19.7	21	65	0.2	3.0	2
	30	★	0880L30	28.7	30	70	0.2	3.0	2
0.89	2	★	MLDH 0890P	2.3	3.6	45	0.1	3.0	1
	5	★	0890L5	7.7	9	50.0	0.2	3.0	2
	12	★	0890L12	13.7	15	55	0.2	3.0	2
	20	★	0890L20	19.7	21	65	0.2	3.0	2
	30	★	0890L30	28.7	30	70	0.2	3.0	2
0.90	2	★	MLDH 0900P	2.3	3.6	45	0.1	3.0	1
	5	★	0900L5	7.7	9	50.0	0.2	3.0	2
	12	★	0900L12	13.7	15	55	0.2	3.0	2
	20	★	0900L20	20.7	22	65	0.2	3.0	2
	30	★	0900L30	29.7	31	75	0.2	3.0	2

Part Number Suffix - P: For Guide Hole
Grade: ACV70

Diameter ø0.91 to 1.05mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.91	2	★	MLDH 0910P	2.2	3.6	45	0.1	3.0	1
	5	★	0910L5	8.6	10	50.0	0.2	3.0	2
	12	★	0910L12	13.6	15	55	0.2	3.0	2
	20	★	0910L20	20.6	22	65	0.2	3.0	2
	30	★	0910L30	29.6	31	75	0.2	3.0	2
0.92	2	★	MLDH 0920P	2.3	3.7	45	0.1	3.0	1
	5	★	0920L5	8.6	10	50.0	0.2	3.0	2
	12	★	0920L12	14.6	16	60	0.2	3.0	2
	20	★	0920L20	20.6	22	65	0.2	3.0	2
	30	★	0920L30	29.6	31	75	0.2	3.0	2
0.93	2	★	MLDH 0930P	2.3	3.7	45	0.1	3.0	1
	5	★	0930L5	8.6	10	50.0	0.2	3.0	2
	12	★	0930L12	14.6	16	60	0.2	3.0	2
	20	★	0930L20	20.6	22	65	0.2	3.0	2
	30	★	0930L30	30.6	32	75	0.2	3.0	2
0.94	2	★	MLDH 0940P	2.4	3.8	45	0.1	3.0	1
	5	★	0940L5	8.6	10	50.0	0.2	3.0	2
	12	★	0940L12	14.6	16	60	0.2	3.0	2
	20	★	0940L20	21.6	23	65	0.2	3.0	2
	30	★	0940L30	30.6	32	75	0.2	3.0	2
0.95	2	★	MLDH 0950P	2.4	3.8	45	0.2	3.0	1
	5	★	0950L5	8.6	10	50.0	0.2	3.0	2
	12	★	0950L12	14.6	16	60	0.2	3.0	2
	20	★	0950L20	21.6	23	65	0.2	3.0	2
	30	★	0950L30	30.6	32	75	0.2	3.0	2
0.96	2	★	MLDH 0960P	2.4	3.8	45	0.2	3.0	1
	5	★	0960L5	8.6	10	50.0	0.2	3.0	2
	12	★	0960L12	14.6	16	60	0.2	3.0	2
	20	★	0960L20	21.6	23	65	0.2	3.0	2
	30	★	0960L30	31.6	33	75	0.2	3.0	2
0.97	2	★	MLDH 0970P	2.4	3.9	45	0.2	3.0	1
	5	★	0970L5	8.5	10	50.0	0.2	3.0	2
	12	★	0970L12	14.5	16	60	0.2	3.0	2
	20	★	0970L20	21.5	23	65	0.2	3.0	2
	30	★	0970L30	31.5	33	75	0.2	3.0	2
0.98	2	★	MLDH 0980P	2.4	3.9	45	0.2	3.0	1
	5	★	0980L5	8.5	10	50.0	0.2	3.0	2
	12	★	0980L12	15.5	17	60	0.2	3.0	2
	20	★	0980L20	22.5	24	65	0.2	3.0	2
	30	★	0980L30	31.5	33	75	0.2	3.0	2
0.99	2	★	MLDH 0990P	2.5	4	45	0.2	3.0	1
	5	★	0990L5	8.5	10	50.0	0.2	3.0	2
	12	★	0990L12	15.5	17	60	0.2	3.0	2
	20	★	0990L20	22.5	24	65	0.2	3.0	2
	30	★	0990L30	32.5	34	75	0.2	3.0	2
1.00	2	★	MLDH 1000P	2.5	4	45	0.2	3.0	1
	5	★	1000L5	8.5	10	50.0	0.2	3.0	2
	12	★	1000L12	15.5	17	60	0.2	3.0	2
	20	★	1000L20	22.5	24	65	0.2	3.0	2
	30	★	1000L30	32.5	34	75	0.2	3.0	2
1.05	2	★	MLDH 1050P	2.6	4.2	45	0.2	3.0	1
	5	★	1050L5	10.4	12	55.0	0.2	3.0	2
	12	★	1050L12	16.4	18	60	0.2	3.0	2
	20	★	1050L20	23.4	25	65	0.2	3.0	2
	30	★	1050L30	34.4	36	80	0.2	3.0	2

Part Number Suffix - P: For Guide Hole
Grade: ACV70

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MLDH-L type/MLDH-P type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | Coolant Hole | 5D | 12D | 20D | 30D | Pilot 2D

Fig 1 (MLDH-P type)

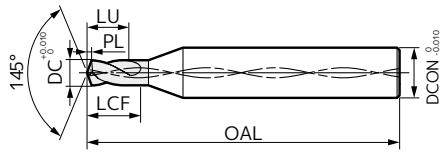
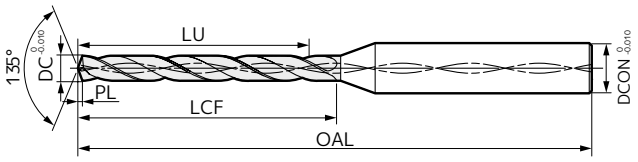


Fig 2 (MLDH-L type)



Diameter ø1.10 to 1.60mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	★	**MLDH 1100P**	2.8	4.4	45	0.2	3.0	1
	5	★	**1100L5**	10.4	12	55.0	0.2	3.0	2
1.10	12	★	**1100L12**	17.4	19	60	0.2	3.0	2
	20	★	**1100L20**	24.4	26	70	0.2	3.0	2
	30	★	**1100L30**	35.4	37	80	0.2	3.0	2
	2	★	**MLDH 1150P**	2.9	4.6	45	0.2	3.0	1
	5	★	**1150L5**	10.3	12	55.0	0.2	3.0	2
1.15	12	★	**1150L12**	18.3	20	60	0.2	3.0	2
	20	★	**1150L20**	26.3	28	70	0.2	3.0	2
	30	★	**1150L30**	37.3	39	80	0.2	3.0	2
	2	★	**MLDH 1200P**	3.0	4.8	45	0.2	3.0	1
	5	★	**1200L5**	10.2	12	55.0	0.2	3.0	2
1.20	12	★	**1200L12**	18.2	20	60	0.2	3.0	2
	20	★	**1200L20**	27.2	29	70	0.2	3.0	2
	30	★	**1200L30**	39.2	41	85	0.2	3.0	2
	2	★	**MLDH 1250P**	3.1	5.0	45	0.2	3.0	1
	5	★	**1250L5**	12.1	14	55.0	0.3	3.0	2
1.25	12	★	**1250L12**	19.1	21	65	0.3	3.0	2
	20	★	**1250L20**	28.1	30	70	0.3	3.0	2
	30	★	**1250L30**	41.1	43	85	0.3	3.0	2
	2	★	**MLDH 1300P**	3.3	5.2	45	0.2	3.0	1
	5	★	**1300L5**	12.1	14	55.0	0.3	3.0	2
1.30	12	★	**1300L12**	20.1	22	65	0.3	3.0	2
	20	★	**1300L20**	29.1	31	75	0.3	3.0	2
	30	★	**1300L30**	42.1	44	85	0.3	3.0	2
	2	★	**MLDH 1350P**	3.4	5.4	45	0.2	3.0	1
	5	★	**1350L5**	12.0	14	55.0	0.3	3.0	2
1.35	12	★	**1350L12**	21.0	23	65	0.3	3.0	2
	20	★	**1350L20**	30.0	32	75	0.3	3.0	2
	30	★	**1350L30**	44.0	46	90	0.3	3.0	2
	2	★	**MLDH 1400P**	3.5	5.6	45	0.2	3.0	1
	5	★	**1400L5**	11.9	14	55.0	0.3	3.0	2
1.40	12	★	**1400L12**	21.9	24	65	0.3	3.0	2
	20	★	**1400L20**	31.9	34	75	0.3	3.0	2
	30	★	**1400L30**	45.9	48	90	0.3	3.0	2
	2	★	**MLDH 1450P**	3.6	5.8	45	0.2	3.0	1
	5	★	**1450L5**	13.8	16	55.0	0.3	3.0	2
1.45	12	★	**1450L12**	22.8	25	65	0.3	3.0	2
	20	★	**1450L20**	32.8	35	75	0.3	3.0	2
	30	★	**1450L30**	46.8	49	90	0.3	3.0	2
	2	★	**MLDH 1500P**	3.8	6	45	0.2	3.0	1
	5	★	**1500L5**	13.8	16	55.0	0.3	3.0	2
1.50	12	★	**1500L12**	23.8	26	65	0.3	3.0	2
	20	★	**1500L20**	33.8	36	75	0.3	3.0	2
	30	★	**1500L30**	48.8	51	90	0.3	3.0	2
	2	★	**MLDH 1550P**	3.9	6.2	45	0.2	3.0	1
	5	★	**1550L5**	13.7	16	55.0	0.3	3.0	2
1.55	12	★	**1550L12**	23.7	26	65	0.3	3.0	2
	20	★	**1550L20**	34.7	37	80	0.3	3.0	2
	30	★	**1550L30**	50.7	53	95	0.3	3.0	2
	2	★	**MLDH 1600P**	4.0	6.4	45	0.3	3.0	1
	5	★	**1600L5**	13.6	16	55.0	0.3	3.0	2
1.60	12	★	**1600L12**	24.6	27	70	0.3	3.0	2
	20	★	**1600L20**	35.6	38	80	0.3	3.0	2
	30	★	**1600L30**	51.6	54	95	0.3	3.0	2

Part Number Suffix - P: For Guide Hole
Grade: ACV70

Diameter ø1.65 to 2.00mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	★	**MLDH 1650P**	4.1	6.6	50	0.3	3.0	1
	5	★	**1650L5**	15.5	18	60.0	0.3	3.0	2
1.65	12	★	**1650L12**	25.5	28	70	0.3	3.0	2
	20	★	**1650L20**	37.5	40	80	0.3	3.0	2
	30	★	**1650L30**	53.5	56	95	0.3	3.0	2
	2	★	**MLDH 1700P**	4.3	6.8	50	0.3	3.0	1
	5	★	**1700L5**	15.5	18	60.0	0.4	3.0	2
1.70	12	★	**1700L12**	26.5	29	70	0.4	3.0	2
	20	★	**1700L20**	38.5	41	80	0.4	3.0	2
	30	★	**1700L30**	55.5	58	100	0.4	3.0	2
	2	★	**MLDH 1750P**	4.4	7	50	0.3	3.0	1
	5	★	**1750L5**	15.4	18	60.0	0.4	3.0	2
1.75	12	★	**1750L12**	27.4	30	70	0.4	3.0	2
	20	★	**1750L20**	39.4	42	85	0.4	3.0	2
	30	★	**1750L30**	57.4	60	100	0.4	3.0	2
	2	★	**MLDH 1800P**	4.5	7.2	50	0.3	3.0	1
	5	★	**1800L5**	15.3	18	60.0	0.4	3.0	2
1.80	12	★	**1800L12**	28.3	31	70	0.4	3.0	2
	20	★	**1800L20**	40.3	43	85	0.4	3.0	2
	30	★	**1800L30**	58.3	61	100	0.4	3.0	2
	2	★	**MLDH 1850P**	4.6	7.4	50	0.3	3.0	1
	5	★	**1850L5**	17.2	20	60.0	0.4	3.0	2
1.85	12	★	**1850L12**	28.2	31	70	0.4	3.0	2
	20	★	**1850L20**	41.2	44	85	0.4	3.0	2
	30	★	**1850L30**	59.2	62	103	0.4	3.0	2
	2	★	**MLDH 1900P**	4.8	7.6	50	0.3	3.0	1
	5	★	**1900L5**	17.2	20	60.0	0.4	3.0	2
1.90	12	★	**1900L12**	29.2	32	75	0.4	3.0	2
	20	★	**1900L20**	43.2	46	85	0.4	3.0	2
	30	★	**1900L30**	60.2	63	103	0.4	3.0	2
	2	★	**MLDH 1950P**	4.9	7.8	50	0.3	3.0	1
	5	★	**1950L5**	17.1	20	60.0	0.4	3.0	2
1.95	12	★	**1950L12**	30.1	33	75	0.4	3.0	2
	20	★	**1950L20**	44.1	47	85	0.4	3.0	2
	30	★	**1950L30**	61.1	64	103	0.4	3.0	2
	2	★	**MLDH 2000P**	5.0	8	50	0.3	3.0	1
	5	★	**2000L5**	17.0	20	60.0	0.4	3.0	2
2.00	12	★	**2000L12**	31.0	34	75	0.4	3.0	2
	20	★	**2000L20**	45.0	48	90	0.4	3.0	2
	30	★	**2000L30**	63.0	66	103	0.4	3.0	2

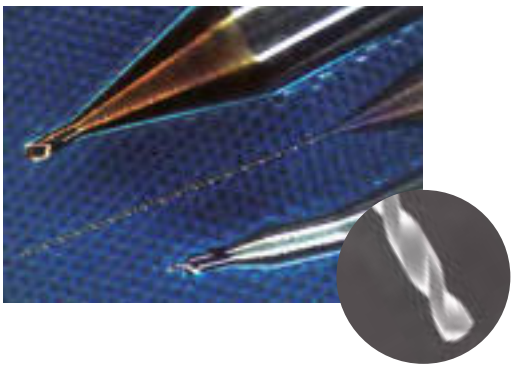
Part Number Suffix - P: For Guide Hole
Grade: ACV70

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDUS series/MDUP series/MDSS series

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Aluminum Alloy | Copper Alloy

For Steel, Stainless Steel and Other Metals



■ Micro MULTIDRILL MDUS series ø0.03 to ø0.19mm

- High-precision shank (Shank tolerance h3, circularity 0.3µm or less, cylindricity 0.5µm or less)
- Ultra-thin TiAlN coating gives improved wear resistance
- Perfect for drilling steel, stainless steel, or copper
- Available from ø0.03mm to ø0.19mm in 0.005mm increments

■ Micro Multi Pointing Drill MDUP series ø0.03 to ø0.18mm

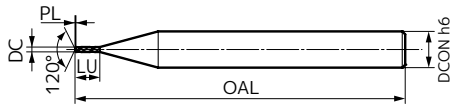
- For drilling guide hole for MDUS series drills



PVD Coat | Pilot 1D

*For tolerances, refer to Chapter N - References.

Fig 1 (Helix Angle: 30°)



DC	Tolerance
Less than 0.1	From -0.005 to -0.010
0.1 and above	From -0.010 to -0.015

Micro Multi Pointing Drill MDUP series Diameter ø0.03 to 0.18mm

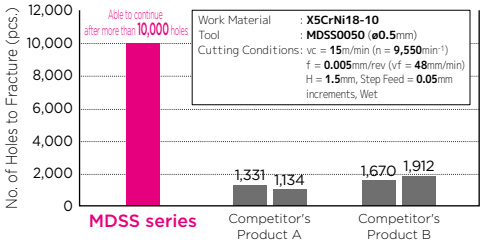
Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.03	★	**MDUP 0030-30C**	0.02	**38.2**	0.01	3.0	1
0.04	★	**0040-30C**	0.04	**38.2**	0.01	3.0	1
0.05	★	**0050-30C**	0.05	**38.2**	0.01	3.0	1
0.08	★	**0080-30C**	0.06	**38.2**	0.02	3.0	1
0.10	★	**0100-30C**	0.10	**38.2**	0.03	3.0	1
0.12	★	**0120-30C**	0.08	**38.2**	0.03	3.0	1
0.15	★	**0150-30C**	0.08	**38.2**	0.04	3.0	1
0.18	★	**0180-30C**	0.17	**38.2**	0.05	3.0	1

Grade: KP011

■ Solid Carbide MINI-MULTIDRILL MDSS series ø0.20 to ø1.00mm

- The combination of a hard, tough carbide substrate and a high-rigidity design (web thickness, flute width ratio, helix angle) greatly improves fracture resistance.
- PVD coating dedicated for small drills significantly extends tool life.
- Applicable to a wide range of work materials including carbon steel, alloy steel, die steel, and stainless steel.
- Shanks standardised to ø3mm diameter and overall length of 38mm for greater ease of use.

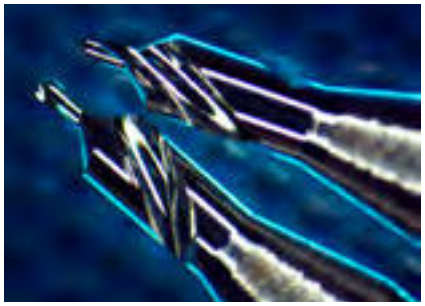


MDSS Recommended Cutting Conditions (Wet) (Inquire about cutting conditions for the MDUS series)

Work Material / Cutting Conditions / Dia. DC (mm)	Alloy Steel, Pre-hardened Steel CrMo,NAK			Die Steel, Tempered Steel (30 to 40HRC)			Stainless Steel Cr		
	Spindle Speed min-1	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min-1	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min-1	Feed Rate mm/min	Step Feed (mm)
ø0.2	26,500	50	0.1D	21,200	40	0.1D	10,600	20	0.1D
ø0.3	26,500	80		21,200	60		10,600	30	
ø0.4	25,900	100		19,900	80		9,500	40	
ø0.5	25,500	150		19,100	110		9,500	50	
ø1.0	15,900	240	0.2D to 0.5D*	12,700	190	0.2D to 0.5D*	5,600	80	

1. The conditions at left are recommended under wet conditions, using water-soluble coolant.
2. If cutting noise and vibration are present, please adjust the cutting conditions accordingly.
3. If the machine cannot achieve the recommended spindle speed, use the maximum spindle speed available. In this case, lower the feed rate by the same ratio.

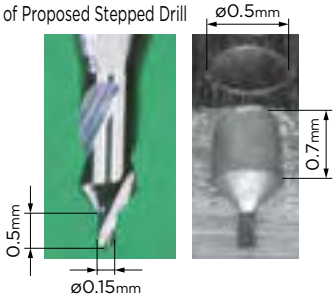
*Step feed is recommended for drilling of holes deeper than 3D (D=drill diameter).



■ Made-to-order Micro Drills ø0.02mm up

- Dedicated cutting edge designs are available for various work materials including non-metals, ceramics, and resins.
- Customised designs are also available for improved efficiency, such as integration of processes by using a stepped drill.
- Various drill diameters (from ø0.02) and LxDs are available to order. (Contact us for possible profiles.)

Example of Proposed Stepped Drill



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MDUS series/MDSS series (External Coolant Supply/Small Diameter type)

MDUS: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Aluminum Alloy | Copper Alloy

MDSS: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | FB Coat | 10D

*For tolerances, refer to Chapter N - References.

Fig 1 (ø0.030 to 0.190mm)

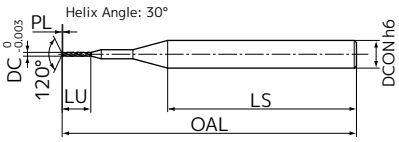


Fig 2 (ø0.20 to 0.34mm)

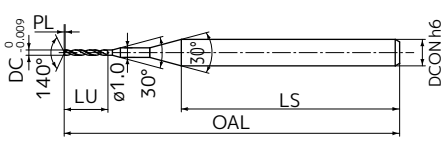
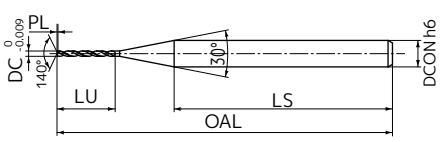


Fig 3 (ø0.35 to 1.00mm)



Diameter ø0.030 to 0.49mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
0.030		★	MDUS 0030-30C	0.26	38.0	0.01	28	3.0	1
0.035			0035-30C	0.35	38.0	0.01	28	3.0	1
0.040	10	★	0040-30C	0.34	38.0	0.01	28	3.0	1
0.045			0045-30C	0.46	38.0	0.01	28	3.0	1
0.050		★	0050-30C	0.45	38.0	0.01	28	3.0	1
0.055			MDUS 0055-30C	0.55	38.0	0.02	28	3.0	1
0.060			0060-30C	0.54	38.0	0.02	28	3.0	1
0.065			0065-30C	0.64	38.0	0.02	28	3.0	1
0.070	10		0070-30C	0.63	38.0	0.02	28	3.0	1
0.075			0075-30C	0.73	38.0	0.02	28	3.0	1
0.080		★	0080-30C	0.72	38.0	0.02	28	3.0	1
0.085			0085-30C	0.92	38.0	0.02	28	3.0	1
0.090			MDUS 0090-30C	0.91	38.0	0.03	28	3.0	1
0.095			0095-30C	0.91	38.0	0.03	28	3.0	1
0.100	10	★	0100-30C	0.90	38.0	0.03	28	3.0	1
0.110			0110-30C	1.09	38.0	0.03	28	3.0	1
0.120		★	0120-30C	1.08	38.0	0.03	28	3.0	1
0.130			MDUS 0130-30C	1.37	38.0	0.04	28	3.0	1
0.140	10		0140-30C	1.36	38.0	0.04	28	3.0	1
0.150		★	0150-30C	1.35	38.0	0.04	28	3.0	1
0.160			MDUS 0160-30C	1.64	38.0	0.05	28	3.0	1
0.170	10		0170-30C	1.63	38.0	0.05	28	3.0	1
0.180		★	0180-30C	1.62	38.0	0.05	28	3.0	1
0.190			0190-30C	1.71	38.0	0.05	28	3.0	1
0.20		★	MDSS 0020	2.25	38	0.04	28	3.0	2
0.21		★	0021	2.24	38	0.04	28	3.0	2
0.22	10	★	0022	2.23	38	0.04	28	3.0	2
0.23		★	0023	2.21	38	0.04	28	3.0	2
0.24		★	0024	2.20	38	0.04	28	3.0	2
0.25		★	MDSS 0025	2.19	38	0.05	28	3.0	2
0.26		★	0026	2.18	38	0.05	28	3.0	2
0.27	10	★	0027	2.16	38	0.05	28	3.0	2
0.28		★	0028	2.15	38	0.05	28	3.0	2
0.29		★	0029	2.14	38	0.05	28	3.0	2
0.30		★	0030	2.6	38	0.05	28	3.0	2
0.31		★	MDSS 0031	2.6	38	0.06	28	3.0	2
0.32		★	0032	2.6	38	0.06	28	3.0	2
0.33	10	★	0033	2.6	38	0.06	28	3.0	2
0.34		★	0034	2.6	38	0.06	28	3.0	2
0.35		★	0035	3.6	38	0.06	28	3.0	3
0.36		★	MDSS 0036	3.6	38	0.07	28	3.0	3
0.37		★	0037	3.5	38	0.07	28	3.0	3
0.38	10	★	0038	3.5	38	0.07	28	3.0	3
0.39		★	0039	3.5	38	0.07	28	3.0	3
0.40		★	0040	4.5	38	0.07	28	3.0	3
0.41		★	0041	4.5	38	0.07	28	3.0	3
0.42		★	MDSS 0042	4.5	38	0.08	28	3.0	3
0.43		★	0043	4.5	38	0.08	28	3.0	3
0.44	10	★	0044	4.5	38	0.08	28	3.0	3
0.45		★	0045	4.4	38	0.08	28	3.0	3
0.46		★	0046	4.4	38	0.08	28	3.0	3
0.47		★	MDSS 0047	4.4	38	0.09	28	3.0	3
0.48	10	★	0048	4.4	38	0.09	28	3.0	3
0.49		★	0049	4.4	38	0.09	28	3.0	3

Grade: MDUS series KP011 / MDSS series ACF40B

Diameter ø0.50 to 1.00mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
0.50		★	MDSS 0050	5.4	38	0.09	27	3.0	3
0.51	10	★	0051	5.4	38	0.09	27	3.0	3
0.52		★	0052	5.4	38	0.09	27	3.0	3
0.53		★	MDSS 0053	5.3	38	0.10	27	3.0	3
0.54		★	0054	5.3	38	0.10	27	3.0	3
0.55	10	★	0055	5.3	38	0.10	27	3.0	3
0.56		★	0056	5.3	38	0.10	27	3.0	3
0.57		★	0057	5.3	38	0.10	27	3.0	3
0.58		★	MDSS 0058	5.3	38	0.11	27	3.0	3
0.59		★	0059	5.3	38	0.11	27	3.0	3
0.60	10	★	0060	6.3	38	0.11	26	3.0	3
0.61		★	0061	6.2	38	0.11	26	3.0	3
0.62		★	0062	6.2	38	0.11	26	3.0	3
0.63		★	0063	6.2	38	0.11	26	3.0	3
0.64		★	MDSS 0064	6.2	38	0.12	26	3.0	3
0.65		★	0065	6.2	38	0.12	26	3.0	3
0.66	10	★	0066	6.2	38	0.12	26	3.0	3
0.67		★	0067	6.2	38	0.12	26	3.0	3
0.68		★	0068	6.2	38	0.12	26	3.0	3
0.69		★	MDSS 0069	6.1	38	0.13	26	3.0	3
0.70		★	0070	8.1	38	0.13	24	3.0	3
0.71	10	★	0071	8.1	38	0.13	24	3.0	3
0.72		★	0072	8.1	38	0.13	24	3.0	3
0.73		★	0073	8.1	38	0.13	24	3.0	3
0.74		★	0074	8.1	38	0.13	24	3.0	3
0.75		★	MDSS 0075	8.1	38	0.14	24	3.0	3
0.76		★	0076	8.1	38	0.14	24	3.0	3
0.77	10	★	0077	8.0	38	0.14	24	3.0	3
0.78		★	0078	8.0	38	0.14	24	3.0	3
0.79		★	0079	8.0	38	0.14	24	3.0	3
0.80		★	MDSS 0080	9.0	38	0.15	23	3.0	3
0.81		★	0081	9.0	38	0.15	23	3.0	3
0.82	10	★	0082	9.0	38	0.15	23	3.0	3
0.83		★	0083	9.0	38	0.15	23	3.0	3
0.84		★	0084	9.0	38	0.15	23	3.0	3
0.85		★	0085	8.9	38	0.15	23	3.0	3
0.86		★	MDSS 0086	8.9	38	0.16	23	3.0	3
0.87		★	0087	8.9	38	0.16	23	3.0	3
0.88	10	★	0088	8.9	38	0.16	23	3.0	3
0.89		★	0089	8.9	38	0.16	23	3.0	3
0.90		★	0090	9.9	38	0.16	22	3.0	3
0.91		★	MDSS 0091	9.9	38	0.17	22	3.0	3
0.92		★	0092	9.9	38	0.17	22	3.0	3
0.93	10	★	0093	9.8	38	0.17	22	3.0	3
0.94		★	0094	9.8	38	0.17	22	3.0	3
0.95		★	0095	9.8	38	0.17	22	3.0	3
0.96		★	0096	9.8	38	0.17	22	3.0	3
0.97		★	MDSS 0097	9.8	38	0.18	22	3.0	3
0.98	10	★	0098	9.8	38	0.18	22	3.0	3
0.99		★	0099	9.8	38	0.18	22	3.0	3
1.00		★	0100	10.8	38	0.18	21	3.0	3

Grade: MDUS series KP011 / MDSS series ACF40B

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

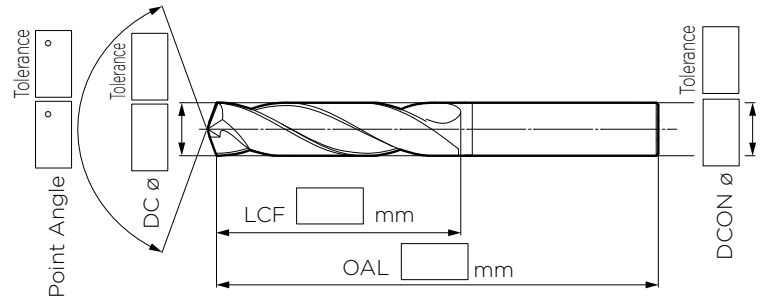
— mark: Not available

N·m Recommended Tightening Torque (N·m)

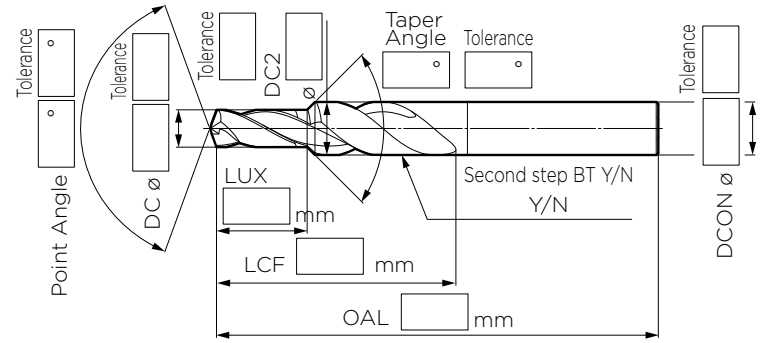
MULTIDRILL Made-to-Order Design Request Sheet

■ Drill Shape

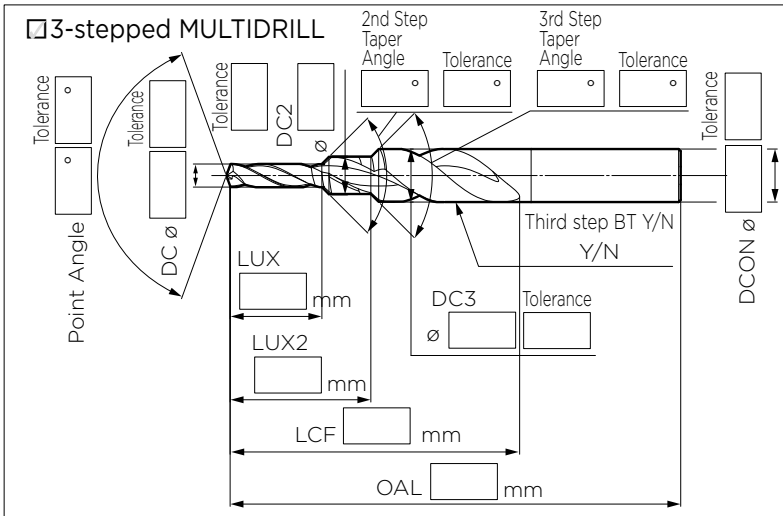
☐Straight MULTIDRILL



☐Stepped MULTIDRILL

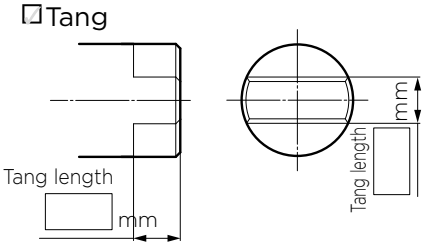


☐3-stepped MULTIDRILL



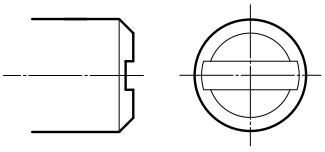
■ Shank Shape

☐Tang



*Tang is not available for 3-fluted drills.

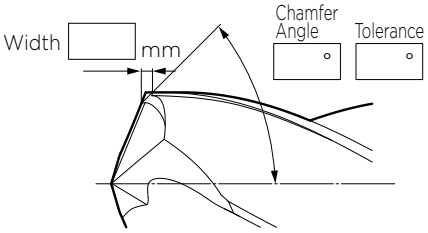
☐Slit



☐Tang/slit not required

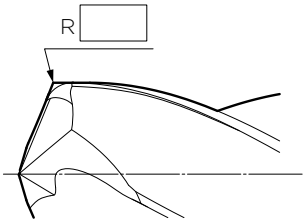
■ Drill Point Corner Edge Shape

☐Corner Edge Chamfer



Burr Countermeasures / Chipping Countermeasures / Hole Bottom Shape

☐Corner Edge Radius



Burr Countermeasures / Chipping Countermeasures / Hole Bottom Shape

☐Corner Edge Chamfering or Radius Not Required

■ MULTIDRILL Details

Cutting Edge Specification: type

Material:

Oil Hole: Y/N

Regrinding Limit: OAL mm

No. of Flutes: 2-flute / 3-flute

Tip Angle: 118° to 179° (180°)

*For blind holes, please let us know if there is a hole bottom profile requirement.

*We may not be able to fulfill requests for cutting edge specifications if the drill point angle is not within 130° to 160°.

■ Machine Information

Coolant: ☐Water-soluble ☐Oil-based ☐MQL

Coolant Supply Information: ☐ Internal Coolant Supply ☐ External Coolant Supply

■ Workpiece Information

Work Material:

Hole Type: Through / Blind

Stepped Part Application: Chamfer/Counterbore

■ Current Tool

Cutting Conditions:

Tool Life:

Tool Life Criteria:

■ Other Requests

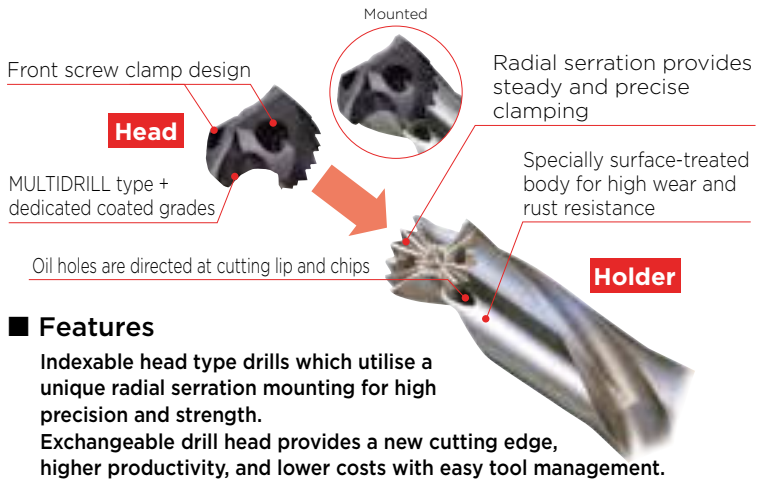
After filling in the required dimensions and other information, contact our nearest sales office or distributor.

Feel free to contact us with other requests as well.

Company Name/Contact

MEMO

SMD series



■ Features

Indexable head type drills which utilise a unique radial serration mounting for high precision and strength.
Exchangeable drill head provides a new cutting edge, higher productivity, and lower costs with easy tool management.
Regrinding allowance of 1.5mm to 3mm makes further tool cost reductions possible. * Regrinding is available only for MTL/MSL/MEL/MB

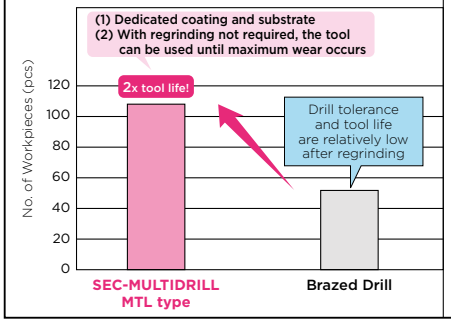
■ Product Range

Head	Application	Holder (L/D)	Dia. (mm)
MTL type	General Steel	1.5D type / 1.5DF type (1.5D)	ø12.0 to ø30.8 M type / L type: ø12.0 to ø42.5 D type: ø13.5 to ø42.5
		M type / 3D type / 3DF type (3D) / M3	
		L type / 5D type / 5DF type (5D)/ M5	
		D type / 8D type / 8DF type (8D) / M8	
		12D type (12D)	
MSL type MEL type	SUS SS FC	1.5D type / 1.5DF type (1.5D)	ø12.0 to ø30.8 D type: ø13.5 to ø30.8
		M type / 3D type / 3DF type (3D) / M3	
		L type / 5D type / 5DF type (5D)/ M5	
		D type / 8D type / 8DF type (8D) / M8	
		12D type (12D)	
NAL type	Non-Ferros, Al-Alloys	1.5D type / 1.5DF type (1.5D)	ø12.0–30.5
		M type / 3D type / 3DF type (3D) / M3	
		L type / 5D type / 5DF type (5D)/ M5	
		D type / 8D type / 8DF type (8D) / M8	
		12D type (12D)	
MFS type	Flat Bottom	1.5D type/1.5DF type	ø12.0 to ø30.0
MB type	Bridge	B3 type (3D)	ø24.5 to ø26.7

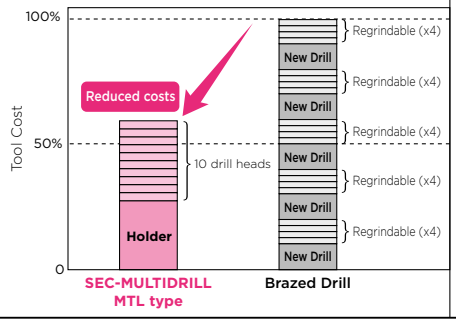
*MFS type can also be used with 3D, 5D, 8D, and 12D holders.

■ Tool Life and Cost

● Comparison of Tool Life



● Tool Comparison for Drilling of 1,000 Workpieces

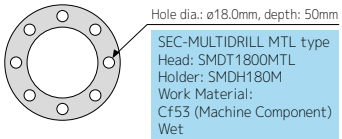


● Results

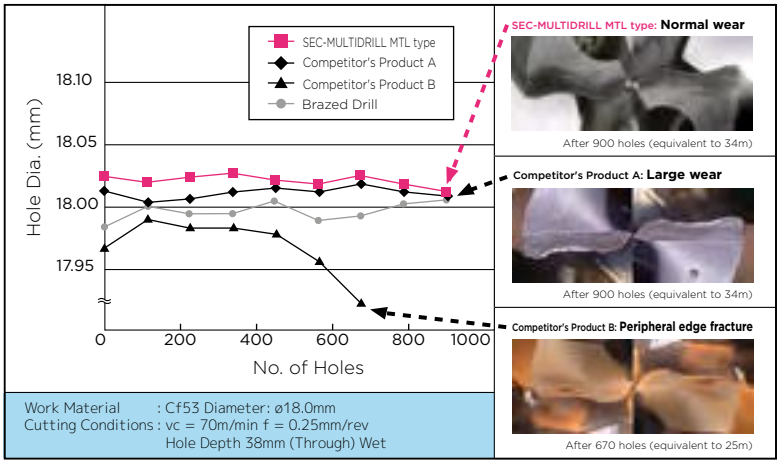
For regrinding purposes, brazed drills are only used up to **50-70%** of their actual tool life potential.
SEC-MULTIDRILL MTL type can be used up to 100%!

SEC-MULTIDRILL MTL type has double the tool life of brazed drills! Shorter tool change time!

● Workpiece Example and Cutting Conditions



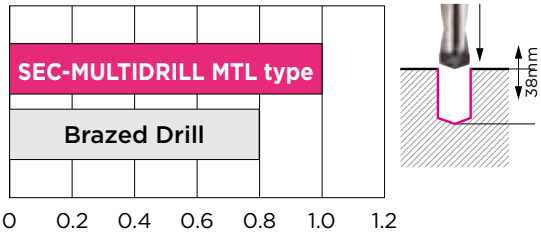
■ Drilling Precision



Work Material : Cf53 Diameter: ø18.0mm
Cutting Conditions : vc = 70m/min f = 0.25mm/rev
Hole Depth 38mm (Through) Wet

■ Tool Strength

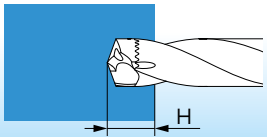
● Durability Comparison



Work Material : Cf53 Diameter: ø16.0mm
Cutting Conditions : vc = 80m/min
Hole Depth: 38mm

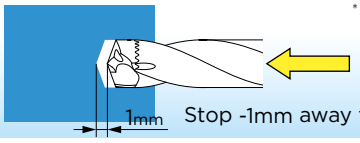
■ Recommended Drilling Method for 8D and 12D type: Use a hydro chuck, milling chuck, or collet chuck to hold the 12D drill body

(1) Use a SMDHOOO-1.5D(F) type (1.5D holder) + MTL type, MSL type (head) to drill a guide hole
● Use a 1.5D drill body and a drill head with the same diameter (same Cat. No.) as the 8D or 12D drill when drilling a guide hole.



H = Drill diameter × 1 to 1.5 times the depth

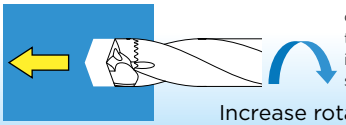
(2) Feed the 8D or 12D holder + MTL type, MSL type (head) through the guide hole at a low spindle speed
● Spindle speed: 500min^{-1} ● Feed rate: 1,000 to 2,000mm/min



* If the drill is inserted into the guide hole at the set cutting speed, peripheral runout may cause damage to the drill's peripheral edges.

Stop -1mm away from the guide hole depth

(3) Increase spindle speed until the set spindle speed is reached, then start drilling



* On some NC machine tools, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

Increase rotation speed

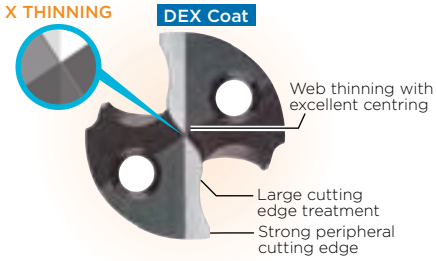
(4) After drilling, rotation speed is reduced and the drill is retracted from the work material
● Spindle speed: 500min^{-1} ● Feed rate: 1,000 to 2,000mm/min



* Retracting the drill from the work material at a high spindle speed is dangerous as doing so may result in breakage due to runout.

Change rotation speed to 500min^{-1}

MTL type Suitable for high-efficiency drilling of general steel



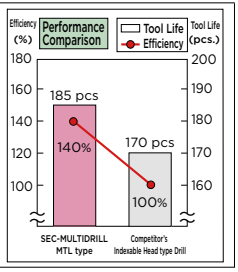
Excellent cutting edge strength
Large edge treatment is used to reduce fracture of the cutting edge.

Stable machined hole accuracy
X type thinning achieves excellent centring on drill entry and stable drilling.

■ Longer Tool Life

Improved tool life and efficiency

Work Material : Housing (C22)
Tool : ø15×5D
Cutting Conditions : vc = 107m/min
f = 0.3mm/rev
Hole depth : 32mm×12 holes

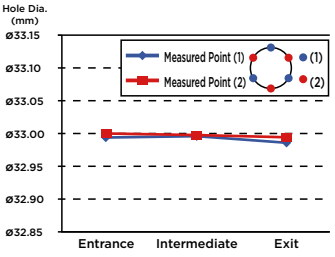


■ Drilling Precision

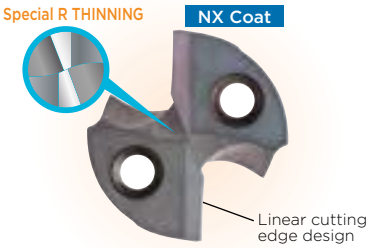
High drilling accuracy even with large diameters

Work Material : St52-3
(base plate for construction machinery)
Tool : ø33×5D
Cutting Conditions : vc = 120m/min
f = 0.25mm/rev
Coolant : Emulsion type





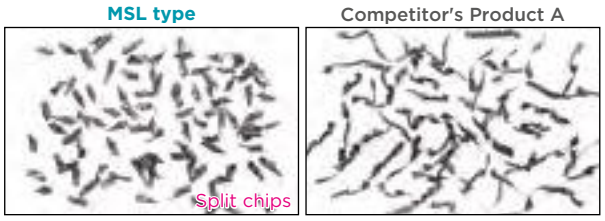
MSL type Stable drilling of mild steel, stainless steel, etc.



Exceptional cutting edge sharpness in mild steel and SUS drilling
Newly designed linear cutting edge and special R THINNING enable improved chip evacuation and stable drilling.

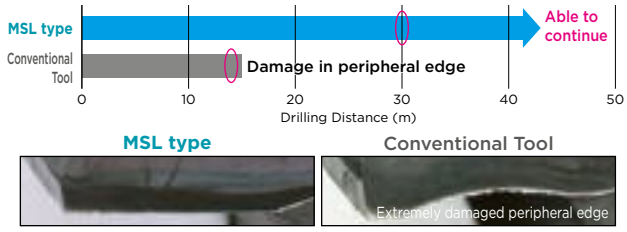
Long and stable tool life
NX Coat based on ABSOTECH™ technology for improved fracture resistance and adhesion resistance.

■ Chip Evacuation



Equipment: Vertical Machining Centre BT50 Internal Coolant Supply 2MPa
Work Material: S235JR Tool: ø14 x 5D
Cutting Conditions: vc = 80m/min f = 0.2mm/rev H = 50mm

■ Longer Tool Life



Equipment: Vertical Machining Centre BT50 Internal Coolant Supply 2MPa
Work Material: X5CrNi18-10 Tool: ø14 x 5D
Cutting Conditions: vc = 65m/min f = 0.15mm/rev H = 40mm

■ Recommended Cutting Conditions (MSL type / MTL type / MEL type)

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Work Material		Mild Steel (up to 250HB)	General Steel (250 to 320HB)		Hardened Steel (45HRC)	Stainless Steel (up to 200HB)	Grey Cast Iron	Ductile Cast Iron	Aluminum Alloy
Recommended Head		MSL type	MTL type	MSL type	MTL type	MSL type / MEL type	MTL type / MSL type	MTL type / MSL type	(Special Cutting Edge)*
Diameter DC (mm)	Cutting Conditions	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.
Up to ø16.0	n	2,000 (1,400)	2,000 (1,400)	2,000 (1,400)	1,200 (1,000)	1,200 (1,000)	1,400 (1,200)	1,200 (1,000)	4,800 (4,000)
	vc	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	30-**50**-80 (30-**50**-60)	50-**70**-90 (40-**60**-80)	50-**60**-80 (40-**50**-70)	200-**240**-260 (180-**200**-240)
	f	0.15-**0.20**-0.25	0.15-**0.20**-0.30	0.10-**0.15**-0.20	0.10-**0.15**-0.20	0.10-**0.15**-0.20	0.20-**0.25**-0.30	0.20-**0.25**-0.30	0.35-**0.45**-0.55
Up to ø20.0	n	1,600 (1,100)	1,600 (1,100)	1,600 (1,100)	1,000 (800)	1,100 (950)	1,300 (1,100)	1,100 (950)	3,800 (3,200)
	vc	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	30-**60**-90 (30-**50**-70)	60-**80**-100 (50-**70**-90)	50-**70**-90 (40-**60**-80)	200-**240**-260 (180-**200**-240)
	f	0.15-**0.25**-0.30	0.20-**0.25**-0.35	0.15-**0.20**-0.25	0.15-**0.20**-0.25	0.10-**0.20**-0.25	0.20-**0.30**-0.35	0.20-**0.25**-0.35	0.35-**0.50**-0.60
Up to ø30.8	n	1,000 (700)	1,000 (700)	1,000 (700)	600 (500)	700 (600)	800 (700)	700 (600)	2,500 (2,000)
	vc	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	30-**60**-90 (30-**50**-70)	60-**80**-100 (50-**70**-90)	50-**70**-90 (40-**60**-80)	200-**240**-260 (180-**200**-240)
	f	0.20-**0.25**-0.30	0.20-**0.25**-0.35	0.15-**0.20**-0.25	0.15-**0.20**-0.25	0.10-**0.20**-0.25	0.20-**0.30**-0.40	0.25-**0.30**-0.35	0.35-**0.50**-0.60
Recommended Head		Large Diameter MTL type (ø31.0 up)							
ø31.0 to ø42.5	n	650 (520)	650 (520)		380 (300)	450 (300)	520 (450)	450 (380)	1,800 (1,500)
	vc	70-**90**-120 (50-**70**-80)	70-**90**-120 (50-**70**-80)		40-**50**-80 (30-**40**-60)	40-**60**-80 (30-**40**-60)	60-**70**-100 (50-**60**-90)	50-**60**-90 (40-**50**-70)	200-**240**-260 (180-**200**-240)
	f	0.25-**0.35**-0.45	0.25-**0.30**-0.40		0.15-**0.25**-0.30	0.20-**0.25**-0.30	0.25-**0.35**-0.45	0.25-**0.30**-0.35	0.35-**0.50**-0.60

Note: Adjustment of cutting feed f, etc., may be required depending on machine rigidity and workpiece rigidity. For 8D and 12D drills, use the cutting speeds in parentheses as a guideline. Before drilling 8D and 12D holes, a guide hole of a similar diameter is recommended.

*Inquire if you require special drill heads for aluminum alloy.

SMD series (Internal Coolant Supply)

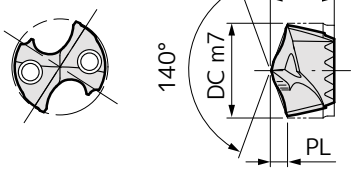
MTL | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

DEX Coat | Indexable head MTL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1 (DC ≤ 30.8mm)



Indexable Head MTL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	★	SMDT 1200 D MTL	6.9	2.2		1
12.1	★	1210 D MTL	6.9	2.2		1
12.2	★	1220 D MTL	6.9	2.2	SMDH120□	1
12.3	★	1230 D MTL	6.9	2.2		1
12.4	★	1240 D MTL	6.9	2.3		1
12.5	★	SMDT 1250 D MTL	7.1	2.3		1
12.6		1260 D MTL	7.1	2.3		1
12.7	★	1270 D MTL	7.1	2.3	SMDH125□	1
12.8	★	1280 D MTL	7.1	2.3		1
12.9		1290 D MTL	7.1	2.3		1
13.0	★	SMDT 1300 D MTL	7.3	2.4		1
13.1	★	1310 D MTL	7.3	2.4		1
13.2		1320 D MTL	7.3	2.4	SMDH130□	1
13.3	★	1330 D MTL	7.3	2.4		1
13.4		1340 D MTL	7.3	2.4		1
13.5	★	SMDT 1350 D MTL	7.8	2.5		1
13.6	★	1360 D MTL	7.8	2.5		1
13.7	★	1370 D MTL	7.8	2.5		1
13.8	★	1380 D MTL	7.8	2.5		1
13.9		1390 D MTL	7.8	2.5		1
14.0	★	1400 D MTL	7.8	2.5	SMDH140□	1
14.1	★	1410 D MTL	7.8	2.6		1
14.2	★	1420 D MTL	7.8	2.6		1
14.3	★	1430 D MTL	7.8	2.6		1
14.4		1440 D MTL	7.8	2.6		1
14.5	★	1450 D MTL	7.8	2.6		1
14.6	★	SMDT 1460 D MTL	8.3	2.7		1
14.7		1470 D MTL	8.3	2.7		1
14.8	★	1480 D MTL	8.3	2.7		1
14.9	★	1490 D MTL	8.3	2.7		1
15.0	★	1500 D MTL	8.3	2.7	SMDH150□	1
15.1	★	1510 D MTL	8.3	2.7		1
15.2	★	1520 D MTL	8.3	2.8		1
15.3	★	1530 D MTL	8.3	2.8		1
15.4		1540 D MTL	8.3	2.8		1
15.5	★	1550 D MTL	8.3	2.8		1
15.6	★	SMDT 1560 D MTL	8.7	2.8		1
15.7	★	1570 D MTL	8.7	2.9		1
15.8	★	1580 D MTL	8.7	2.9		1
15.9	★	1590 D MTL	8.7	2.9		1
16.0	★	1600 D MTL	8.7	2.9	SMDH160□	1
16.1	★	1610 D MTL	8.7	2.9		1
16.2	★	1620 D MTL	8.7	2.9		1
16.3	★	1630 D MTL	8.7	3.0		1
16.4		1640 D MTL	8.7	3.0		1
16.5	★	1650 D MTL	8.7	3.0		1
16.6	★	SMDT 1660 D MTL	9.2	3.0		1
16.7	★	1670 D MTL	9.2	3.0		1
16.8	★	1680 D MTL	9.2	3.1		1
16.9		1690 D MTL	9.2	3.1	SMDH170□	1
17.0	★	1700 D MTL	9.2	3.1		1
17.1	★	1710 D MTL	9.2	3.1		1
17.2	★	1720 D MTL	9.2	3.1		1
17.3	★	1730 D MTL	9.2	3.1		1

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MTL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	★	SMDT 1740 D MTL	9.2	3.2		1
17.5	★	1750 D MTL	9.2	3.2	SMDH170□	1
17.6	★	SMDT 1760 D MTL	9.6	3.2		1
17.7	★	1770 D MTL	9.6	3.2		1
17.8	★	1780 D MTL	9.6	3.2		1
17.9	★	1790 D MTL	9.6	3.3		1
18.0	★	1800 D MTL	9.6	3.3		1
18.1	★	1810 D MTL	9.6	3.3	SMDH180□	1
18.2	★	1820 D MTL	9.6	3.3		1
18.3	★	1830 D MTL	9.6	3.3		1
18.4	★	1840 D MTL	9.6	3.3		1
18.5	★	1850 D MTL	9.6	3.4		1
18.6	★	SMDT 1860 D MTL	10.1	3.4		1
18.7	★	1870 D MTL	10.1	3.4		1
18.8	★	1880 D MTL	10.1	3.4		1
18.9	★	1890 D MTL	10.1	3.4		1
19.0	★	1900 D MTL	10.1	3.5		1
19.1	★	1910 D MTL	10.1	3.5	SMDH190□	1
19.2	★	1920 D MTL	10.1	3.5		1
19.3		1930 D MTL	10.1	3.5		1
19.4	★	1940 D MTL	10.1	3.5		1
19.5	★	1950 D MTL	10.1	3.5		1
19.6	★	SMDT 1960 D MTL	10.5	3.6		1
19.7	★	1970 D MTL	10.5	3.6		1
19.8	★	1980 D MTL	10.5	3.6		1
19.9	★	1990 D MTL	10.5	3.6		1
20.0	★	2000 D MTL	10.5	3.6	SMDH200□	1
20.1		2010 D MTL	10.5	3.7		1
20.2		2020 D MTL	10.5	3.7		1
20.3		2030 D MTL	10.5	3.7		1
20.4		2040 D MTL	10.5	3.7		1
20.5	★	2050 D MTL	10.5	3.7		1
20.6		SMDT 2060 D MTL	11.0	3.7		1
20.7		2070 D MTL	11.0	3.8		1
20.8		2080 D MTL	11.0	3.8		1
20.9		2090 D MTL	11.0	3.8		1
21.0	★	2100 D MTL	11.0	3.8		1
21.1	★	2110 D MTL	11.0	3.8	SMDH210□	1
21.2		2120 D MTL	11.0	3.9		1
21.3	★	2130 D MTL	11.0	3.9		1
21.4		2140 D MTL	11.0	3.9		1
21.5	★	2150 D MTL	11.0	3.9		1
21.6		SMDT 2160 D MTL	11.0	3.9		1
21.7		2170 D MTL	11.0	3.9		1
21.8		2180 D MTL	11.0	4.0		1
21.9		2190 D MTL	11.0	4.0		1
22.0	★	2200 D MTL	11.0	4.0		1
22.1		2210 D MTL	11.0	4.0	SMDH220□	1
22.2		2220 D MTL	11.0	4.0		1
22.3		2230 D MTL	11.0	4.1		1
22.4		2240 D MTL	11.0	4.1		1
22.5	★	2250 D MTL	11.0	4.1		1
22.6		2260 D MTL	11.0	4.1		1
22.7		2270 D MTL	11.0	4.1		1

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

MTL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

DEX Coat | Indexable head MTL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1 (DC ≤ 30.8mm)

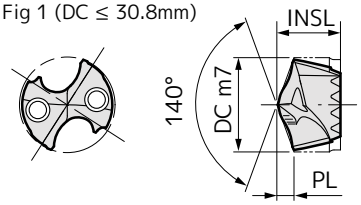
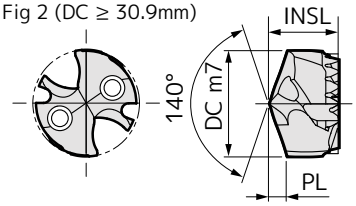


Fig 2 (DC ≥ 30.9mm)



Indexable Head MTL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	★	SMDT 2280 D MTL	11.0	4.1	SMDH220□	1
22.9		SMDT 2290 D MTL	11.0	4.2	SMDH230□	1
23.0	★	2300 D MTL	11.0	4.2		1
23.1	★	2310 D MTL	11.0	4.2		1
23.2		2320 D MTL	11.0	4.2		1
23.3		2330 D MTL	11.0	4.2		1
23.4		2340 D MTL	11.0	4.3		1
23.5	★	2350 D MTL	11.0	4.3		1
23.6		2360 D MTL	11.0	4.3		1
23.7		2370 D MTL	11.0	4.3		1
23.8		2380 D MTL	11.0	4.3		1
23.9		SMDT 2390 D MTL	11.0	4.3	SMDH240□	1
24.0	★	2400 D MTL	11.0	4.4		1
24.1	★	2410 D MTL	11.0	4.4		1
24.2		2420 D MTL	11.0	4.4		1
24.3		2430 D MTL	11.0	4.4		1
24.4		2440 D MTL	11.0	4.4		1
24.5	★	2450 D MTL	11.0	4.5		1
24.6		2460 D MTL	11.0	4.5		1
24.7		2470 D MTL	11.0	4.5		1
24.8		2480 D MTL	11.0	4.5		1
24.9		SMDT 2490 D MTL	11.3	4.5	SMDH250□	1
25.0	★	2500 D MTL	11.3	4.5		1
25.1		2510 D MTL	11.3	4.6		1
25.2		2520 D MTL	11.3	4.6		1
25.3		2530 D MTL	11.3	4.6		1
25.4		2540 D MTL	11.3	4.6		1
25.5	★	2550 D MTL	11.3	4.6		1
25.6		2560 D MTL	11.3	4.7		1
25.7		2570 D MTL	11.3	4.7		1
25.8		2580 D MTL	11.3	4.7		1
25.9		SMDT 2590 D MTL	11.7	4.7	SMDH260□	1
26.0	★	2600 D MTL	11.7	4.7		1
26.1		2610 D MTL	11.7	4.7		1
26.2		2620 D MTL	11.7	4.8		1
26.3		2630 D MTL	11.7	4.8		1
26.4		2640 D MTL	11.7	4.8		1
26.5	★	2650 D MTL	11.7	4.8		1
26.6		2660 D MTL	11.7	4.8		1
26.7		2670 D MTL	11.7	4.9		1
26.8		2680 D MTL	11.7	4.9		1
26.9		SMDT 2690 D MTL	12.2	4.9	SMDH270□	1
27.0	★	2700 D MTL	12.2	4.9		1
27.1		2710 D MTL	12.2	4.9		1
27.2		2720 D MTL	12.2	4.9		1
27.3		2730 D MTL	12.2	5.0		1
27.4		2740 D MTL	12.2	5.0		1
27.5	★	2750 D MTL	12.2	5.0		1
27.6		2760 D MTL	12.2	5.0		1
27.7		2770 D MTL	12.2	5.0		1
27.8		2780 D MTL	12.2	5.1		1
27.9		SMDT 2790 D MTL	12.6	5.1	SMDH280□	1
28.0	★	2800 D MTL	12.6	5.1		1
28.1		2810 D MTL	12.6	5.1		1

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MTL type Diameter ø28.2 to 42.5mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2		SMDT 2820 D MTL	12.6	5.1	SMDH280□	1
28.3		2830 D MTL	12.6	5.2		1
28.4		2840 D MTL	12.6	5.2		1
28.5	★	2850 D MTL	12.6	5.2		1
28.6		2860 D MTL	12.6	5.2		1
28.7		2870 D MTL	12.6	5.2		1
28.8		2880 D MTL	12.6	5.2		1
28.9		SMDT 2890 D MTL	13.1	5.3	SMDH290□	1
29.0	★	2900 D MTL	13.1	5.3		1
29.1		2910 D MTL	13.1	5.3		1
29.2		2920 D MTL	13.1	5.3		1
29.3		2930 D MTL	13.1	5.3		1
29.4		2940 D MTL	13.1	5.4		1
29.5	★	2950 D MTL	13.1	5.4		1
29.6		2960 D MTL	13.1	5.4		1
29.7		2970 D MTL	13.1	5.4		1
29.8		2980 D MTL	13.1	5.4		1
29.9		SMDT 2990 D MTL	13.5	5.4	SMDH300□	1
30.0	★	3000 D MTL	13.5	5.5		1
30.1		3010 D MTL	13.5	5.5		1
30.2		3020 D MTL	13.5	5.5		1
30.3		3030 D MTL	13.5	5.5		1
30.4		3040 D MTL	13.5	5.5		1
30.5	★	3050 D MTL	13.5	5.6		1
30.6		3060 D MTL	13.5	5.6		1
30.7		3070 D MTL	13.5	5.6		1
30.8		3080 D MTL	13.5	5.6		1
31.0		SMDT 3100 D MTL	15.4	5.6	SMDH320□	2
31.5		3150 D MTL	15.3	5.7		2
32.0	★	3200 D MTL	15.2	5.8		2
32.5		SMDT 3250 D MTL	15.1	5.9	SMDH335□	2
33.0		3300 D MTL	15.0	6.0		2
33.5		3350 D MTL	14.9	6.1		2
34.0		SMDT 3400 D MTL	16.8	6.2	SMDH350□	2
34.5		3450 D MTL	16.7	6.3		2
35.0		3500 D MTL	16.6	6.4		2
35.5		SMDT 3550 D MTL	16.5	6.5	SMDH365□	2
36.0		3600 D MTL	16.4	6.6		2
36.5		3650 D MTL	16.4	6.6		2
37.0		SMDT 3700 D MTL	18.3	6.7	SMDH380□	2
37.5		3750 D MTL	18.2	6.8		2
38.0		3800 D MTL	18.1	6.9		2
38.5		SMDT 3850 D MTL	18.0	7.0	SMDH395□	2
39.0		3900 D MTL	17.9	7.1		2
39.5		3950 D MTL	17.8	7.2		2
40.0		SMDT 4000 D MTL	19.7	7.3	SMDH410□	2
40.5		4050 D MTL	19.6	7.4		2
41.0		4100 D MTL	19.5	7.5		2
41.5		SMDT 4150 D MTL	19.4	7.6	SMDH425□	2
42.0		4200 D MTL	19.4	7.6		2
42.5		4250 D MTL	19.3	7.7		2

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141,142

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

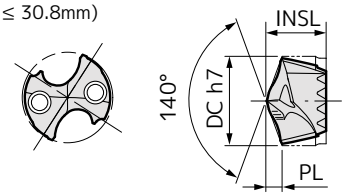
MTL | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

DEX Coat | Indexable head MTL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1 (DC ≤ 30.8mm)



Indexable Head MTL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	★	SMDT 1200 MTL	9.1	2.2		1
12.1	★	1210 MTL	9.1	2.2		1
12.2	★	1220 MTL	9.1	2.2	SMDH120□	1
12.3	★	1230 MTL	9.1	2.2		1
12.4	★	1240 MTL	9.1	2.3		1
12.5	★	SMDT 1250 MTL	9.4	2.3		1
12.6	★	1260 MTL	9.4	2.3		1
12.7	★	1270 MTL	9.4	2.3	SMDH125□	1
12.8	★	1280 MTL	9.4	2.3		1
12.9	★	1290 MTL	9.4	2.3		1
13.0	★	SMDT 1300 MTL	9.7	2.4		1
13.1	★	1310 MTL	9.7	2.4		1
13.2	★	1320 MTL	9.7	2.4	SMDH130□	1
13.3	★	1330 MTL	9.7	2.4		1
13.4	★	1340 MTL	9.7	2.4		1
13.5	★	SMDT 1350 MTL	10.3	2.5		1
13.6	★	1360 MTL	10.3	2.5		1
13.7	★	1370 MTL	10.3	2.5		1
13.8	★	1380 MTL	10.3	2.5		1
13.9	★	1390 MTL	10.3	2.5		1
14.0	★	1400 MTL	10.3	2.5	SMDH140□	1
14.1	★	1410 MTL	10.3	2.6		1
14.2	★	1420 MTL	10.3	2.6		1
14.3	★	1430 MTL	10.3	2.6		1
14.4	★	1440 MTL	10.3	2.6		1
14.5	★	1450 MTL	10.3	2.6		1
14.6	★	SMDT 1460 MTL	11.0	2.7		1
14.7	★	1470 MTL	11.0	2.7		1
14.8	★	1480 MTL	11.0	2.7		1
14.9	★	1490 MTL	11.0	2.7		1
15.0	★	1500 MTL	11.0	2.7	SMDH150□	1
15.1	★	1510 MTL	11.0	2.7		1
15.2	★	1520 MTL	11.0	2.8		1
15.3	★	1530 MTL	11.0	2.8		1
15.4	★	1540 MTL	11.0	2.8		1
15.5	★	1550 MTL	11.0	2.8		1
15.6	★	SMDT 1560 MTL	11.6	2.8		1
15.7	★	1570 MTL	11.6	2.9		1
15.8	★	1580 MTL	11.6	2.9		1
15.9	★	1590 MTL	11.6	2.9		1
16.0	★	1600 MTL	11.6	2.9	SMDH160□	1
16.1	★	1610 MTL	11.6	2.9		1
16.2	★	1620 MTL	11.6	2.9		1
16.3	★	1630 MTL	11.6	3.0		1
16.4	★	1640 MTL	11.6	3.0		1
16.5	★	1650 MTL	11.6	3.0		1
16.6	★	SMDT 1660 MTL	12.2	3.0		1
16.7	★	1670 MTL	12.2	3.0		1
16.8	★	1680 MTL	12.2	3.1		1
16.9	★	1690 MTL	12.2	3.1		1
17.0	★	1700 MTL	12.2	3.1	SMDH170□	1
17.1	★	1710 MTL	12.2	3.1		1
17.2	★	1720 MTL	12.2	3.1		1
17.3	★	1730 MTL	12.2	3.1		1

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MTL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	★	SMDT 1740 MTL	12.2	3.2	SMDH170□	1
17.5	★	1750 MTL	12.2	3.2		1
17.6	★	SMDT 1760 MTL	12.9	3.2		1
17.7	★	1770 MTL	12.9	3.2		1
17.8	★	1780 MTL	12.9	3.2		1
17.9	★	1790 MTL	12.9	3.3		1
18.0	★	1800 MTL	12.9	3.3		1
18.1	★	1810 MTL	12.9	3.3	SMDH180□	1
18.2	★	1820 MTL	12.9	3.3		1
18.3	★	1830 MTL	12.9	3.3		1
18.4	★	1840 MTL	12.9	3.3		1
18.5	★	1850 MTL	12.9	3.4		1
18.6	★	SMDT 1860 MTL	13.5	3.4		1
18.7	★	1870 MTL	13.5	3.4		1
18.8	★	1880 MTL	13.5	3.4		1
18.9	★	1890 MTL	13.5	3.4		1
19.0	★	1900 MTL	13.5	3.5		1
19.1	★	1910 MTL	13.5	3.5	SMDH190□	1
19.2	★	1920 MTL	13.5	3.5		1
19.3	★	1930 MTL	13.5	3.5		1
19.4	★	1940 MTL	13.5	3.5		1
19.5	★	1950 MTL	13.5	3.5		1
19.6	★	SMDT 1960 MTL	14.1	3.6		1
19.7	★	1970 MTL	14.1	3.6		1
19.8	★	1980 MTL	14.1	3.6		1
19.9	★	1990 MTL	14.1	3.6		1
20.0	★	2000 MTL	14.1	3.6		1
20.1	★	2010 MTL	14.1	3.7	SMDH200□	1
20.2	★	2020 MTL	14.1	3.7		1
20.3	★	2030 MTL	14.1	3.7		1
20.4	★	2040 MTL	14.1	3.7		1
20.5	★	2050 MTL	14.1	3.7		1
20.6	★	SMDT 2060 MTL	14.8	3.7		1
20.7	★	2070 MTL	14.8	3.8		1
20.8	★	2080 MTL	14.8	3.8		1
20.9	★	2090 MTL	14.8	3.8		1
21.0	★	2100 MTL	14.8	3.8		1
21.1	★	2110 MTL	14.8	3.8	SMDH210□	1
21.2	★	2120 MTL	14.8	3.9		1
21.3	★	2130 MTL	14.8	3.9		1
21.4	★	2140 MTL	14.8	3.9		1
21.5	★	2150 MTL	14.8	3.9		1
21.6	★	SMDT 2160 MTL	15.0	3.9		1
21.7	★	2170 MTL	15.0	3.9		1
21.8	★	2180 MTL	15.0	4.0		1
21.9	★	2190 MTL	15.0	4.0		1
22.0	★	2200 MTL	15.0	4.0		1
22.1	★	2210 MTL	15.0	4.0	SMDH220□	1
22.2	★	2220 MTL	15.0	4.0		1
22.3	★	2230 MTL	15.0	4.1		1
22.4	★	2240 MTL	15.0	4.1		1
22.5	★	2250 MTL	15.0	4.1		1
22.6	★	2260 MTL	15.0	4.1		1
22.7	★	2270 MTL	15.0	4.1		1

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

MTL | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

DEX Coat | Indexable head MTL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1 (DC ≤ 30.8mm)

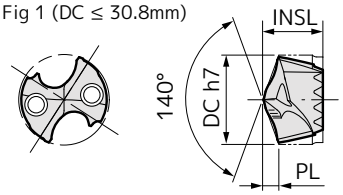
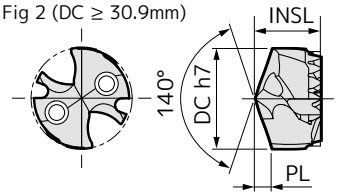


Fig 2 (DC ≥ 30.9mm)



Indexable Head MTL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	★	SMDT 2280 MTL	15.0	4.1	SMDH220□	1
22.9	★	SMDT 2290 MTL	15.1	4.2	SMDH230□	1
23.0	★	2300 MTL	15.1	4.2		1
23.1	★	2310 MTL	15.1	4.2		1
23.2	★	2320 MTL	15.1	4.2		1
23.3	★	2330 MTL	15.1	4.2		1
23.4	★	2340 MTL	15.1	4.3		1
23.5	★	2350 MTL	15.1	4.3		1
23.6	★	2360 MTL	15.1	4.3		1
23.7	★	2370 MTL	15.1	4.3		1
23.8	★	2380 MTL	15.1	4.3		1
23.9	★	SMDT 2390 MTL	15.4	4.3	SMDH240□	1
24.0	★	2400 MTL	15.4	4.4		1
24.1	★	2410 MTL	15.4	4.4		1
24.2	★	2420 MTL	15.4	4.4		1
24.3	★	2430 MTL	15.4	4.4		1
24.4	★	2440 MTL	15.4	4.4		1
24.5	★	2450 MTL	15.4	4.5		1
24.6	★	2460 MTL	15.4	4.5		1
24.7	★	2470 MTL	15.4	4.5		1
24.8	★	2480 MTL	15.4	4.5		1
24.9	★	SMDT 2490 MTL	15.8	4.5	SMDH250□	1
25.0	★	2500 MTL	15.8	4.5		1
25.1	★	2510 MTL	15.8	4.6		1
25.2	★	2520 MTL	15.8	4.6		1
25.3	★	2530 MTL	15.8	4.6		1
25.4	★	2540 MTL	15.8	4.6		1
25.5	★	2550 MTL	15.8	4.6		1
25.6	★	2560 MTL	15.8	4.7		1
25.7	★	2570 MTL	15.8	4.7		1
25.8	★	2580 MTL	15.8	4.7		1
25.9	★	SMDT 2590 MTL	16.4	4.7	SMDH260□	1
26.0	★	2600 MTL	16.4	4.7		1
26.1	★	2610 MTL	16.4	4.7		1
26.2	★	2620 MTL	16.4	4.8		1
26.3	★	2630 MTL	16.4	4.8		1
26.4	★	2640 MTL	16.4	4.8		1
26.5	★	2650 MTL	16.4	4.8		1
26.6	★	2660 MTL	16.4	4.8		1
26.7	★	2670 MTL	16.4	4.9		1
26.8	★	2680 MTL	16.4	4.9		1
26.9	★	SMDT 2690 MTL	17.1	4.9	SMDH270□	1
27.0	★	2700 MTL	17.1	4.9		1
27.1	★	2710 MTL	17.1	4.9		1
27.2	★	2720 MTL	17.1	4.9		1
27.3	★	2730 MTL	17.1	5.0		1
27.4	★	2740 MTL	17.1	5.0		1
27.5	★	2750 MTL	17.1	5.0		1
27.6	★	2760 MTL	17.1	5.0		1
27.7	★	2770 MTL	17.1	5.0		1
27.8	★	2780 MTL	17.1	5.1		1
27.9	★	SMDT 2790 MTL	17.7	5.1	SMDH280□	1
28.0	★	2800 MTL	17.7	5.1		1
28.1	★	2810 MTL	17.7	5.1		1

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MTL type Diameter ø28.2 to 42.5mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2	★	SMDT 2820 MTL	17.7	5.1	SMDH280□	1
28.3	★	2830 MTL	17.7	5.2		1
28.4	★	2840 MTL	17.7	5.2		1
28.5	★	2850 MTL	17.7	5.2		1
28.6	★	2860 MTL	17.7	5.2		1
28.7	★	2870 MTL	17.7	5.2		1
28.8	★	2880 MTL	17.7	5.2		1
28.9	★	SMDT 2890 MTL	18.3	5.3	SMDH290□	1
29.0	★	2900 MTL	18.3	5.3		1
29.1	★	2910 MTL	18.3	5.3		1
29.2	★	2920 MTL	18.3	5.3		1
29.3	★	2930 MTL	18.3	5.3		1
29.4	★	2940 MTL	18.3	5.4		1
29.5	★	2950 MTL	18.3	5.4		1
29.6	★	2960 MTL	18.3	5.4		1
29.7	★	2970 MTL	18.3	5.4		1
29.8	★	2980 MTL	18.3	5.4		1
29.9	★	SMDT 2990 MTL	19.0	5.4	SMDH300□	1
30.0	★	3000 MTL	19.0	5.5		1
30.1	★	3010 MTL	19.0	5.5		1
30.2	★	3020 MTL	19.0	5.5		1
30.3	★	3030 MTL	19.0	5.5		1
30.4	★	3040 MTL	19.0	5.5		1
30.5	★	3050 MTL	19.0	5.6		1
30.6	★	3060 MTL	19.0	5.6		1
30.7	★	3070 MTL	19.0	5.6		1
30.8	★	3080 MTL	19.0	5.6		1
31.0	★	SMDT 3100 MTL	21.0	5.6	SMDH320□	2
31.5		3150 MTL	21.0	5.7		2
32.0	★	3200 MTL	21.0	5.8		2
32.5		SMDT 3250 MTL	21.0	5.9	SMDH335□	2
33.0	★	3300 MTL	21.0	6.0		2
33.5		3350 MTL	21.0	6.1		2
34.0	★	SMDT 3400 MTL	23.0	6.2	SMDH350□	2
34.5		3450 MTL	23.0	6.3		2
35.0	★	3500 MTL	23.0	6.4		2
35.5		SMDT 3550 MTL	23.0	6.5	SMDH365□	2
36.0	★	3600 MTL	23.0	6.6		2
36.5		3650 MTL	23.0	6.6		2
37.0	★	SMDT 3700 MTL	25.0	6.7	SMDH380□	2
37.5	★	3750 MTL	25.0	6.8		2
38.0	★	3800 MTL	25.0	6.9		2
38.5		SMDT 3850 MTL	25.0	7.0	SMDH395□	2
39.0	★	3900 MTL	25.0	7.1		2
39.5		3950 MTL	25.0	7.2		2
40.0	★	SMDT 4000 MTL	27.0	7.3	SMDH410□	2
40.5	★	4050 MTL	27.0	7.4		2
41.0	★	4100 MTL	27.0	7.5		2
41.5		SMDT 4150 MTL	27.0	7.6	SMDH425□	2
42.0	★	4200 MTL	27.0	7.6		2
42.5		4250 MTL	27.0	7.7		2

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions J126 | Applicable Holders J141,J142

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

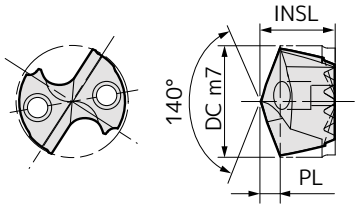
MSL | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

NX Coat | Indexable head MSL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MSL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	★	SMDT 1200 MSL D	6.9	2.2		1
12.1		1210 MSL D	6.9	2.2		1
12.2		1220 MSL D	6.9	2.2	SMDH120□	1
12.3		1230 MSL D	6.9	2.2		1
12.4		1240 MSL D	6.9	2.3		1
12.5	★	SMDT 1250 MSL D	7.1	2.3		1
12.6		1260 MSL D	7.1	2.3		1
12.7		1270 MSL D	7.1	2.3	SMDH125□	1
12.8		1280 MSL D	7.1	2.3		1
12.9		1290 MSL D	7.1	2.3		1
13.0		SMDT 1300 MSL D	7.3	2.4		1
13.1		1310 MSL D	7.3	2.4		1
13.2		1320 MSL D	7.3	2.4	SMDH130□	1
13.3		1330 MSL D	7.3	2.4		1
13.4		1340 MSL D	7.3	2.4		1
13.5	★	SMDT 1350 MSL D	7.8	2.5		1
13.6	★	1360 MSL D	7.8	2.5		1
13.7	★	1370 MSL D	7.8	2.5		1
13.8	★	1380 MSL D	7.8	2.5		1
13.9		1390 MSL D	7.8	2.5		1
14.0	★	1400 MSL D	7.8	2.5	SMDH140□	1
14.1		1410 MSL D	7.8	2.6		1
14.2		1420 MSL D	7.8	2.6		1
14.3		1430 MSL D	7.8	2.6		1
14.4		1440 MSL D	7.8	2.6		1
14.5		1450 MSL D	7.8	2.6		1
14.6		SMDT 1460 MSL D	8.3	2.7		1
14.7		1470 MSL D	8.3	2.7		1
14.8		1480 MSL D	8.3	2.7		1
14.9		1490 MSL D	8.3	2.7		1
15.0	★	1500 MSL D	8.3	2.7	SMDH150□	1
15.1		1510 MSL D	8.3	2.7		1
15.2		1520 MSL D	8.3	2.8		1
15.3		1530 MSL D	8.3	2.8		1
15.4		1540 MSL D	8.3	2.8		1
15.5	★	1550 MSL D	8.3	2.8		1
15.6		SMDT 1560 MSL D	8.7	2.8		1
15.7		1570 MSL D	8.7	2.9		1
15.8		1580 MSL D	8.7	2.9		1
15.9		1590 MSL D	8.7	2.9		1
16.0	★	1600 MSL D	8.7	2.9	SMDH160□	1
16.1	★	1610 MSL D	8.7	2.9		1
16.2	★	1620 MSL D	8.7	2.9		1
16.3		1630 MSL D	8.7	3.0		1
16.4		1640 MSL D	8.7	3.0		1
16.5	★	1650 MSL D	8.7	3.0		1
16.6		SMDT 1660 MSL D	9.2	3.0		1
16.7		1670 MSL D	9.2	3.0		1
16.8		1680 MSL D	9.2	3.1		1
16.9		1690 MSL D	9.2	3.1		1
17.0	★	1700 MSL D	9.2	3.1	SMDH170□	1
17.1		1710 MSL D	9.2	3.1		1
17.2		1720 MSL D	9.2	3.1		1
17.3		1730 MSL D	9.2	3.1		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MSL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4		SMDT 1740 MSL D	9.2	3.2		1
17.5	★	1750 MSL D	9.2	3.2	SMDH170□	1
17.6		SMDT 1760 MSL D	9.6	3.2		1
17.7		1770 MSL D	9.6	3.2		1
17.8		1780 MSL D	9.6	3.2		1
17.9		1790 MSL D	9.6	3.3		1
18.0	★	1800 MSL D	9.6	3.3		1
18.1		1810 MSL D	9.6	3.3	SMDH180□	1
18.2		1820 MSL D	9.6	3.3		1
18.3		1830 MSL D	9.6	3.3		1
18.4		1840 MSL D	9.6	3.3		1
18.5		1850 MSL D	9.6	3.4		1
18.6		SMDT 1860 MSL D	10.1	3.4		1
18.7		1870 MSL D	10.1	3.4		1
18.8		1880 MSL D	10.1	3.4		1
18.9		1890 MSL D	10.1	3.4		1
19.0	★	1900 MSL D	10.1	3.5		1
19.1		1910 MSL D	10.1	3.5	SMDH190□	1
19.2	★	1920 MSL D	10.1	3.5		1
19.3	★	1930 MSL D	10.1	3.5		1
19.4		1940 MSL D	10.1	3.5		1
19.5		1950 MSL D	10.1	3.5		1
19.6		SMDT 1960 MSL D	10.5	3.6		1
19.7		1970 MSL D	10.5	3.6		1
19.8		1980 MSL D	10.5	3.6		1
19.9		1990 MSL D	10.5	3.6		1
20.0	★	2000 MSL D	10.5	3.6		1
20.1	★	2010 MSL D	10.5	3.7	SMDH200□	1
20.2		2020 MSL D	10.5	3.7		1
20.3		2030 MSL D	10.5	3.7		1
20.4		2040 MSL D	10.5	3.7		1
20.5	★	2050 MSL D	10.5	3.7		1
20.6		SMDT 2060 MSL D	11.0	3.7		1
20.7		2070 MSL D	11.0	3.8		1
20.8		2080 MSL D	11.0	3.8		1
20.9		2090 MSL D	11.0	3.8		1
21.0	★	2100 MSL D	11.0	3.8		1
21.1		2110 MSL D	11.0	3.8	SMDH210□	1
21.2		2120 MSL D	11.0	3.9		1
21.3		2130 MSL D	11.0	3.9		1
21.4		2140 MSL D	11.0	3.9		1
21.5	★	2150 MSL D	11.0	3.9		1
21.6		SMDT 2160 MSL D	11.0	3.9		1
21.7		2170 MSL D	11.0	3.9		1
21.8		2180 MSL D	11.0	4.0		1
21.9		2190 MSL D	11.0	4.0		1
22.0	★	2200 MSL D	11.0	4.0		1
22.1		2210 MSL D	11.0	4.0	SMDH220□	1
22.2		2220 MSL D	11.0	4.0		1
22.3		2230 MSL D	11.0	4.1		1
22.4		2240 MSL D	11.0	4.1		1
22.5	★	2250 MSL D	11.0	4.1		1
22.6		2260 MSL D	11.0	4.1		1
22.7		2270 MSL D	11.0	4.1		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

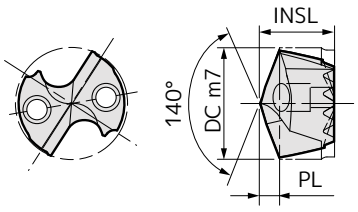
MSL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

NX Coat | Indexable head MSL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MSL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8		SMDT 2280 MSL D	11.0	4.1	SMDH220□	1
22.9		SMDT 2290 MSL D	11.0	4.2	SMDH230□	1
23.0	★	2300 MSL D	11.0	4.2		1
23.1		2310 MSL D	11.0	4.2		1
23.2		2320 MSL D	11.0	4.2		1
23.3		2330 MSL D	11.0	4.2		1
23.4		2340 MSL D	11.0	4.3		1
23.5		2350 MSL D	11.0	4.3		1
23.6		2360 MSL D	11.0	4.3		1
23.7		2370 MSL D	11.0	4.3		1
23.8		2380 MSL D	11.0	4.3		1
23.9		SMDT 2390 MSL D	11.0	4.3	SMDH240□	1
24.0	★	2400 MSL D	11.0	4.4		1
24.1		2410 MSL D	11.0	4.4		1
24.2		2420 MSL D	11.0	4.4		1
24.3		2430 MSL D	11.0	4.4		1
24.4		2440 MSL D	11.0	4.4		1
24.5		2450 MSL D	11.0	4.5		1
24.6		2460 MSL D	11.0	4.5		1
24.7		2470 MSL D	11.0	4.5		1
24.8		2480 MSL D	11.0	4.5		1
24.9		SMDT 2490 MSL D	11.3	4.5	SMDH250□	1
25.0	★	2500 MSL D	11.3	4.5		1
25.1		2510 MSL D	11.3	4.6		1
25.2		2520 MSL D	11.3	4.6		1
25.3		2530 MSL D	11.3	4.6		1
25.4		2540 MSL D	11.3	4.6		1
25.5		2550 MSL D	11.3	4.6		1
25.6		2560 MSL D	11.3	4.7		1
25.7		2570 MSL D	11.3	4.7		1
25.8		2580 MSL D	11.3	4.7		1
25.9		SMDT 2590 MSL D	11.7	4.7	SMDH260□	1
26.0	★	2600 MSL D	11.7	4.7		1
26.1		2610 MSL D	11.7	4.7		1
26.2		2620 MSL D	11.7	4.8		1
26.3		2630 MSL D	11.7	4.8		1
26.4		2640 MSL D	11.7	4.8		1
26.5	★	2650 MSL D	11.7	4.8		1
26.6		2660 MSL D	11.7	4.8		1
26.7		2670 MSL D	11.7	4.9		1
26.8		2680 MSL D	11.7	4.9		1
26.9		SMDT 2690 MSL D	12.2	4.9	SMDH270□	1
27.0	★	2700 MSL D	12.2	4.9		1
27.1		2710 MSL D	12.2	4.9		1
27.2		2720 MSL D	12.2	4.9		1
27.3		2730 MSL D	12.2	5.0		1
27.4		2740 MSL D	12.2	5.0		1
27.5		2750 MSL D	12.2	5.0		1
27.6		2760 MSL D	12.2	5.0		1
27.7		2770 MSL D	12.2	5.0		1
27.8		2780 MSL D	12.2	5.1		1
27.9		SMDT 2790 MSL D	12.6	5.1	SMDH280□	1
28.0	★	2800 MSL D	12.6	5.1		1
28.1		2810 MSL D	12.6	5.1		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MSL type Diameter ø28.2 to 30.8mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2		SMDT 2820 MSL D	12.6	5.1	SMDH280□	1
28.3		2830 MSL D	12.6	5.2		1
28.4		2840 MSL D	12.6	5.2		1
28.5		2850 MSL D	12.6	5.2		1
28.6		2860 MSL D	12.6	5.2		1
28.7		2870 MSL D	12.6	5.2		1
28.8		2880 MSL D	12.6	5.2		1
28.9		SMDT 2890 MSL D	13.1	5.3	SMDH290□	1
29.0	★	2900 MSL D	13.1	5.3		1
29.1		2910 MSL D	13.1	5.3		1
29.2		2920 MSL D	13.1	5.3		1
29.3		2930 MSL D	13.1	5.3		1
29.4		2940 MSL D	13.1	5.4		1
29.5		2950 MSL D	13.1	5.4		1
29.6		2960 MSL D	13.1	5.4		1
29.7		2970 MSL D	13.1	5.4		1
29.8		2980 MSL D	13.1	5.4		1
29.9		SMDT 2990 MSL D	13.5	5.4	SMDH300□	1
30.0	★	3000 MSL D	13.5	5.5		1
30.1		3010 MSL D	13.5	5.5		1
30.2		3020 MSL D	13.5	5.5		1
30.3		3030 MSL D	13.5	5.5		1
30.4		3040 MSL D	13.5	5.5		1
30.5		3050 MSL D	13.5	5.6		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141, J142

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

(N·m) Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

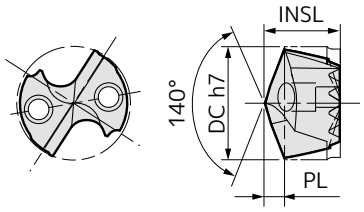
MSL | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

NX Coat | Indexable head MSL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MSL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	★	SMDT 1200 MSL	9.1	2.2		1
12.1	★	1210 MSL	9.1	2.2		1
12.2	★	1220 MSL	9.1	2.2	SMDH120□	1
12.3	★	1230 MSL	9.1	2.2		1
12.4	★	1240 MSL	9.1	2.3		1
12.5	★	SMDT 1250 MSL	9.4	2.3		1
12.6	★	1260 MSL	9.4	2.3		1
12.7	★	1270 MSL	9.4	2.3	SMDH125□	1
12.8	★	1280 MSL	9.4	2.3		1
12.9	★	1290 MSL	9.4	2.3		1
13.0	★	SMDT 1300 MSL	9.7	2.4		1
13.1	★	1310 MSL	9.7	2.4		1
13.2	★	1320 MSL	9.7	2.4	SMDH130□	1
13.3	★	1330 MSL	9.7	2.4		1
13.4	★	1340 MSL	9.7	2.4		1
13.5	★	SMDT 1350 MSL	10.3	2.5		1
13.6	★	1360 MSL	10.3	2.5		1
13.7	★	1370 MSL	10.3	2.5		1
13.8	★	1380 MSL	10.3	2.5		1
13.9	★	1390 MSL	10.3	2.5		1
14.0	★	1400 MSL	10.3	2.5	SMDH140□	1
14.1	★	1410 MSL	10.3	2.6		1
14.2	★	1420 MSL	10.3	2.6		1
14.3	★	1430 MSL	10.3	2.6		1
14.4	★	1440 MSL	10.3	2.6		1
14.5	★	1450 MSL	10.3	2.6		1
14.6	★	SMDT 1460 MSL	11.0	2.7		1
14.7	★	1470 MSL	11.0	2.7		1
14.8	★	1480 MSL	11.0	2.7		1
14.9	★	1490 MSL	11.0	2.7		1
15.0	★	1500 MSL	11.0	2.7	SMDH150□	1
15.1	★	1510 MSL	11.0	2.7		1
15.2	★	1520 MSL	11.0	2.8		1
15.3	★	1530 MSL	11.0	2.8		1
15.4	★	1540 MSL	11.0	2.8		1
15.5	★	1550 MSL	11.0	2.8		1
15.6	★	SMDT 1560 MSL	11.6	2.8		1
15.7	★	1570 MSL	11.6	2.9		1
15.8	★	1580 MSL	11.6	2.9		1
15.9	★	1590 MSL	11.6	2.9		1
16.0	★	1600 MSL	11.6	2.9	SMDH160□	1
16.1	★	1610 MSL	11.6	2.9		1
16.2	★	1620 MSL	11.6	2.9		1
16.3	★	1630 MSL	11.6	3.0		1
16.4	★	1640 MSL	11.6	3.0		1
16.5	★	1650 MSL	11.6	3.0		1
16.6	★	SMDT 1660 MSL	12.2	3.0		1
16.7	★	1670 MSL	12.2	3.0		1
16.8	★	1680 MSL	12.2	3.1		1
16.9	★	1690 MSL	12.2	3.1		1
17.0	★	1700 MSL	12.2	3.1	SMDH170□	1
17.1	★	1710 MSL	12.2	3.1		1
17.2	★	1720 MSL	12.2	3.1		1
17.3	★	1730 MSL	12.2	3.1		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MSL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	★	SMDT 1740 MSL	12.2	3.2		1
17.5	★	1750 MSL	12.2	3.2	SMDH170□	1
17.6	★	SMDT 1760 MSL	12.9	3.2		1
17.7	★	1770 MSL	12.9	3.2		1
17.8	★	1780 MSL	12.9	3.2		1
17.9	★	1790 MSL	12.9	3.3		1
18.0	★	1800 MSL	12.9	3.3		1
18.1	★	1810 MSL	12.9	3.3	SMDH180□	1
18.2	★	1820 MSL	12.9	3.3		1
18.3	★	1830 MSL	12.9	3.3		1
18.4	★	1840 MSL	12.9	3.3		1
18.5	★	1850 MSL	12.9	3.4		1
18.6	★	SMDT 1860 MSL	13.5	3.4		1
18.7	★	1870 MSL	13.5	3.4		1
18.8	★	1880 MSL	13.5	3.4		1
18.9	★	1890 MSL	13.5	3.4		1
19.0	★	1900 MSL	13.5	3.5		1
19.1	★	1910 MSL	13.5	3.5	SMDH190□	1
19.2	★	1920 MSL	13.5	3.5		1
19.3	★	1930 MSL	13.5	3.5		1
19.4	★	1940 MSL	13.5	3.5		1
19.5	★	1950 MSL	13.5	3.5		1
19.6	★	SMDT 1960 MSL	14.1	3.6		1
19.7	★	1970 MSL	14.1	3.6		1
19.8	★	1980 MSL	14.1	3.6		1
19.9	★	1990 MSL	14.1	3.6		1
20.0	★	2000 MSL	14.1	3.6		1
20.1	★	2010 MSL	14.1	3.7	SMDH200□	1
20.2	★	2020 MSL	14.1	3.7		1
20.3	★	2030 MSL	14.1	3.7		1
20.4	★	2040 MSL	14.1	3.7		1
20.5	★	2050 MSL	14.1	3.7		1
20.6	★	SMDT 2060 MSL	14.8	3.7		1
20.7	★	2070 MSL	14.8	3.8		1
20.8	★	2080 MSL	14.8	3.8		1
20.9	★	2090 MSL	14.8	3.8		1
21.0	★	2100 MSL	14.8	3.8		1
21.1	★	2110 MSL	14.8	3.8	SMDH210□	1
21.2	★	2120 MSL	14.8	3.9		1
21.3	★	2130 MSL	14.8	3.9		1
21.4	★	2140 MSL	14.8	3.9		1
21.5	★	2150 MSL	14.8	3.9		1
21.6	★	SMDT 2160 MSL	15.0	3.9		1
21.7	★	2170 MSL	15.0	3.9		1
21.8	★	2180 MSL	15.0	4.0		1
21.9	★	2190 MSL	15.0	4.0		1
22.0	★	2200 MSL	15.0	4.0		1
22.1	★	2210 MSL	15.0	4.0	SMDH220□	1
22.2	★	2220 MSL	15.0	4.0		1
22.3	★	2230 MSL	15.0	4.1		1
22.4	★	2240 MSL	15.0	4.1		1
22.5	★	2250 MSL	15.0	4.1		1
22.6	★	2260 MSL	15.0	4.1		1
22.7	★	2270 MSL	15.0	4.1		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

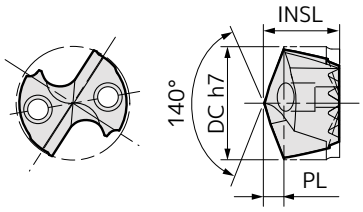
MSL | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

NX Coat | Indexable head MSL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MSL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	★	SMDT 2280 MSL	15.0	4.1	SMDH220□	1
22.9	★	SMDT 2290 MSL	15.1	4.2	SMDH230□	1
23.0	★	2300 MSL	15.1	4.2		1
23.1	★	2310 MSL	15.1	4.2		1
23.2	★	2320 MSL	15.1	4.2		1
23.3	★	2330 MSL	15.1	4.2		1
23.4	★	2340 MSL	15.1	4.3		1
23.5	★	2350 MSL	15.1	4.3		1
23.6	★	2360 MSL	15.1	4.3		1
23.7	★	2370 MSL	15.1	4.3		1
23.8	★	2380 MSL	15.1	4.3		1
23.9	★	SMDT 2390 MSL	15.4	4.3	SMDH240□	1
24.0	★	2400 MSL	15.4	4.4		1
24.1	★	2410 MSL	15.4	4.4		1
24.2	★	2420 MSL	15.4	4.4		1
24.3	★	2430 MSL	15.4	4.4		1
24.4	★	2440 MSL	15.4	4.4		1
24.5	★	2450 MSL	15.4	4.5		1
24.6	★	2460 MSL	15.4	4.5		1
24.7	★	2470 MSL	15.4	4.5		1
24.8	★	2480 MSL	15.4	4.5		1
24.9	★	SMDT 2490 MSL	15.8	4.5	SMDH250□	1
25.0	★	2500 MSL	15.8	4.5		1
25.1	★	2510 MSL	15.8	4.6		1
25.2	★	2520 MSL	15.8	4.6		1
25.3	★	2530 MSL	15.8	4.6		1
25.4	★	2540 MSL	15.8	4.6		1
25.5	★	2550 MSL	15.8	4.6		1
25.6	★	2560 MSL	15.8	4.7		1
25.7	★	2570 MSL	15.8	4.7		1
25.8	★	2580 MSL	15.8	4.7		1
25.9	★	SMDT 2590 MSL	16.4	4.7	SMDH260□	1
26.0	★	2600 MSL	16.4	4.7		1
26.1	★	2610 MSL	16.4	4.7		1
26.2	★	2620 MSL	16.4	4.8		1
26.3	★	2630 MSL	16.4	4.8		1
26.4	★	2640 MSL	16.4	4.8		1
26.5	★	2650 MSL	16.4	4.8		1
26.6	★	2660 MSL	16.4	4.8		1
26.7	★	2670 MSL	16.4	4.9		1
26.8	★	2680 MSL	16.4	4.9		1
26.9	★	SMDT 2690 MSL	17.1	4.9	SMDH270□	1
27.0	★	2700 MSL	17.1	4.9		1
27.1	★	2710 MSL	17.1	4.9		1
27.2	★	2720 MSL	17.1	4.9		1
27.3	★	2730 MSL	17.1	5.0		1
27.4	★	2740 MSL	17.1	5.0		1
27.5	★	2750 MSL	17.1	5.0		1
27.6	★	2760 MSL	17.1	5.0		1
27.7	★	2770 MSL	17.1	5.0		1
27.8	★	2780 MSL	17.1	5.1		1
27.9	★	SMDT 2790 MSL	17.7	5.1	SMDH280□	1
28.0	★	2800 MSL	17.7	5.1		1
28.1	★	2810 MSL	17.7	5.1		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MSL type Diameter ø28.2 to 30.8mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2	★	SMDT 2820 MSL	17.7	5.1	SMDH280□	1
28.3	★	2830 MSL	17.7	5.2		1
28.4	★	2840 MSL	17.7	5.2		1
28.5	★	2850 MSL	17.7	5.2		1
28.6	★	2860 MSL	17.7	5.2		1
28.7	★	2870 MSL	17.7	5.2		1
28.8	★	2880 MSL	17.7	5.2		1
28.9	★	SMDT 2890 MSL	18.3	5.3	SMDH290□	1
29.0	★	2900 MSL	18.3	5.3		1
29.1	★	2910 MSL	18.3	5.3		1
29.2	★	2920 MSL	18.3	5.3		1
29.3	★	2930 MSL	18.3	5.3		1
29.4	★	2940 MSL	18.3	5.4		1
29.5	★	2950 MSL	18.3	5.4		1
29.6	★	2960 MSL	18.3	5.4		1
29.7	★	2970 MSL	18.3	5.4		1
29.8	★	2980 MSL	18.3	5.4		1
29.9	★	SMDT 2990 MSL	19.0	5.4	SMDH300□	1
30.0	★	3000 MSL	19.0	5.5		1
30.1	★	3010 MSL	19.0	5.5		1
30.2	★	3020 MSL	19.0	5.5		1
30.3	★	3030 MSL	19.0	5.5		1
30.4	★	3040 MSL	19.0	5.5		1
30.5	★	3050 MSL	19.0	5.6		1
30.6	★	3060 MSL	19.0	5.6		1
30.7	★	3070 MSL	19.0	5.6		1
30.8	★	3080 MSL	19.0	5.6		1

Grade: ACT100

Recommended Cutting Conditions J126 | Applicable Holders J141, J142

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

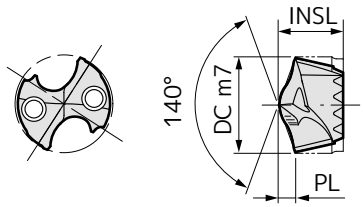
SMD series (Internal Coolant Supply)

MEL — Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MEL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head — Fig 1



Indexable Head MEL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	▲	SMDT 1200 D MEL	6.9	2.2		1
12.1	▲	1210 D MEL	6.9	2.2		1
12.2	▲	1220 D MEL	6.9	2.2	SMDH120□	1
12.3		1230 D MEL	6.9	2.2		1
12.4	▲	1240 D MEL	6.9	2.3		1
12.5	▲	SMDT 1250 D MEL	7.1	2.3		1
12.6	▲	1260 D MEL	7.1	2.3		1
12.7	▲	1270 D MEL	7.1	2.3	SMDH125□	1
12.8		1280 D MEL	7.1	2.3		1
12.9		1290 D MEL	7.1	2.3		1
13.0	▲	SMDT 1300 D MEL	7.3	2.4		1
13.1	▲	1310 D MEL	7.3	2.4		1
13.2	▲	1320 D MEL	7.3	2.4	SMDH130□	1
13.3	▲	1330 D MEL	7.3	2.4		1
13.4	▲	1340 D MEL	7.3	2.4		1
13.5	▲	SMDT 1350 D MEL	7.8	2.5		1
13.6	▲	1360 D MEL	7.8	2.5		1
13.7	▲	1370 D MEL	7.8	2.5		1
13.8	▲	1380 D MEL	7.8	2.5		1
13.9	▲	1390 D MEL	7.8	2.5		1
14.0	▲	1400 D MEL	7.8	2.5	SMDH140□	1
14.1	▲	1410 D MEL	7.8	2.6		1
14.2	▲	1420 D MEL	7.8	2.6		1
14.3	▲	1430 D MEL	7.8	2.6		1
14.4	▲	1440 D MEL	7.8	2.6		1
14.5	▲	1450 D MEL	7.8	2.6		1
14.6	▲	SMDT 1460 D MEL	8.3	2.7		1
14.7	▲	1470 D MEL	8.3	2.7		1
14.8	▲	1480 D MEL	8.3	2.7		1
14.9		1490 D MEL	8.3	2.7		1
15.0	▲	1500 D MEL	8.3	2.7	SMDH150□	1
15.1	▲	1510 D MEL	8.3	2.7		1
15.2	▲	1520 D MEL	8.3	2.8		1
15.3	▲	1530 D MEL	8.3	2.8		1
15.4	▲	1540 D MEL	8.3	2.8		1
15.5	▲	1550 D MEL	8.3	2.8		1
15.6	▲	SMDT 1560 D MEL	8.7	2.8		1
15.7	▲	1570 D MEL	8.7	2.9		1
15.8	▲	1580 D MEL	8.7	2.9		1
15.9	▲	1590 D MEL	8.7	2.9		1
16.0	▲	1600 D MEL	8.7	2.9	SMDH160□	1
16.1	▲	1610 D MEL	8.7	2.9		1
16.2	▲	1620 D MEL	8.7	2.9		1
16.3	▲	1630 D MEL	8.7	3.0		1
16.4	▲	1640 D MEL	8.7	3.0		1
16.5	▲	1650 D MEL	8.7	3.0		1
16.6	▲	SMDT 1660 D MEL	9.2	3.0		1
16.7	▲	1670 D MEL	9.2	3.0		1
16.8	▲	1680 D MEL	9.2	3.1		1
16.9		1690 D MEL	9.2	3.1	SMDH170□	1
17.0	▲	1700 D MEL	9.2	3.1		1
17.1	▲	1710 D MEL	9.2	3.1		1
17.2	▲	1720 D MEL	9.2	3.1		1
17.3	▲	1730 D MEL	9.2	3.1		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MEL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	▲	SMDT 1740 D MEL	9.2	3.2		1
17.5	▲	1750 D MEL	9.2	3.2	SMDH170□	1
17.6	▲	SMDT 1760 D MEL	9.6	3.2		1
17.7	▲	1770 D MEL	9.6	3.2		1
17.8	▲	1780 D MEL	9.6	3.2		1
17.9		1790 D MEL	9.6	3.3		1
18.0	▲	1800 D MEL	9.6	3.3		1
18.1	▲	1810 D MEL	9.6	3.3	SMDH180□	1
18.2	▲	1820 D MEL	9.6	3.3		1
18.3	▲	1830 D MEL	9.6	3.3		1
18.4	▲	1840 D MEL	9.6	3.3		1
18.5	▲	1850 D MEL	9.6	3.4		1
18.6	▲	SMDT 1860 D MEL	10.1	3.4		1
18.7	▲	1870 D MEL	10.1	3.4		1
18.8	▲	1880 D MEL	10.1	3.4		1
18.9	▲	1890 D MEL	10.1	3.4		1
19.0	▲	1900 D MEL	10.1	3.5		1
19.1	▲	1910 D MEL	10.1	3.5	SMDH190□	1
19.2	▲	1920 D MEL	10.1	3.5		1
19.3	▲	1930 D MEL	10.1	3.5		1
19.4	▲	1940 D MEL	10.1	3.5		1
19.5	▲	1950 D MEL	10.1	3.5		1
19.6	▲	SMDT 1960 D MEL	10.5	3.6		1
19.7	▲	1970 D MEL	10.5	3.6		1
19.8	▲	1980 D MEL	10.5	3.6		1
19.9		1990 D MEL	10.5	3.6		1
20.0	▲	2000 D MEL	10.5	3.6	SMDH200□	1
20.1		2010 D MEL	10.5	3.7		1
20.2		2020 D MEL	10.5	3.7		1
20.3		2030 D MEL	10.5	3.7		1
20.4		2040 D MEL	10.5	3.7		1
20.5	▲	2050 D MEL	10.5	3.7		1
20.6		SMDT 2060 D MEL	11.0	3.7		1
20.7		2070 D MEL	11.0	3.8		1
20.8		2080 D MEL	11.0	3.8		1
20.9		2090 D MEL	11.0	3.8		1
21.0	▲	2100 D MEL	11.0	3.8		1
21.1		2110 D MEL	11.0	3.8	SMDH210□	1
21.2		2120 D MEL	11.0	3.9		1
21.3		2130 D MEL	11.0	3.9		1
21.4		2140 D MEL	11.0	3.9		1
21.5	▲	2150 D MEL	11.0	3.9		1
21.6		SMDT 2160 D MEL	11.0	3.9		1
21.7		2170 D MEL	11.0	3.9		1
21.8		2180 D MEL	11.0	4.0		1
21.9		2190 D MEL	11.0	4.0		1
22.0	▲	2200 D MEL	11.0	4.0		1
22.1		2210 D MEL	11.0	4.0	SMDH220□	1
22.2		2220 D MEL	11.0	4.0		1
22.3		2230 D MEL	11.0	4.1		1
22.4		2240 D MEL	11.0	4.1		1
22.5	▲	2250 D MEL	11.0	4.1		1
22.6		2260 D MEL	11.0	4.1		1
22.7		2270 D MEL	11.0	4.1		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

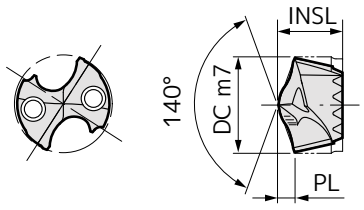
MEL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MEL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MEL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8		SMDT 2280 D MEL	11.0	4.1	SMDH220□	1
22.9		SMDT 2290 D MEL	11.0	4.2	SMDH230□	1
23.0	▲	2300 D MEL	11.0	4.2		1
23.1		2310 D MEL	11.0	4.2		1
23.2		2320 D MEL	11.0	4.2		1
23.3		2330 D MEL	11.0	4.2		1
23.4		2340 D MEL	11.0	4.3		1
23.5	▲	2350 D MEL	11.0	4.3		1
23.6		2360 D MEL	11.0	4.3		1
23.7		2370 D MEL	11.0	4.3		1
23.8		2380 D MEL	11.0	4.3		1
23.9		SMDT 2390 D MEL	11.0	4.3	SMDH240□	1
24.0	▲	2400 D MEL	11.0	4.4		1
24.1		2410 D MEL	11.0	4.4		1
24.2		2420 D MEL	11.0	4.4		1
24.3		2430 D MEL	11.0	4.4		1
24.4		2440 D MEL	11.0	4.4		1
24.5	▲	2450 D MEL	11.0	4.5		1
24.6		2460 D MEL	11.0	4.5		1
24.7		2470 D MEL	11.0	4.5		1
24.8		2480 D MEL	11.0	4.5		1
24.9		SMDT 2490 D MEL	11.3	4.5	SMDH250□	1
25.0	▲	2500 D MEL	11.3	4.5		1
25.1		2510 D MEL	11.3	4.6		1
25.2		2520 D MEL	11.3	4.6		1
25.3		2530 D MEL	11.3	4.6		1
25.4		2540 D MEL	11.3	4.6		1
25.5	▲	2550 D MEL	11.3	4.6		1
25.6		2560 D MEL	11.3	4.7		1
25.7		2570 D MEL	11.3	4.7		1
25.8		2580 D MEL	11.3	4.7		1
25.9		SMDT 2590 D MEL	11.7	4.7	SMDH260□	1
26.0	▲	2600 D MEL	11.7	4.7		1
26.1		2610 D MEL	11.7	4.7		1
26.2		2620 D MEL	11.7	4.8		1
26.3		2630 D MEL	11.7	4.8		1
26.4		2640 D MEL	11.7	4.8		1
26.5	▲	2650 D MEL	11.7	4.8		1
26.6		2660 D MEL	11.7	4.8		1
26.7		2670 D MEL	11.7	4.9		1
26.8		2680 D MEL	11.7	4.9		1
26.9		SMDT 2690 D MEL	12.2	4.9	SMDH270□	1
27.0	▲	2700 D MEL	12.2	4.9		1
27.1		2710 D MEL	12.2	4.9		1
27.2		2720 D MEL	12.2	4.9		1
27.3		2730 D MEL	12.2	5.0		1
27.4		2740 D MEL	12.2	5.0		1
27.5	▲	2750 D MEL	12.2	5.0		1
27.6		2760 D MEL	12.2	5.0		1
27.7		2770 D MEL	12.2	5.0		1
27.8		2780 D MEL	12.2	5.1		1
27.9		SMDT 2790 D MEL	12.6	5.1	SMDH280□	1
28.0	▲	2800 D MEL	12.6	5.1		1
28.1		2810 D MEL	12.6	5.1		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MEL type Diameter ø28.2 to 30.8mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2		SMDT 2820 D MEL	12.6	5.1	SMDH280□	1
28.3		2830 D MEL	12.6	5.2		1
28.4		2840 D MEL	12.6	5.2		1
28.5	▲	2850 D MEL	12.6	5.2		1
28.6		2860 D MEL	12.6	5.2		1
28.7		2870 D MEL	12.6	5.2		1
28.8		2880 D MEL	12.6	5.2		1
28.9		SMDT 2890 D MEL	13.1	5.3	SMDH290□	1
29.0	▲	2900 D MEL	13.1	5.3		1
29.1		2910 D MEL	13.1	5.3		1
29.2		2920 D MEL	13.1	5.3		1
29.3		2930 D MEL	13.1	5.3		1
29.4		2940 D MEL	13.1	5.4		1
29.5	▲	2950 D MEL	13.1	5.4		1
29.6		2960 D MEL	13.1	5.4		1
29.7		2970 D MEL	13.1	5.4		1
29.8		2980 D MEL	13.1	5.4		1
29.9		SMDT 2990 D MEL	13.5	5.4	SMDH300□	1
30.0	▲	3000 D MEL	13.5	5.5		1
30.1		3010 D MEL	13.5	5.5		1
30.2		3020 D MEL	13.5	5.5		1
30.3		3030 D MEL	13.5	5.5		1
30.4		3040 D MEL	13.5	5.5		1
30.5	▲	3050 D MEL	13.5	5.6		1
30.6		3060 D MEL	13.5	5.6		1
30.7		3070 D MEL	13.5	5.6		1
30.8		3080 D MEL	13.5	5.6		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141, J142

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

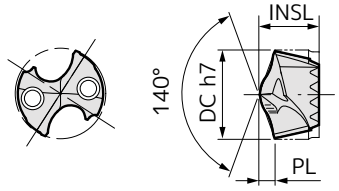
SMD series (Internal Coolant Supply)

MEL — Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MEL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head — Fig 1



Indexable Head MEL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	▲	SMDT 1200 MEL	9.1	2.2		1
12.1	▲	1210 MEL	9.1	2.2		1
12.2	▲	1220 MEL	9.1	2.2	SMDH120□	1
12.3	▲	1230 MEL	9.1	2.2		1
12.4	▲	1240 MEL	9.1	2.3		1
12.5	▲	SMDT 1250 MEL	9.4	2.3		1
12.6	▲	1260 MEL	9.4	2.3		1
12.7	▲	1270 MEL	9.4	2.3	SMDH125□	1
12.8	▲	1280 MEL	9.4	2.3		1
12.9	▲	1290 MEL	9.4	2.3		1
13.0	▲	SMDT 1300 MEL	9.7	2.4		1
13.1	▲	1310 MEL	9.7	2.4		1
13.2	▲	1320 MEL	9.7	2.4	SMDH130□	1
13.3	▲	1330 MEL	9.7	2.4		1
13.4	▲	1340 MEL	9.7	2.4		1
13.5	▲	SMDT 1350 MEL	10.3	2.5		1
13.6	▲	1360 MEL	10.3	2.5		1
13.7	▲	1370 MEL	10.3	2.5		1
13.8	▲	1380 MEL	10.3	2.5		1
13.9	▲	1390 MEL	10.3	2.5		1
14.0	▲	1400 MEL	10.3	2.5	SMDH140□	1
14.1	▲	1410 MEL	10.3	2.6		1
14.2	▲	1420 MEL	10.3	2.6		1
14.3	▲	1430 MEL	10.3	2.6		1
14.4	▲	1440 MEL	10.3	2.6		1
14.5	▲	1450 MEL	10.3	2.6		1
14.6	▲	SMDT 1460 MEL	11.0	2.7		1
14.7	▲	1470 MEL	11.0	2.7		1
14.8	▲	1480 MEL	11.0	2.7		1
14.9	▲	1490 MEL	11.0	2.7		1
15.0	▲	1500 MEL	11.0	2.7	SMDH150□	1
15.1	▲	1510 MEL	11.0	2.7		1
15.2	▲	1520 MEL	11.0	2.8		1
15.3	▲	1530 MEL	11.0	2.8		1
15.4	▲	1540 MEL	11.0	2.8		1
15.5	▲	1550 MEL	11.0	2.8		1
15.6	▲	SMDT 1560 MEL	11.6	2.8		1
15.7	▲	1570 MEL	11.6	2.9		1
15.8	▲	1580 MEL	11.6	2.9		1
15.9	▲	1590 MEL	11.6	2.9		1
16.0	▲	1600 MEL	11.6	2.9	SMDH160□	1
16.1	▲	1610 MEL	11.6	2.9		1
16.2	▲	1620 MEL	11.6	2.9		1
16.3	▲	1630 MEL	11.6	3.0		1
16.4	▲	1640 MEL	11.6	3.0		1
16.5	▲	1650 MEL	11.6	3.0		1
16.6	▲	SMDT 1660 MEL	12.2	3.0		1
16.7	▲	1670 MEL	12.2	3.0		1
16.8	▲	1680 MEL	12.2	3.1		1
16.9	▲	1690 MEL	12.2	3.1	SMDH170□	1
17.0	▲	1700 MEL	12.2	3.1		1
17.1	▲	1710 MEL	12.2	3.1		1
17.2	▲	1720 MEL	12.2	3.1		1
17.3	▲	1730 MEL	12.2	3.1		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MEL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	▲	SMDT 1740 MEL	12.2	3.2		1
17.5	▲	1750 MEL	12.2	3.2	SMDH170□	1
17.6	▲	SMDT 1760 MEL	12.9	3.2		1
17.7	▲	1770 MEL	12.9	3.2		1
17.8	▲	1780 MEL	12.9	3.2		1
17.9	▲	1790 MEL	12.9	3.3		1
18.0	▲	1800 MEL	12.9	3.3		1
18.1	▲	1810 MEL	12.9	3.3	SMDH180□	1
18.2	▲	1820 MEL	12.9	3.3		1
18.3	▲	1830 MEL	12.9	3.3		1
18.4	▲	1840 MEL	12.9	3.3		1
18.5	▲	1850 MEL	12.9	3.4		1
18.6	▲	SMDT 1860 MEL	13.5	3.4		1
18.7	▲	1870 MEL	13.5	3.4		1
18.8	▲	1880 MEL	13.5	3.4		1
18.9	▲	1890 MEL	13.5	3.4		1
19.0	▲	1900 MEL	13.5	3.5		1
19.1	▲	1910 MEL	13.5	3.5	SMDH190□	1
19.2	▲	1920 MEL	13.5	3.5		1
19.3	▲	1930 MEL	13.5	3.5		1
19.4	▲	1940 MEL	13.5	3.5		1
19.5	▲	1950 MEL	13.5	3.5		1
19.6	▲	SMDT 1960 MEL	14.1	3.6		1
19.7	▲	1970 MEL	14.1	3.6		1
19.8	▲	1980 MEL	14.1	3.6		1
19.9	▲	1990 MEL	14.1	3.6		1
20.0	▲	2000 MEL	14.1	3.6		1
20.1	▲	2010 MEL	14.1	3.7	SMDH200□	1
20.2	▲	2020 MEL	14.1	3.7		1
20.3	▲	2030 MEL	14.1	3.7		1
20.4	▲	2040 MEL	14.1	3.7		1
20.5	▲	2050 MEL	14.1	3.7		1
20.6	▲	SMDT 2060 MEL	14.8	3.7		1
20.7	▲	2070 MEL	14.8	3.8		1
20.8	▲	2080 MEL	14.8	3.8		1
20.9	▲	2090 MEL	14.8	3.8		1
21.0	▲	2100 MEL	14.8	3.8		1
21.1	▲	2110 MEL	14.8	3.8	SMDH210□	1
21.2	▲	2120 MEL	14.8	3.9		1
21.3	▲	2130 MEL	14.8	3.9		1
21.4	▲	2140 MEL	14.8	3.9		1
21.5	▲	2150 MEL	14.8	3.9		1
21.6	▲	SMDT 2160 MEL	15.0	3.9		1
21.7	▲	2170 MEL	15.0	3.9		1
21.8	▲	2180 MEL	15.0	4.0		1
21.9	▲	2190 MEL	15.0	4.0		1
22.0	▲	2200 MEL	15.0	4.0		1
22.1	▲	2210 MEL	15.0	4.0	SMDH220□	1
22.2	▲	2220 MEL	15.0	4.0		1
22.3	▲	2230 MEL	15.0	4.1		1
22.4	▲	2240 MEL	15.0	4.1		1
22.5	▲	2250 MEL	15.0	4.1		1
22.6	▲	2260 MEL	15.0	4.1		1
22.7	▲	2270 MEL	15.0	4.1		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply)

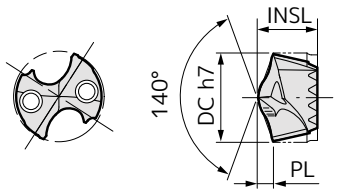
MEL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MEL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MEL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	▲	SMDT 2280 MEL	15.0	4.1	SMDH220□	1
22.9	▲	SMDT 2290 MEL	15.1	4.2	SMDH230□	1
23.0	▲	2300 MEL	15.1	4.2		1
23.1	▲	2310 MEL	15.1	4.2		1
23.2	▲	2320 MEL	15.1	4.2		1
23.3	▲	2330 MEL	15.1	4.2		1
23.4	▲	2340 MEL	15.1	4.3		1
23.5	▲	2350 MEL	15.1	4.3		1
23.6	▲	2360 MEL	15.1	4.3		1
23.7	▲	2370 MEL	15.1	4.3		1
23.8	▲	2380 MEL	15.1	4.3		1
23.9	▲	SMDT 2390 MEL	15.4	4.3	SMDH240□	1
24.0	▲	2400 MEL	15.4	4.4		1
24.1	▲	2410 MEL	15.4	4.4		1
24.2	▲	2420 MEL	15.4	4.4		1
24.3	▲	2430 MEL	15.4	4.4		1
24.4	▲	2440 MEL	15.4	4.4		1
24.5	▲	2450 MEL	15.4	4.5		1
24.6	▲	2460 MEL	15.4	4.5		1
24.7	▲	2470 MEL	15.4	4.5		1
24.8	▲	2480 MEL	15.4	4.5		1
24.9	▲	SMDT 2490 MEL	15.8	4.5	SMDH250□	1
25.0	▲	2500 MEL	15.8	4.5		1
25.1	▲	2510 MEL	15.8	4.6		1
25.2	▲	2520 MEL	15.8	4.6		1
25.3	▲	2530 MEL	15.8	4.6		1
25.4	▲	2540 MEL	15.8	4.6		1
25.5	▲	2550 MEL	15.8	4.6		1
25.6	▲	2560 MEL	15.8	4.7		1
25.7	▲	2570 MEL	15.8	4.7		1
25.8	▲	2580 MEL	15.8	4.7		1
25.9	▲	SMDT 2590 MEL	16.4	4.7	SMDH260□	1
26.0	▲	2600 MEL	16.4	4.7		1
26.1	▲	2610 MEL	16.4	4.7		1
26.2	▲	2620 MEL	16.4	4.8		1
26.3	▲	2630 MEL	16.4	4.8		1
26.4	▲	2640 MEL	16.4	4.8		1
26.5	▲	2650 MEL	16.4	4.8		1
26.6	▲	2660 MEL	16.4	4.8		1
26.7	▲	2670 MEL	16.4	4.9		1
26.8	▲	2680 MEL	16.4	4.9		1
26.9	▲	SMDT 2690 MEL	17.1	4.9	SMDH270□	1
27.0	▲	2700 MEL	17.1	4.9		1
27.1	▲	2710 MEL	17.1	4.9		1
27.2	▲	2720 MEL	17.1	4.9		1
27.3	▲	2730 MEL	17.1	5.0		1
27.4	▲	2740 MEL	17.1	5.0		1
27.5	▲	2750 MEL	17.1	5.0		1
27.6	▲	2760 MEL	17.1	5.0		1
27.7	▲	2770 MEL	17.1	5.0		1
27.8	▲	2780 MEL	17.1	5.1		1
27.9	▲	SMDT 2790 MEL	17.7	5.1	SMDH280□	1
28.0	▲	2800 MEL	17.7	5.1		1
28.1	▲	2810 MEL	17.7	5.1		1

Grade: ACX80

Recommended Cutting Conditions J126 | Applicable Holders J141

Indexable Head MEL type Diameter ø28.2 to 30.8mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2	▲	SMDT 2820 MEL	17.7	5.1	SMDH280□	1
28.3	▲	2830 MEL	17.7	5.2		1
28.4	▲	2840 MEL	17.7	5.2		1
28.5	▲	2850 MEL	17.7	5.2		1
28.6	▲	2860 MEL	17.7	5.2		1
28.7	▲	2870 MEL	17.7	5.2		1
28.8	▲	2880 MEL	17.7	5.2		1
28.9	▲	SMDT 2890 MEL	18.3	5.3	SMDH290□	1
29.0	▲	2900 MEL	18.3	5.3		1
29.1	▲	2910 MEL	18.3	5.3		1
29.2	▲	2920 MEL	18.3	5.3		1
29.3	▲	2930 MEL	18.3	5.3		1
29.4	▲	2940 MEL	18.3	5.4		1
29.5	▲	2950 MEL	18.3	5.4		1
29.6	▲	2960 MEL	18.3	5.4		1
29.7	▲	2970 MEL	18.3	5.4		1
29.8	▲	2980 MEL	18.3	5.4		1
29.9	▲	SMDT 2990 MEL	19.0	5.4	SMDH300□	1
30.0	▲	3000 MEL	19.0	5.5		1
30.1	▲	3010 MEL	19.0	5.5		1
30.2	▲	3020 MEL	19.0	5.5		1
30.3	▲	3030 MEL	19.0	5.5		1
30.4	▲	3040 MEL	19.0	5.5		1
30.5	▲	3050 MEL	19.0	5.6		1
30.6	▲	3060 MEL	19.0	5.6		1
30.7	▲	3070 MEL	19.0	5.6		1
30.8	▲	3080 MEL	19.0	5.6		1

Grade: ACX80

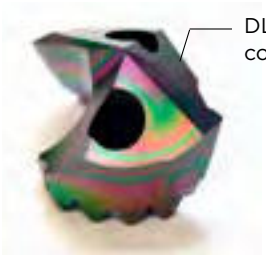
Recommended Cutting Conditions J126 | Applicable Holders J141, J142

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

NAL Type DLC Coated for non-ferrous and Aluminum alloys



High efficiency drilling of non-ferrous materials.

Very sharp cutting edge combined with DLC Aurora coating creates:
Anti-adhession, low cutting forces and stablechip evacuation.

Recommended Cutting Conditions - SMDT-NAL

v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev)

SMD Tip		NAL							
Material		Aluminum Casting		Wrought Aluminum		Aluminum Bronze		Brass	Copper
Ø Drill (mm)		30 HB	180 HB	30 HB	180 HB	100–200 HB	200–250 HB	100 HB	60 HB
12	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,4–0,7–1,0	0,35–0,65–0,9	0,4–0,7–1,0	0,35–0,65–0,9	0,3–0,5–0,7	0,25–0,4–0,55	0,25–0,4–0,55	0,2–0,3–0,4
14	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,4–0,7–1,0	0,35–0,65–0,9	0,4–0,7–1,0	0,35–0,65–0,9	0,3–0,5–0,7	0,25–0,4–0,55	0,25–0,4–0,55	0,2–0,3–0,4
16	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,4–0,7–1,0	0,35–0,65–0,9	0,4–0,7–1,0	0,35–0,65–0,9	0,3–0,5–0,7	0,25–0,4–0,55	0,25–0,4–0,55	0,2–0,3–0,4
18	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,45–0,75–1,05	0,4–0,65–0,95	0,45–0,75–1,05	0,4–0,65–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
20	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,45–0,75–1,05	0,4 - 0,65 - 0,95	0,45–0,75–1,05	0,4–0,65–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
22	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,45–0,75–1,05	0,4 - 0,65 - 0,95	0,45–0,75–1,05	0,4–0,65–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
24	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,5–0,8–1,1	0,4–0,7–0,95	0,5–0,8–1,1	0,4–0,7–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
26	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,5–0,8–1,1	0,4–0,7–0,95	0,5–0,8–1,1	0,4–0,7–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
28	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,5–0,8–1,1	0,4–0,7–0,95	0,5–0,8–1,1	0,4–0,7–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
30	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,5–0,8–1,1	0,4–0,7–0,95	0,5–0,8–1,1	0,4–0,7–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45
32	v_c	180–350	140–260	180–400	180–350	90–150	60–120	140–240	80–180
	f	0,5–0,8–1,1	0,4–0,7–0,95	0,5–0,8–1,1	0,4–0,7–0,95	0,35–0,55–0,75	0,3–0,45–0,6	0,3–0,45–0,6	0,25–0,35–0,45

SMD series (Internal Coolant Supply)

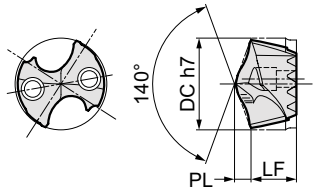
NAL | Aluminum Alloy | Non-ferrous Materials | Copper Alloy

Aurora DLC Coating | Indexable head NAL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Set Figure

NAL



Indexable Head NAL type Diameter ø12.0 to 30.5mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0		**SMDT 1200 NAL**	6.9	2.2	**SMDH120□**	1
12.5		**SMDT 1250 NAL**	7.1	2.3	**SMDH125□**	1
13.0		**SMDT 1300 NAL**	7.3	2.4	**SMDH130□**	1
14.0		**SMDT 1400 NAL**	7.8	2.5	**SMDH140□**	1
14.2		**SMDT 1420 NAL**		2.6		1
14.5		**SMDT 1450 NAL**				1
14.7		**SMDT 1470 NAL**	8.3	2.7	**SMDH150□**	1
15.0		**SMDT 1500 NAL**				1
15.5		**SMDT 1550 NAL**		2.8		1
16.0		**SMDT 1600 NAL**	8.7	2.9	**SMDH160□**	1
16.5		**SMDT 1650 NAL**		3.0		1
17.0		**SMDT 1700 NAL**	9.2	3.1	**SMDH170□**	1
17.5		**SMDT 1750 NAL**		3.2		1
18.0		**SMDT 1800 NAL**	9.6	3.3	**SMDH180□**	1
18.5		**SMDT 1850 NAL**		3.4		1
19.0		**SMDT 1900 NAL**	10.1	3.5	**SMDH190□**	1
19.5		**SMDT 1950 NAL**				1
20.0		**SMDT 2000 NAL**	10.5	3.6	**SMDH200□**	1
20.5		**SMDT 2050 NAL**		3.7		1
21.0		**SMDT 2100 NAL**	11.0	3.8	**SMDH210□**	1
21.5		**SMDT 2150 NAL**		3.9		1
22.0		**SMDT 2200 NAL**		4.0	**SMDH220□**	1
22.5		**SMDT 2250 NAL**		4.1		1
23.0		**SMDT 2300 NAL**		4.2	**SMDH230□**	1
23.5		**SMDT 2350 NAL**		4.3		1
24.0		**SMDT 2400 NAL**		4.4	**SMDH240□**	1
24.5		**SMDT 2450 NAL**		4.5		1
25.0		**SMDT 2500 NAL**	11.3		**SMDH250□**	1
25.5		**SMDT 2550 NAL**		4.6		1
26.0		**SMDT 2600 NAL**	11.7	4.7	**SMDH260□**	1
26.5		**SMDT 2650 NAL**		4.8		1
27.0		**SMDT 2700 NAL**	12.2	4.9	**SMDH270□**	1
27.5		**SMDT 2750 NAL**		5.0		1
28.0		**SMDT 2800 NAL**	12.6	5.1	**SMDH280□**	1
28.5		**SMDT 2850 NAL**		5.2		1
29.0		**SMDT 2900 NAL**	13.1	5.3	**SMDH290□**	1
29.5		**SMDT 2950 NAL**		5.4		1
30.0		**SMDT 3000 NAL**	13.5		**SMDH300□**	1
30.5		**SMDT 3050 NAL**		5.6		1

Grade: DL1500

Recommended Cutting Conditions J126 | Applicable Holders J141

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/No Flange

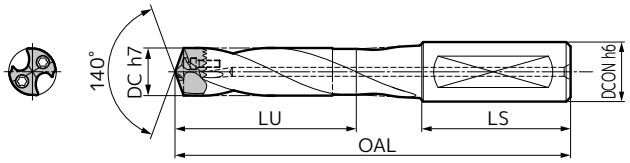
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy

DEX Coat | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø12.0 to 29.8mm with MTL type / MSL type / MEL type set Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
12.0 ≤ D < 12.5	3	**SMDH 120M**	★	**42.0**	**107.2**	48	16	MTL/MSL MEL	1	BXD02208IP	**0.75 to 1.00**	TRDR08IP
	5	**120L**	★	**67.0**	**132.2**	48	16		1			
12.5 ≤ D < 13.0	3	**SMDH 125M**	★	**44.0**	**107.3**	48	16	MTL/MSL MEL	1	BXD02208IP	**0.75 to 1.00**	TRDR08IP
	5	**125L**	★	**69.0**	**132.3**	48	16		1			
13.0 ≤ D < 13.5	3	**SMDH 130M**	★	**45.0**	**112.4**	48	16	MTL/MSL MEL	1	BXD02208IP	**0.75 to 1.00**	TRDR08IP
	5	**130L**	★	**72.0**	**142.4**	48	16		1			
13.5 ≤ D ≤ 14.5	3	**SMDH 140M**	★	**51.0**	**119.0**	48	16	MTL/MSL MEL	1	BXD02208IP	**0.75 to 1.00**	TRDR08IP
	5	**140L**	★	**80.0**	**149.0**	48	16		1			
	8	**140D**	★	**123.0**	**194.0**	48	16		1			
14.5 < D ≤ 15.5	3	**SMDH 150M**	★	**54.0**	**129.2**	50	20	MTL/MSL MEL	1	BXD02208IP	**0.75 to 1.00**	TRDR08IP
	5	**150L**	★	**85.0**	**159.2**	50	20		1			
	8	**150D**	★	**131.0**	**204.2**	50	20		1			
15.5 < D ≤ 16.5	3	**SMDH 160M**	★	**57.0**	**134.4**	50	20	MTL/MSL MEL	1	BXD02509IP	**0.93 to 1.24**	TRDR10IP
	5	**160L**	★	**90.0**	**169.4**	50	20		1			
	8	**160D**	★	**140.0**	**214.4**	50	20		1			
16.5 < D ≤ 17.5	3	**SMDH 170M**	★	**60.0**	**139.6**	50	20	MTL/MSL MEL	1	BXD02509IP	**0.93 to 1.24**	TRDR10IP
	5	**170L**	★	**95.0**	**174.6**	50	20		1			
	8	**170D**	★	**148.0**	**224.6**	50	20		1			
17.5 < D ≤ 18.5	3	**SMDH 180M**	★	**63.0**	**144.8**	50	20	MTL/MSL MEL	1	BXD02509IP	**0.93 to 1.24**	TRDR10IP
	5	**180L**	★	**100.0**	**179.8**	50	20		1			
	8	**180D**	★	**156.0**	**229.8**	50	20		1			
18.5 < D ≤ 19.5	3	**SMDH 190M**	★	**67.0**	**160.0**	56	25	MTL/MSL MEL	1	BXD03011IP	**1.83 to 2.44**	TRDR15IP
	5	**190L**	★	**106.0**	**195.0**	56	25		1			
	8	**190D**	★	**164.0**	**255.0**	56	25		1			
19.5 < D ≤ 20.5	3	**SMDH 200M**	★	**70.0**	**160.1**	56	25	MTL/MSL MEL	1	BXD03011IP	**1.83 to 2.44**	TRDR15IP
	5	**200L**	★	**111.0**	**200.1**	56	25		1			
	8	**200D**	★	**172.0**	**265.1**	56	25		1			
20.5 < D ≤ 21.5	3	**SMDH 210M**	★	**73.0**	**160.3**	56	25	MTL/MSL MEL	1	BXD03011IP	**1.83 to 2.44**	TRDR15IP
	5	**210L**	★	**116.0**	**200.3**	56	25		1			
	8	**210D**	★	**180.0**	**270.3**	56	25		1			
21.5 < D ≤ 22.8	3	**SMDH 220M**	★	**77.0**	**165.1**	56	25	MTL/MSL MEL	1	BXD03512IP	**2.79 to 3.72**	TRDR15IP
	5	**220L**	★	**123.0**	**205.1**	56	25		1			
	8	**220D**	★	**191.0**	**275.1**	56	25		1			
22.8 < D ≤ 23.8	3	**SMDH 230M**	★	**80.0**	**164.7**	56	25	MTL/MSL MEL	1	BXD03512IP	**2.79 to 3.72**	TRDR15IP
	5	**230L**	★	**128.0**	**214.7**	56	25		1			
	8	**230D**	★	**199.0**	**284.7**	56	25		1			
23.8 < D ≤ 24.8	3	**SMDH 240M**	★	**83.0**	**174.6**	60	32	MTL/MSL MEL	1	BXD03512IP	**2.79 to 3.72**	TRDR15IP
	5	**240L**	★	**133.0**	**224.6**	60	32		1			
	8	**240D**	★	**207.0**	**299.6**	60	32		1			
24.8 < D ≤ 25.8	3	**SMDH 250M**	★	**87.0**	**174.5**	60	32	MTL/MSL MEL	1	BXD04014IP	**4.14 to 5.52**	TRDR20IP
	5	**250L**	★	**138.0**	**229.5**	60	32		1			
	8	**250D**	★	**216.0**	**304.5**	60	32		1			
25.8 < D ≤ 26.8	3	**SMDH 260M**	★	**90.0**	**179.7**	60	32	MTL/MSL MEL	1	BXD04014IP	**4.14 to 5.52**	TRDR20IP
	5	**260L**	★	**143.0**	**234.7**	60	32		1			
	8	**260D**	★	**224.0**	**314.7**	60	32		1			
26.8 < D ≤ 27.8	3	**SMDH 270M**	★	**93.0**	**179.9**	60	32	MTL/MSL MEL	1	BXD04014IP	**4.14 to 5.52**	TRDR20IP
	5	**270L**	★	**149.0**	**239.9**	60	32		1			
	8	**270D**	★	**232.0**	**324.9**	60	32		1			
27.8 < D ≤ 28.8	3	**SMDH 280M**	★	**96.0**	**185.1**	60	32	MTL/MSL MEL	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**280L**	★	**154.0**	**245.1**	60	32		1			
	8	**280D**	★	**240.0**	**330.1**	60	32		1			
28.8 < D ≤ 29.8	3	**SMDH 290M**	★	**99.0**	**190.3**	60	32	MTL/MSL MEL	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**290L**	★	**159.0**	**250.3**	60	32		1			
	8	**290D**	★	**248.0**	**340.3**	60	32		1			

Recommended Cutting Conditions J126 | MTL type Heads J129, J130 | MSL type Heads J133, J134 | MEL type Heads J137, J138

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/No Flange

MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy
NAL: Aluminum Alloy

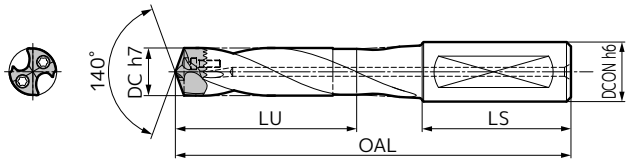
DEX Coat | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

MTL | MSL | MEL | NAL

Fig 1



Holder ø29.8 to 42.5mm with MTL type / MSL type / MEL type set Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw N·m	Wrench
29.8 < D ≤ 30.8	3	**SMDH 300M**	★	**103.0**	**190.5**	60	32	MTL/MSL MEL	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**300L**	★	**164.0**	**260.5**	60	32		1			
	8	**300D**	★	**257.0**	**350.5**	60	32		1			
30.8 < D ≤ 32.0	3	**SMDH 320M**	★	**106.0**	**200.7**	60	32	MTL	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**320L**	★	**170.0**	**265.8**	60	32		1			
	8	**320D**	★	**266.0**	**360.8**	60	32		1			
32.0 < D ≤ 33.5	3	**SMDH 335M**	★	**111.0**	**205.9**	60	32	MTL	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**335L**	★	**178.0**	**274.1**	60	32		1			
	8	**335D**	★	**279.0**	**376.1**	60	32		1			
33.5 < D ≤ 35.0	3	**SMDH 350M**	★	**116.0**	**221.2**	70	40	MTL	1	BX0515	**7.2**	HD040
	5	**350L**	★	**186.0**	**296.4**	70	40		1			
	8	**350D**	★	**291.0**	**401.4**	70	40		1			
35.0 < D ≤ 36.5	3	**SMDH 365M**	★	**121.0**	**226.4**	70	40	MTL	1	BX0515	**7.2**	HD040
	5	**365L**	★	**194.0**	**301.6**	70	40		1			
	8	**365D**	★	**303.0**	**411.6**	70	40		1			
36.5 < D ≤ 38.0	3	**SMDH 380M**	★	**125.0**	**231.7**	70	40	MTL	1	BX0515	**7.2**	HD040
	5	**380L**	★	**201.0**	**311.9**	70	40		1			
	8	**380D**	★	**315.0**	**426.9**	70	40		1			
38.0 < D ≤ 39.5	3	**SMDH 395M**	★	**130.0**	**237.0**	70	40	MTL	1	BX0515	**7.2**	HD040
	5	**395L**	★	**209.0**	**322.2**	70	40		1			
	8	**395D**	★	**328.0**	**437.2**	70	40		1			
39.5 < D ≤ 41.0	3	**SMDH 410M**	★	**135.0**	**252.2**	70	40	MTL	1	BX0515	**7.2**	HD040
	5	**410L**	★	**217.0**	**332.5**	70	40		1			
	8	**410D**	★	**340.0**	**457.5**	70	40		1			
41.0 < D ≤ 42.5	3	**SMDH 425M**	★	**140.0**	**257.5**	70	40	MTL	1	BX0515	**7.2**	HD040
	5	**425L**	★	**225.0**	**342.7**	70	40		1			
	8	**425D**	★	**352.0**	**467.7**	70	40		1			

Recommended Cutting Conditions J126 | MTL type Head J130 | MSL type Head J134 | MEL type Head J138

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/Flange

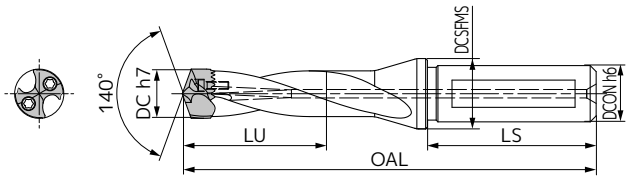
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy
NAL: Aluminum Alloy | Ductile Cast Iron | Aluminum Alloy

DEX Coat | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø12.0 to 24.8mm with MTL type / MSL type / MEL type set

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Parts: Cap Screw	Parts: Cap Screw N·m	Parts: Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5DF	★	23.0	90.5	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3DF	★	42.0	107.2	48	20	16		1			
	5	120-5DF	★	67.0	132.2	48	20	16		1			
	8	120-8DF	★	98.0	164.4	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5DF	★	24.0	91.0	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3DF	★	44.0	107.3	48	20	16		1			
	5	125-5DF	★	69.0	132.3	48	20	16		1			
	8	125-8DF	★	102.0	170.1	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5DF	★	25.0	92.2	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3DF	★	45.0	112.4	48	20	16		1			
	5	130-5DF	★	72.0	142.4	48	20	16		1			
	8	130-8DF	★	106.0	178.4	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5DF	★	29.0	96.3	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3DF	★	51.0	119.0	48	20	16		1			
	5	140-5DF	★	80.0	149.0	48	20	16		1			
	8	140-8DF	★	123.0	194.0	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5DF	★	31.0	100.0	50	25	20	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3DF	★	54.0	129.2	50	25	20		1			
	5	150-5DF	★	85.0	159.2	50	25	20		1			
	8	150-8DF	★	131.0	204.2	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5DF	★	32.0	102.7	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3DF	★	57.0	134.4	50	25	20		1			
	5	160-5DF	★	90.0	169.4	50	25	20		1			
	8	160-8DF	★	140.0	214.4	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5DF	★	34.0	104.4	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3DF	★	60.0	139.6	50	25	20		1			
	5	170-5DF	★	95.0	174.6	50	25	20		1			
	8	170-8DF	★	148.0	224.6	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5DF	★	36.0	107.1	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3DF	★	63.0	144.8	50	25	20		1			
	5	180-5DF	★	100.0	179.8	50	25	20		1			
	8	180-8DF	★	156.0	229.8	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5DF	★	37.0	114.8	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3DF	★	67.0	160.0	56	30	25		1			
	5	190-5DF	★	106.0	195.0	56	30	25		1			
	8	190-8DF	★	164.0	255.0	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5DF	★	39.0	117.4	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3DF	★	70.0	160.1	56	30	25		1			
	5	200-5DF	★	111.0	200.1	56	30	25		1			
	8	200-8DF	★	172.0	265.1	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5DF	★	41.0	119.1	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3DF	★	73.0	160.3	56	30	25		1			
	5	210-5DF	★	116.0	200.3	56	30	25		1			
	8	210-8DF	★	180.0	270.3	56	30	25		1			
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5DF	★	43.0	120.9	56	30	25	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3DF	★	77.0	165.1	56	30	25		1			
	5	220-5DF	★	123.0	205.1	56	30	25		1			
	8	220-8DF	★	191.0	275.1	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5DF	★	45.0	122.0	56	30	25	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3DF	★	80.0	164.7	56	30	25		1			
	5	230-5DF	★	128.0	214.7	56	30	25		1			
	8	230-8DF	★	199.0	284.7	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5DF	★	46.0	128.4	60	37	32	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3DF	★	83.0	174.6	60	37	32		1			
	5	240-5DF	★	133.0	224.6	60	37	32		1			
	8	240-8DF	★	207.0	299.6	60	37	32		1			

Recommended Cutting Conditions J126 | MTL type Heads J129, J130 | MSL type Heads J133, J134 | MEL type Heads J137, J138

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/Flange

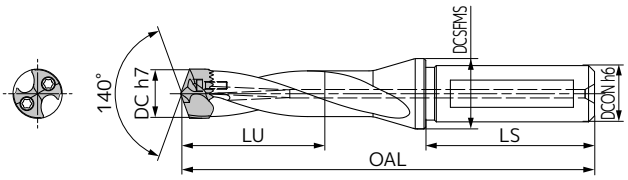
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy | Aluminum Alloy | Aluminum Alloy

DEX Coat | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø24.8 to 30.8mm with MTL type / MSL type / MEL type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
24.8 < D ≤ 25.8	1.5	**SMDH 250-1.5DF**	★	**48.0**	**128.8**	60	37	32	MTL/MSL MEL	1	BXD04014IPC	**4.14 to 5.52**	TRDR20IP
	3	**250-3DF**	★	**87.0**	**174.5**	60	37	32		1			
	5	**250-5DF**	★	**138.0**	**229.5**	60	37	32		1			
	8	**250-8DF**	★	**216.0**	**304.5**	60	37	32		1			
25.8 < D ≤ 26.8	1.5	**SMDH 260-1.5DF**	★	**50.0**	**131.5**	60	37	32	MTL/MSL MEL	1	BXD04014IPC	**4.14 to 5.52**	TRDR20IP
	3	**260-3DF**	★	**90.0**	**179.7**	60	37	32		1			
	5	**260-5DF**	★	**143.0**	**234.7**	60	37	32		1			
	8	**260-8DF**	★	**224.0**	**314.7**	60	37	32		1			
26.8 < D ≤ 27.8	1.5	**SMDH 270-1.5DF**	★	**51.0**	**132.2**	60	37	32	MTL/MSL MEL	1	BXD04014IPC	**4.14 to 5.52**	TRDR20IP
	3	**270-3DF**	★	**93.0**	**179.9**	60	37	32		1			
	5	**270-5DF**	★	**149.0**	**239.9**	60	37	32		1			
	8	**270-8DF**	★	**232.0**	**324.9**	60	37	32		1			
27.8 < D ≤ 28.8	1.5	**SMDH 280-1.5DF**	★	**53.0**	**133.9**	60	37	32	MTL/MSL MEL	1	BXD04515IPC	**4.98 to 6.64**	TRDR25IP
	3	**280-3DF**	★	**96.0**	**185.1**	60	37	32		1			
	5	**280-5DF**	★	**154.0**	**245.1**	60	37	32		1			
	8	**280-8DF**	★	**240.0**	**330.1**	60	37	32		1			
28.8 < D ≤ 29.8	1.5	**SMDH 290-1.5DF**	★	**55.0**	**135.6**	60	37	32	MTL/MSL MEL	1	BXD04515IPC	**4.98 to 6.64**	TRDR25IP
	3	**290-3DF**	★	**99.0**	**190.3**	60	37	32		1			
	5	**290-5DF**	★	**159.0**	**250.3**	60	37	32		1			
	8	**290-8DF**	★	**248.0**	**340.3**	60	37	32		1			
29.8 < D ≤ 30.8	1.5	**SMDH 300-1.5DF**	★	**56.0**	**138.3**	60	37	32	MTL/MSL MEL	1	BXD04515IPC	**4.98 to 6.64**	TRDR25IP
	3	**300-3DF**	★	**103.0**	**190.5**	60	37	32		1			
	5	**300-5DF**	★	**164.0**	**260.5**	60	37	32		1			
	8	**300-8DF**	★	**257.0**	**350.5**	60	37	32		1			

Recommended Cutting Conditions J126 | MTL type Head J130 | MSL type Head J134 | MEL type Head J138

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) No Side Lock Flat/Flange

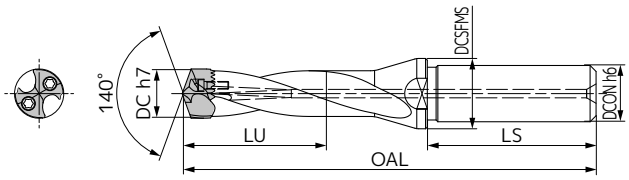
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy

DEX Coat | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø12.0 to 21.5mm with MTL type / MSL type / MEL type set

Parts

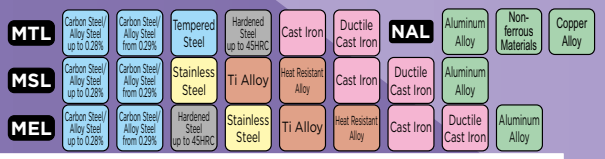
Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw N·m	Wrench
12.0 ≤ D < 12.5	1.5	**SMDH 120-1.5D**	★	**23.0**	**90.5**	48	20	16	MTL/MSL MEL	1	BXD02208IPC	**0.75 to 1.00**	TRDR08IP
	3	**120-3D**	★	**42.0**	**107.2**	48	20	16		1			
	5	**120-5D**	★	**67.0**	**132.2**	48	20	16		1			
	8	**120-8D**	★	**98.0**	**164.4**	48	20	16		1			
	12	**120-12D**	★	**146.0**	**213.3**	48	20	16		1			
12.5 ≤ D < 13.0	1.5	**SMDH 125-1.5D**	★	**24.0**	**91.0**	48	20	16	MTL/MSL MEL	1	BXD02208IPC	**0.75 to 1.00**	TRDR08IP
	3	**125-3D**	★	**44.0**	**107.3**	48	20	16		1			
	5	**125-5D**	★	**69.0**	**132.3**	48	20	16		1			
	8	**125-8D**	★	**102.0**	**170.1**	48	20	16		1			
	12	**125-12D**	★	**152.0**	**219.5**	48	20	16		1			
13.0 ≤ D < 13.5	1.5	**SMDH 130-1.5D**	★	**25.0**	**92.2**	48	20	16	MTL/MSL MEL	1	BXD02208IPC	**0.75 to 1.00**	TRDR08IP
	3	**130-3D**	★	**45.0**	**112.4**	48	20	16		1			
	5	**130-5D**	★	**72.0**	**142.4**	48	20	16		1			
	8	**130-8D**	★	**106.0**	**178.4**	48	20	16		1			
	12	**130-12D**	★	**158.0**	**225.7**	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	**SMDH 140-1.5D**	★	**29.0**	**96.3**	48	20	16	MTL/MSL MEL	1	BXD02208IPC	**0.75 to 1.00**	TRDR08IP
	3	**140-3D**	★	**51.0**	**119.0**	48	20	16		1			
	5	**140-5D**	★	**80.0**	**149.0**	48	20	16		1			
	8	**140-8D**	★	**123.0**	**194.0**	48	20	16		1			
	12	**140-12D**	★	**170.0**	**238.5**	48	20	16		1			
14.5 < D ≤ 15.5	1.5	**SMDH 150-1.5D**	★	**31.0**	**100.0**	50	25	20	MTL/MSL MEL	1	BXD02208IPC	**0.75 to 1.00**	TRDR08IP
	3	**150-3D**	★	**54.0**	**129.2**	50	25	20		1			
	5	**150-5D**	★	**85.0**	**159.2**	50	25	20		1			
	8	**150-8D**	★	**131.0**	**204.2**	50	25	20		1			
	12	**150-12D**	★	**182.0**	**253.0**	50	25	20		1			
15.5 < D ≤ 16.5	1.5	**SMDH 160-1.5D**	★	**32.0**	**102.7**	50	25	20	MTL/MSL MEL	1	BXD02509IPC	**0.93 to 1.24**	TRDR10IP
	3	**160-3D**	★	**57.0**	**134.4**	50	25	20		1			
	5	**160-5D**	★	**90.0**	**169.4**	50	25	20		1			
	8	**160-8D**	★	**140.0**	**214.4**	50	25	20		1			
	12	**160-12D**	★	**194.0**	**265.5**	50	25	20		1			
16.5 < D ≤ 17.5	1.5	**SMDH 170-1.5D**	★	**34.0**	**104.4**	50	25	20	MTL/MSL MEL	1	BXD02509IPC	**0.93 to 1.24**	TRDR10IP
	3	**170-3D**	★	**60.0**	**139.6**	50	25	20		1			
	5	**170-5D**	★	**95.0**	**174.6**	50	25	20		1			
	8	**170-8D**	★	**148.0**	**224.6**	50	25	20		1			
	12	**170-12D**	★	**207.0**	**278.1**	50	25	20		1			
17.5 < D ≤ 18.5	1.5	**SMDH 180-1.5D**	★	**36.0**	**107.1**	50	25	20	MTL/MSL MEL	1	BXD02509IPC	**0.93 to 1.24**	TRDR10IP
	3	**180-3D**	★	**63.0**	**144.8**	50	25	20		1			
	5	**180-5D**	★	**100.0**	**179.8**	50	25	20		1			
	8	**180-8D**	★	**156.0**	**229.8**	50	25	20		1			
	12	**180-12D**	★	**219.0**	**290.5**	50	25	20		1			
18.5 < D ≤ 19.5	1.5	**SMDH 190-1.5D**	★	**37.0**	**114.8**	56	30	25	MTL/MSL MEL	1	BXD03011IPC	**1.83 to 2.44**	TRDR15IP
	3	**190-3D**	★	**67.0**	**160.0**	56	30	25		1			
	5	**190-5D**	★	**106.0**	**195.0**	56	30	25		1			
	8	**190-8D**	★	**164.0**	**255.0**	56	30	25		1			
	12	**190-12D**	★	**231.0**	**309.1**	56	30	25		1			
19.5 < D ≤ 20.5	1.5	**SMDH 200-1.5D**	★	**39.0**	**117.4**	56	30	25	MTL/MSL MEL	1	BXD03011IPC	**1.83 to 2.44**	TRDR15IP
	3	**200-3D**	★	**70.0**	**160.1**	56	30	25		1			
	5	**200-5D**	★	**111.0**	**200.1**	56	30	25		1			
	8	**200-8D**	★	**172.0**	**265.1**	56	30	25		1			
	12	**200-12D**	★	**243.0**	**321.4**	56	30	25		1			
20.5 < D ≤ 21.5	1.5	**SMDH 210-1.5D**	★	**41.0**	**119.1**	56	30	25	MTL/MSL MEL	1	BXD03011IPC	**1.83 to 2.44**	TRDR15IP
	3	**210-3D**	★	**73.0**	**160.3**	56	30	25		1			
	5	**210-5D**	★	**116.0**	**200.3**	56	30	25		1			
	8	**210-8D**	★	**180.0**	**270.3**	56	30	25		1			
	12	**210-12D**	★	**255.0**	**333.9**	56	30	25		1			

Recommended Cutting Conditions J149 | MSL type Head J152 | MSL type Head J156 | MEL type Head J160

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) No Side Lock Flat/Flange

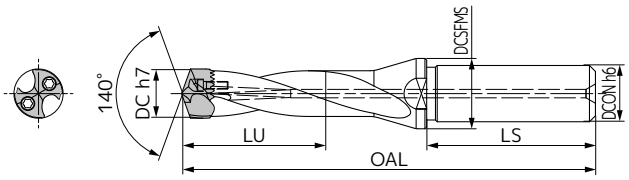


DEX Coat | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø21.5 to 30.8mm with MTL type / MSL type / MEL type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
21.5 < D ≤ 22.8	1.5	**SMDH 220-1.5D**	★	**43.0**	**120.9**	56	30	25	MTL/MSL MEL	1	BXD03512IPC	**2.79 to 3.72**	TRDR15IP
	3	**220-3D**	★	**77.0**	**165.1**	56	30	25		1			
	5	**220-5D**	★	**123.0**	**205.1**	56	30	25		1			
	8	**220-8D**	★	**191.0**	**275.1**	56	30	25		1			
	12	**220-12D**	★	**268.0**	**347.0**	56	30	25		1			
22.8 < D ≤ 23.8	1.5	**SMDH 230-1.5D**	★	**45.0**	**122.0**	56	30	25	MTL/MSL MEL	1	BXD03512IPC	**2.79 to 3.72**	TRDR15IP
	3	**230-3D**	★	**80.0**	**164.7**	56	30	25		1			
	5	**230-5D**	★	**128.0**	**214.7**	56	30	25		1			
	8	**230-8D**	★	**199.0**	**284.7**	56	30	25		1			
	12	**230-12D**	★	**280.0**	**359.0**	56	30	25		1			
23.8 < D ≤ 24.8	1.5	**SMDH 240-1.5D**	★	**46.0**	**128.4**	60	37	32	MTL/MSL MEL	1	BXD03512IPC	**2.79 to 3.72**	TRDR15IP
	3	**240-3D**	★	**83.0**	**174.6**	60	37	32		1			
	5	**240-5D**	★	**133.0**	**224.6**	60	37	32		1			
	8	**240-8D**	★	**207.0**	**299.6**	60	37	32		1			
	12	**240-12D**	★	**292.0**	**376.1**	60	37	32		1			
24.8 < D ≤ 25.8	1.5	**SMDH 250-1.5D**	★	**48.0**	**128.8**	60	37	32	MTL/MSL MEL	1	BXD04014IPC	**4.14 to 5.52**	TRDR20IP
	3	**250-3D**	★	**87.0**	**174.5**	60	37	32		1			
	5	**250-5D**	★	**138.0**	**229.5**	60	37	32		1			
	8	**250-8D**	★	**216.0**	**304.5**	60	37	32		1			
	12	**250-12D**	★	**304.0**	**388.3**	60	37	32		1			
25.8 < D ≤ 26.8	1.5	**SMDH 260-1.5D**	★	**50.0**	**131.5**	60	37	32	MTL/MSL MEL	1	BXD04014IPC	**4.14 to 5.52**	TRDR20IP
	3	**260-3D**	★	**90.0**	**179.7**	60	37	32		1			
	5	**260-5D**	★	**143.0**	**234.7**	60	37	32		1			
	8	**260-8D**	★	**224.0**	**314.7**	60	37	32		1			
	12	**260-12D**	★	**316.0**	**400.8**	60	37	32		1			
26.8 < D ≤ 27.8	1.5	**SMDH 270-1.5D**	★	**51.0**	**132.2**	60	37	32	MTL/MSL MEL	1	BXD04014IPC	**4.14 to 5.52**	TRDR20IP
	3	**270-3D**	★	**93.0**	**179.9**	60	37	32		1			
	5	**270-5D**	★	**149.0**	**239.9**	60	37	32		1			
	8	**270-8D**	★	**232.0**	**324.9**	60	37	32		1			
	12	**270-12D**	★	**328.0**	**413.3**	60	37	32		1			
27.8 < D ≤ 28.8	1.5	**SMDH 280-1.5D**	★	**53.0**	**133.9**	60	37	32	MTL/MSL MEL	1	BXD04515IPC	**4.98 to 6.64**	TRDR25IP
	3	**280-3D**	★	**96.0**	**185.1**	60	37	32		1			
	5	**280-5D**	★	**154.0**	**245.1**	60	37	32		1			
	8	**280-8D**	★	**240.0**	**330.1**	60	37	32		1			
	12	**280-12D**	★	**341.0**	**425.8**	60	37	32		1			
28.8 < D ≤ 29.8	1.5	**SMDH 290-1.5D**	★	**55.0**	**135.6**	60	37	32	MTL/MSL MEL	1	BXD04515IPC	**4.98 to 6.64**	TRDR25IP
	3	**290-3D**	★	**99.0**	**190.3**	60	37	32		1			
	5	**290-5D**	★	**159.0**	**250.3**	60	37	32		1			
	8	**290-8D**	★	**248.0**	**340.3**	60	37	32		1			
	12	**290-12D**	★	**353.0**	**438.4**	60	37	32		1			
29.8 < D ≤ 30.8	1.5	**SMDH 300-1.5D**	★	**56.0**	**138.3**	60	37	32	MTL/MSL MEL	1	BXD04515IPC	**4.98 to 6.64**	TRDR25IP
	3	**300-3D**	★	**103.0**	**190.5**	60	37	32		1			
	5	**300-5D**	★	**164.0**	**260.5**	60	37	32		1			
	8	**300-8D**	★	**257.0**	**350.5**	60	37	32		1			
	12	**300-12D**	★	**365.0**	**450.8**	60	37	32		1			

Recommended Cutting Conditions J149 | MTL type Heads J152, J153 | MSL type Heads J156, J157 | MEL type Heads J160, J161

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

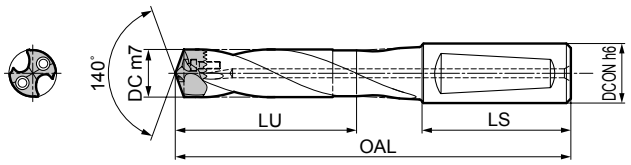
SMD series (Internal Coolant Supply) No Side Lock Flat/Flange

MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy | Aluminum Alloy

DEX Coat | Aurora DLC Coating | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Set Figure



Holder ø12.0 to 29.8mm

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
12,0 ≤ D < 12,5	3	**SMDH 120 M3**	★	42	107	48	16	MTL/MSL MEL/ NAL	1	BXD02208IP	0,75–1,00	TRDR08IP
	5	**120 M5**	★	67	132	48	16		1			
12,5 ≤ D < 13,0	3	**SMDH 125 M3**	★	44	107	48	16		1	BXD02208IP	0,75–1,00	TRDR08IP
	5	**125 M5**	★	69	132	48	16		1			
13,0 ≤ D < 13,5	3	**SMDH 130 M3**	★	45	112	48	16		1	BXD02208IP	0,75–1,00	TRDR08IP
	5	**130 M5**	★	72	142	48	16		1			
13,5 ≤ D ≤ 14,5	3	**SMDH 140 M3**	★	51	119	48	16	MTL/MSL MEL/ NAL	1	BXD02208IP	0,75–1,00	TRDR08IP
	5	**140 M5**	★	80	149	48	16		1			
	8	**140 M8**	★	123	194	48	16		1			
14,5 < D ≤ 15,5	3	**SMDH 150 M3**	★	54	129	50	20		1	BXD02208IP	0,75–1,00	TRDR08IP
	5	**150 M5**	★	85	159	50	20		1			
	8	**150 M8**	★	131	204	50	20		1			
15,5 < D ≤ 16,5	3	**SMDH 160 M3**	★	57	134	50	20	MTL/MSL MEL/ NAL	1	BXD02509IP	0,93–1,24	TRDR10IP
	5	**160 M5**	★	90	169	50	20		1			
	8	**160 M8**	★	140	214	50	20		1			
16,5 < D ≤ 17,5	3	**SMDH 170 M3**	★	60	140	50	20		1	BXD02509IP	0,93–1,24	TRDR10IP
	5	**170 M5**	★	95	175	50	20		1			
	8	**170 M8**	★	148	225	50	20		1			
17,5 < D ≤ 18,5	3	**SMDH 180 M3**	★	63	145	50	20		1	BXD02509IP	0,93–1,24	TRDR10IP
	5	**180 M5**	★	100	180	50	20		1			
	8	**180 M8**	★	156	230	50	20		1			
18,5 < D ≤ 19,5	3	**SMDH 190 M2**	★	67	160	56	25	MTL/MSL MEL/ NAL	1	BXD03011IP	1,83–2,44	TRDR15IP
	5	**190 M5**	★	106	195	56	25		1			
	8	**190 M8**	★	164	255	56	25		1			
19,5 < D ≤ 20,5	3	**SMDH 200 M3**	★	70	160	56	25		1	BXD03011IP	1,83–2,44	TRDR15IP
	5	**200 M5**	★	111	200	56	25		1			
	8	**200 M8**	★	172	265	56	25		1			
20,5 < D ≤ 21,5	3	**SMDH 210 M3**	★	73	160	56	25		1	BXD03011IP	1,83–2,44	TRDR15IP
	5	**210 M5**	★	116	200	56	25		1			
	8	**210 M8**	★	180	270	56	25		1			
21,5 < D ≤ 22,8	3	**SMDH 220 M3**	★	77	165	56	25		1	BXD03512IP	2,79–3,72	TRDR15IP
	5	**220 M5**	★	123	205	56	25		1			
	8	**220 M8**	★	191	275	56	25		1			
22,8 < D ≤ 23,8	3	**SMDH 230 M3**	★	80	165	56	25		1	BXD03512IP	2,79–3,72	TRDR15IP
	5	**230 M5**	★	128	215	56	25		1			
	8	**230 M8**	★	199	285	56	25		1			
23,8 < D ≤ 24,8	3	**SMDH 240 M3**	★	83	175	60	32	MTL/MSL MEL/ NAL	1	BXD03512IP	2,79–3,72	TRDR15IP
	5	**240 M5**	★	133	225	60	32		1			
	8	**240 M8**	★	207	300	60	32		1			
24,8 < D ≤ 25,8	3	**SMDH 250 M3**	★	87	175	60	32		1	BXD04014IP	4,14–5,52	TRDR20IP
	5	**250 M5**	★	138	230	60	32		1			
	8	**250 M8**	★	216	305	60	32		1			
25,8 < D ≤ 26,8	3	**SMDH 260 M3**	★	90	180	60	32	MTL/MSL MEL/ NAL	1	BXD04014IP	4,14–5,52	TRDR20IP
	5	**260 M5**	★	143	235	60	32		1			
	8	**260 M8**	★	224	315	60	32		1			
26,8 < D ≤ 27,8	3	**SMDH 270 M3**	★	93	180	60	32		1	BXD04014IP	4,14–5,52	TRDR20IP
	5	**270 M5**	★	149	240	60	32		1			
	8	**270 M8**	★	232	325	60	32		1			
27,8 < D ≤ 28,8	3	**SMDH 280 M3**	★	96	185	60	32		1	BXD04515IP	4,98–6,64	TRDR25IP
	5	**280 M5**	★	154	245	60	32		1			
	8	**280 M8**	★	240	330	60	32		1			
28,8 < D ≤ 29,8	3	**SMDH 290 M3**	★	99	190	60	32	MTL/MSL MEL/ NAL	1	BXD04515IP	4,98–6,64	TRDR25IP
	5	**290 M5**	★	159	250	60	32		1			
	8	**290 M8**	★	248	340	60	32		1			

Recommended Cutting Conditions J126 | MTL type Head J129 | MSL type Head J133 | MEL type Head J137

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

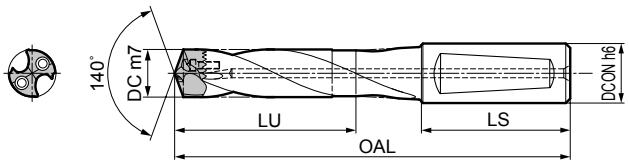
SMD series (Internal Coolant Supply) No Side Lock Flat/Flange

MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron
NAL: Aluminum Alloy | Non-ferrous Materials | Copper Alloy | Aluminum Alloy | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Aurora DLC Coating | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Indexable head NAL | Coolant Hole | Indexable Head type | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

Set Figure



Holder ø29.8 to 42.5mm

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw		Wrench
											N·m	
29,8 < D ≤ 30,8	3	**SMDH 300 M3**	★	103	190	60	32	MTL/MSL MEL	1	BXD04515IP	**4,98–6,64**	TRDR25IP
	5	**300 M5**	★	164	260	60	32		1			
	8	**300 M8**	★	257	350	60	32		1			
30,8 < D ≤ 32,0	3	**SMDH 320 M3**		106	201	60	32		1	BXD04515IP	**4,98–6,64**	TRDR25IP
	5	**320 M5**		170	266	60	32		1			
	8	**320 M8**		266	361	60	32	MTL	1			
32,0 < D ≤ 33,5	3	**SMDH 335 M3**		111	206	60	32		1	BXD04515IP	**4,98–6,64**	TRDR25IP
	5	**335 M5**		178	276	60	32		1			
	8	**335 M8**		279	376	60	32		1			
33,5 < D ≤ 35,0	3	**SMDH 350 M3**		116	221	70	40		1	BX0515	**7,2**	HD040
	5	**350 M5**		186	296	70	40	MTL	1			
	8	**350 M8**		291	401	70	40		1			
35,0 < D ≤ 36,5	3	**SMDH 365 M3**		121	227	70	40		1	BX0515	**7,2**	HD040
	5	**365 M5**		194	302	70	40		1			
	8	**365 M8**		303	412	70	40		1			
36,5 < D ≤ 38,0	3	**SMDH 380 M3**		125	232	70	40		1	BX0515	**7,2**	HD040
	5	**380 M5**		201	312	70	40		1			
	8	**380 M8**		315	427	70	40	MTL	1			
38,0 < D ≤ 39,5	3	**SMDH 395 M3**		130	237	70	40		1	BX0515	**7,2**	HD040
	5	**395 M5**		209	322	70	40		1			
	8	**395 M8**		328	437	70	40		1			
39,5 < D ≤ 41,0	3	**SMDH 410 M3**		135	252	70	40		1	BX0515	**7,2**	HD040
	5	**410 M5**		217	332	70	40	MTL	1			
	8	**410 M8**		340	457	70	40		1			
41,0 < D ≤ 42,5	3	**SMDH 425 M3**		140	258	70	40		1	BX0515	**7,2**	HD040
	5	**425 M5**		225	343	70	40	MTL	1			
	8	**425 M8**		352	468	70	40		1			

Recommended Cutting Conditions J126 | MTL type Head J129 | MSL type Head J133 | MEL type Head J137

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MFS type Ideal for drilling on non-flat surfaces and burr prevention



Suited to various types of drilling thanks to a point angle of 180°

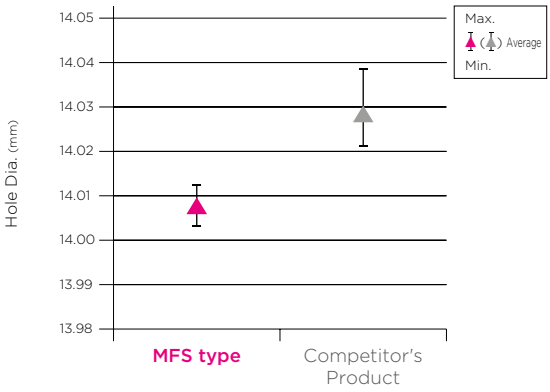
Supports high-efficiency flat bottom drilling, drilling on non-flat surfaces such as inclined, cylindrical surfaces, and interrupted drilling. Also effective in suppressing burrs at the hole exit.

Improved drilling stability

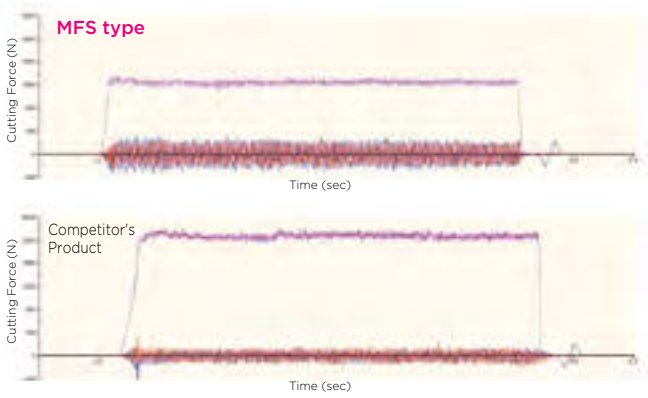
Achieves high rigidity by employing RS THINNING, which ensures thick web at the base.

■ Performance

Comparison of Hole Diameter Accuracy

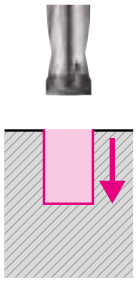
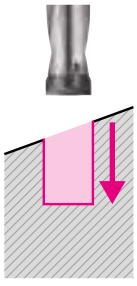
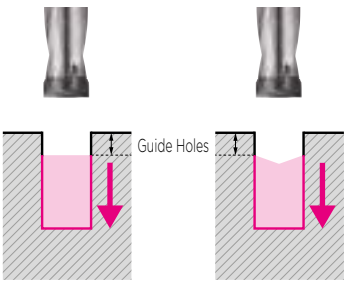
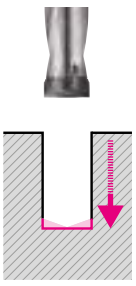


Comparison of Cutting Force



Tool : SMDH140-1.5DF + SMDT1400MFS
Work Material : Cf53
Cutting Conditions : vc = 100mm/min f = 0.15mm/rev Hole Depth 21mm Wet

■ Precautions when Using MFS type Heads

Applications	No guide hole (direct drilling)		With guide hole		Flat Finishing of Hole Bottom
	 Flat Surface	 Non-flat surface	 Guide Holes		
1.5D holder	○		○ (guide hole not needed)		○
3D to 12D holders	×		×		○

■ Recommended Cutting Conditions (MFS type) (n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Work Material		Mild Steel (up to 250HB)	General Steel (250 to 320HB)	Hardened Steel (45HRC)	Stainless Steel (up to 200HB)	Grey Cast Iron	Ductile Cast Iron	Aluminum Alloy*
Diameter DC (mm)	Cutting Conditions	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.
ø16.0	n	2,000	2,000	1,200	1,200	1,400	1,200	4,800
	vc	60-**100**-120	70-**100**-120	40-**60**-90	50-**60**-80	50-**70**-90	50-**60**-80	200-**240**-260
	f	0.15-**0.20**-0.35	0.15-**0.20**-0.30	0.10-**0.15**-0.20	0.10-**0.15**-0.20	0.20-**0.25**-0.30	0.20-**0.25**-0.30	0.35-**0.45**-0.55
ø20.0	n	1,600	1,600	1,000	1,100	1,300	1,100	3,800
	vc	80-**100**-120	70-**100**-120	40-**60**-90	60-**70**-90	60-**80**-100	50-**70**-90	200-**240**-260
	f	0.15-**0.25**-0.35	0.15-**0.25**-0.35	0.15-**0.20**-0.25	0.15-**0.20**-0.25	0.20-**0.30**-0.35	0.20-**0.25**-0.35	0.35-**0.50**-0.60
ø30.8	n	1,000	1,000	600	700	800	700	2,500
	vc	80-**100**-120	70-**100**-120	40-**60**-90	60-**70**-90	60-**80**-100	50-**70**-90	200-**240**-260
	f	0.20-**0.30**-0.35	0.20-**0.25**-0.35	0.15-**0.20**-0.25	0.15-**0.20**-0.25	0.20-**0.30**-0.40	0.25-**0.30**-0.35	0.35-**0.50**-0.60

Note: The recommended hole depth is 2 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.
The recommended cutting conditions are those for drilling in flat horizontal surfaces.
Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
Set the feed rate at 70% or lower when the inclination angle is 30° or less.
Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
This product is a drilling tool. Do not use it for traverse cutting or helical milling.

*Inquire if you require special drill heads for aluminum alloy.

SMD series (Internal Coolant Supply)

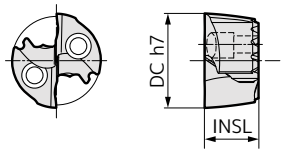
MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

Indexable Head

Fig 1



Indexable Head MFS type Diameter ø12.0 to 21.5mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Applicable Holder	Fig
12.0	★	SMDT 1200 MFS	7.1	SMDH120□	1
12.5	★	1250 MFS	7.2	SMDH125□	1
13.0	★	1300 MFS	7.5	SMDH130□	1
13.5	★	SMDT 1350 MFS	7.9	SMDH140□	1
14.0	★	1400 MFS	7.9		1
14.5	★	1450 MFS	7.9		1
15.0	★	SMDT 1500 MFS	8.3	SMDH150□	1
15.5	★	1550 MFS	8.3		1
16.0	★	SMDT 1600 MFS	8.8	SMDH160□	1
16.5	★	1650 MFS	8.8		1
17.0	★	SMDT 1700 MFS	9.3	SMDH170□	1
17.5	★	1750 MFS	9.3		1
18.0	★	SMDT 1800 MFS	9.8	SMDH180□	1
18.5	★	1850 MFS	9.8		1
19.0	★	SMDT 1900 MFS	10.2	SMDH190□	1
19.5	★	1950 MFS	10.2		1
20.0	★	SMDT 2000 MFS	10.7	SMDH200□	1
20.5	★	2050 MFS	10.7		1
21.0	★	SMDT 2100 MFS	11.2	SMDH210□	1
21.5	★	2150 MFS	11.2		1

Grade: ACX70

Recommended Cutting Conditions J149
Applicable Holders J151, J153. J155

Indexable Head MFS type Diameter ø22.0 to 30.0mm

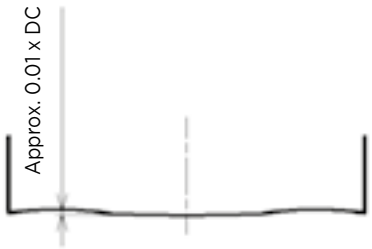
Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Applicable Holder	Fig
22.0	★	SMDT 2200 MFS	11.2	SMDH220□	1
22.5	★	2250 MFS	11.2		1
23.0	★	SMDT 2300 MFS	11.2	SMDH230□	1
23.5	★	2350 MFS	11.2		1
24.0	★	SMDT 2400 MFS	11.3	SMDH240□	1
24.5	★	2450 MFS	11.3		1
25.0	★	SMDT 2500 MFS	11.7	SMDH250□	1
25.5	★	2550 MFS	11.7		1
26.0	★	SMDT 2600 MFS	12.2	SMDH260□	1
26.5	★	2650 MFS	12.2		1
27.0	★	SMDT 2700 MFS	12.7	SMDH270□	1
27.5	★	2750 MFS	12.7		1
28.0	★	SMDT 2800 MFS	13.2	SMDH280□	1
28.5	★	2850 MFS	13.2		1
29.0	★	SMDT 2900 MFS	13.6	SMDH290□	1
29.5	★	2950 MFS	13.6		1
30.0	★	SMDT 3000 MFS	14.1	SMDH300□	1

Grade: ACX70

Recommended Cutting Conditions J149
Applicable Holders J151 to J154. J156

Shape of Hole Bottom Drilled with MFS type



The drilled hole bottom is not completely flat.
Contact us for more details.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/No Flange MFS

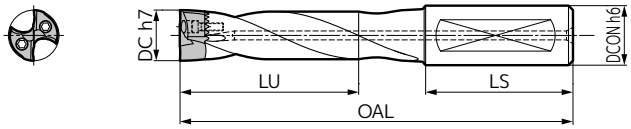
Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø12.0 to 29.8mm with MFS type set

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Parts: Cap Screw	Parts: Cap Screw N·m	Parts: Wrench
12.0 ≤ D < 12.5	3	SMDH 120M	★	40.0	105.2	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	120L	★	65.0	130.2	48	16		1			
12.5 ≤ D < 13.0	3	SMDH 125M	★	41.0	105.1	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	125L	★	67.0	130.1	48	16		1			
13.0 ≤ D < 13.5	3	SMDH 130M	★	43.0	110.2	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	130L	★	70.0	140.2	48	16		1			
13.5 ≤ D ≤ 14.5	3	SMDH 140M	★	48.0	116.6	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	140L	★	77.0	146.6	48	16		1			
	8	140D	★	121.0	191.6	48	16		1			
14.5 < D ≤ 15.5	3	SMDH 150M	★	51.0	126.6	50	20	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	150L	★	82.0	156.6	50	20		1			
	8	150D	★	129.0	201.6	50	20		1			
15.5 < D ≤ 16.5	3	SMDH 160M	★	54.0	131.6	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	160L	★	87.0	166.6	50	20		1			
	8	160D	★	137.0	211.6	50	20		1			
16.5 < D ≤ 17.5	3	SMDH 170M	★	57.0	136.6	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	170L	★	92.0	171.6	50	20		1			
	8	170D	★	145.0	221.6	50	20		1			
17.5 < D ≤ 18.5	3	SMDH 180M	★	60.0	141.7	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	180L	★	97.0	176.7	50	20		1			
	8	180D	★	153.0	226.7	50	20		1			
18.5 < D ≤ 19.5	3	SMDH 190M	★	63.0	156.6	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	190L	★	102.0	191.6	56	25		1			
	8	190D	★	161.0	251.6	56	25		1			
19.5 < D ≤ 20.5	3	SMDH 200M	★	66.0	156.7	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	200L	★	107.0	196.7	56	25		1			
	8	200D	★	169.0	261.7	56	25		1			
20.5 < D ≤ 21.5	3	SMDH 210M	★	69.0	156.7	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	210L	★	112.0	196.7	56	25		1			
	8	210D	★	177.0	266.7	56	25		1			
21.5 < D ≤ 22.8	3	SMDH 220M	★	73.0	161.3	56	25	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	220L	★	119.0	201.3	56	25		1			
	8	220D	★	187.0	271.3	56	25		1			
22.8 < D ≤ 23.8	3	SMDH 230M	★	76.0	160.7	56	25	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	230L	★	124.0	210.7	56	25		1			
	8	230D	★	195.0	280.7	56	25		1			
23.8 < D ≤ 24.8	3	SMDH 240M	★	79.0	170.5	60	32	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	240L	★	129.0	220.5	60	32		1			
	8	240D	★	203.0	295.5	60	32		1			
24.8 < D ≤ 25.8	3	SMDH 250M	★	82.0	170.4	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	250L	★	134.0	225.4	60	32		1			
	8	250D	★	211.0	300.4	60	32		1			
25.8 < D ≤ 26.8	3	SMDH 260M	★	85.0	175.5	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	260L	★	139.0	230.5	60	32		1			
	8	260D	★	219.0	310.5	60	32		1			
26.8 < D ≤ 27.8	3	SMDH 270M	★	88.0	175.5	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	270L	★	144.0	235.5	60	32		1			
	8	270D	★	227.0	320.5	60	32		1			
27.8 < D ≤ 28.8	3	SMDH 280M	★	91.0	180.6	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	280L	★	149.0	240.6	60	32		1			
	8	280D	★	235.0	325.6	60	32		1			
28.8 < D ≤ 29.8	3	SMDH 290M	★	94.0	185.4	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	290L	★	154.0	245.4	60	32		1			
	8	290D	★	243.0	335.4	60	32		1			

Recommended Cutting Conditions J149 | MFS type Head J150

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/No Flange MFS

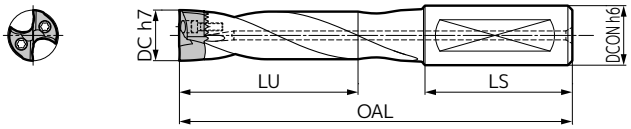
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø29.8 to 30.8mm with MFS type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw		Wrench
												
29.8 < D ≤ 30.8	3	**SMDH 300M**	★	**97.0**	**185.6**	60	32	MFS	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**300L**	★	**159.0**	**255.6**	60	32		1			
	8	**300D**	★	**251.0**	**345.6**	60	32		1			

Recommended Cutting Conditions ☞ J149 | MFS type Head ☞ J150

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/Flange MFS

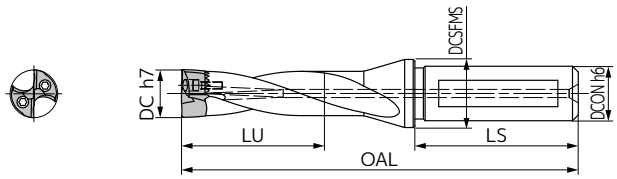
Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø12.0 to 24.8mm with MFS type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw		Wrench
													
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5DF	★	21.0	88.5	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3DF	★	40.0	105.2	48	20	16		1			
	5	120-5DF	★	65.0	130.2	48	20	16		1			
	8	120-8DF	★	96.0	162.4	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5DF	★	22.0	88.8	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3DF	★	41.0	105.1	48	20	16		1			
	5	125-5DF	★	67.0	130.1	48	20	16		1			
	8	125-8DF	★	100.0	167.9	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5DF	★	23.0	90.0	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3DF	★	43.0	110.2	48	20	16		1			
	5	130-5DF	★	70.0	140.2	48	20	16		1			
	8	130-8DF	★	104.0	176.2	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5DF	★	26.0	93.9	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3DF	★	48.0	116.6	48	20	16		1			
	5	140-5DF	★	77.0	146.6	48	20	16		1			
	8	140-8DF	★	121.0	191.6	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5DF	★	28.0	97.3	50	25	20	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3DF	★	51.0	126.6	50	25	20		1			
	5	150-5DF	★	82.0	156.6	50	25	20		1			
	8	150-8DF	★	129.0	201.6	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5DF	★	29.0	99.9	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3DF	★	54.0	131.6	50	25	20		1			
	5	160-5DF	★	87.0	166.6	50	25	20		1			
	8	160-8DF	★	137.0	211.6	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5DF	★	31.0	101.4	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3DF	★	57.0	136.6	50	25	20		1			
	5	170-5DF	★	92.0	171.6	50	25	20		1			
	8	170-8DF	★	145.0	221.6	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5DF	★	32.0	104.0	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3DF	★	60.0	141.7	50	25	20		1			
	5	180-5DF	★	97.0	176.7	50	25	20		1			
	8	180-8DF	★	153.0	226.7	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5DF	★	34.0	111.4	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3DF	★	63.0	156.6	56	30	25		1			
	5	190-5DF	★	102.0	191.6	56	30	25		1			
	8	190-8DF	★	161.0	251.6	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5DF	★	35.0	114.0	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3DF	★	66.0	156.7	56	30	25		1			
	5	200-5DF	★	107.0	196.7	56	30	25		1			
	8	200-8DF	★	169.0	261.7	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5DF	★	37.0	115.5	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3DF	★	69.0	156.7	56	30	25		1			
	5	210-5DF	★	112.0	196.7	56	30	25		1			
	8	210-8DF	★	177.0	266.7	56	30	25		1			
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5DF	★	39.0	117.1	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3DF	★	73.0	161.3	56	30	25		1			
	5	220-5DF	★	119.0	201.3	56	30	25		1			
	8	220-8DF	★	187.0	271.3	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5DF	★	40.0	118.0	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3DF	★	76.0	160.7	56	30	25		1			
	5	230-5DF	★	124.0	210.7	56	30	25		1			
	8	230-8DF	★	195.0	280.7	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5DF	★	42.0	124.3	60	37	32	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3DF	★	79.0	170.5	60	37	32		1			
	5	240-5DF	★	129.0	220.5	60	37	32		1			
	8	240-8DF	★	203.0	295.5	60	37	32		1			

Recommended Cutting Conditions J149 | MFS type Head J150

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) Side Lock Flat/Flange MFS

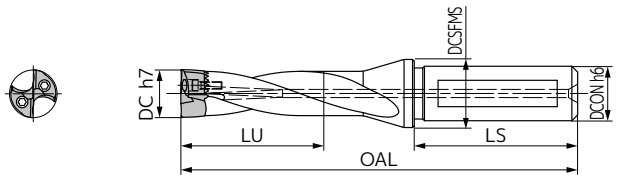
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø24.8 to 30.8mm with MFS type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw		Wrench
												N·m	
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5DF	★	43.0	124.7	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3DF	★	82.0	170.4	60	37	32		1			
	5	250-5DF	★	134.0	225.4	60	37	32		1			
	8	250-8DF	★	211.0	300.4	60	37	32		1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5DF	★	45.0	127.3	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3DF	★	85.0	175.5	60	37	32		1			
	5	260-5DF	★	139.0	230.5	60	37	32		1			
	8	260-8DF	★	219.0	310.5	60	37	32		1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5DF	★	46.0	127.8	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3DF	★	88.0	175.5	60	37	32		1			
	5	270-5DF	★	144.0	235.5	60	37	32		1			
	8	270-8DF	★	227.0	320.5	60	37	32		1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5DF	★	48.0	129.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3DF	★	91.0	180.6	60	37	32		1			
	5	280-5DF	★	149.0	240.6	60	37	32		1			
	8	280-8DF	★	235.0	325.6	60	37	32		1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5DF	★	49.0	130.8	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3DF	★	94.0	185.4	60	37	32		1			
	5	290-5DF	★	154.0	245.4	60	37	32		1			
	8	290-8DF	★	243.0	335.4	60	37	32		1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5DF	★	51.0	133.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3DF	★	97.0	185.6	60	37	32		1			
	5	300-5DF	★	159.0	255.6	60	37	32		1			
	8	300-8DF	★	251.0	345.6	60	37	32		1			

Recommended Cutting Conditions J149 | MFS type Head J150

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) No Side Lock Flat/Flange MFS

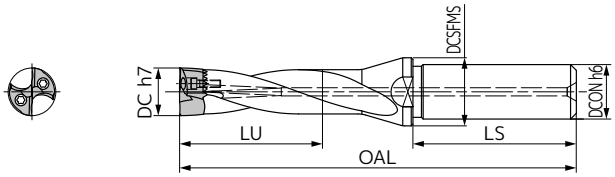
Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø12.0 to 21.5mm with MFS type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw		Wrench
												N·m	
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5D	★	21.0	88.5	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3D	★	40.0	105.2	48	20	16		1			
	5	120-5D	★	65.0	130.2	48	20	16		1			
	8	120-8D	★	96.0	162.4	48	20	16		1			
	12	120-12D	★	144.0	211.3	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5D	★	22.0	88.8	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3D	★	41.0	105.1	48	20	16		1			
	5	125-5D	★	67.0	130.1	48	20	16		1			
	8	125-8D	★	100.0	167.9	48	20	16		1			
	12	125-12D	★	150.0	217.3	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5D	★	23.0	90.0	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3D	★	43.0	110.2	48	20	16		1			
	5	130-5D	★	70.0	140.2	48	20	16		1			
	8	130-8D	★	104.0	176.2	48	20	16		1			
	12	130-12D	★	156.0	223.5	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5D	★	26.0	93.9	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3D	★	48.0	116.6	48	20	16		1			
	5	140-5D	★	77.0	146.6	48	20	16		1			
	8	140-8D	★	121.0	191.6	48	20	16		1			
	12	140-12D	★	168.0	236.1	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5D	★	28.0	97.3	50	25	20	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3D	★	51.0	126.6	50	25	20		1			
	5	150-5D	★	82.0	156.6	50	25	20		1			
	8	150-8D	★	129.0	201.6	50	25	20		1			
	12	150-12D	★	180.0	250.4	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5D	★	29.0	99.9	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3D	★	54.0	131.6	50	25	20		1			
	5	160-5D	★	87.0	166.6	50	25	20		1			
	8	160-8D	★	137.0	211.6	50	25	20		1			
	12	160-12D	★	192.0	262.7	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5D	★	31.0	101.4	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3D	★	57.0	136.6	50	25	20		1			
	5	170-5D	★	92.0	171.6	50	25	20		1			
	8	170-8D	★	145.0	221.6	50	25	20		1			
	12	170-12D	★	204.0	275.1	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5D	★	32.0	104.0	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3D	★	60.0	141.7	50	25	20		1			
	5	180-5D	★	97.0	176.7	50	25	20		1			
	8	180-8D	★	153.0	226.7	50	25	20		1			
	12	180-12D	★	216.0	287.4	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5D	★	34.0	111.4	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3D	★	63.0	156.6	56	30	25		1			
	5	190-5D	★	102.0	191.6	56	30	25		1			
	8	190-8D	★	161.0	251.6	56	30	25		1			
	12	190-12D	★	228.0	305.7	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5D	★	35.0	114.0	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3D	★	66.0	156.7	56	30	25		1			
	5	200-5D	★	107.0	196.7	56	30	25		1			
	8	200-8D	★	169.0	261.7	56	30	25		1			
	12	200-12D	★	240.0	318.0	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5D	★	37.0	115.5	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3D	★	69.0	156.7	56	30	25		1			
	5	210-5D	★	112.0	196.7	56	30	25		1			
	8	210-8D	★	177.0	266.7	56	30	25		1			
	12	210-12D	★	252.0	330.3	56	30	25		1			

Recommended Cutting Conditions J149 | MFS type Head J150

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD series (Internal Coolant Supply) No Side Lock Flat/Flange MFS

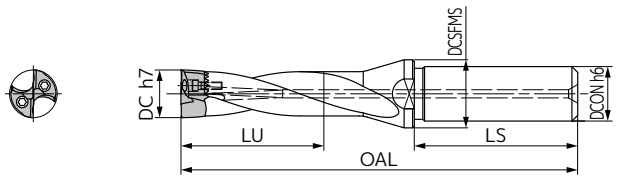
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable Head type | 1.5D | 3D | 5D | 8D | 12D

*For tolerances, refer to Chapter N - References.

● Set Figure

Fig 1



Holder ø21.5 to 30.8mm with MFS type set

Parts

Dimensions (mm)

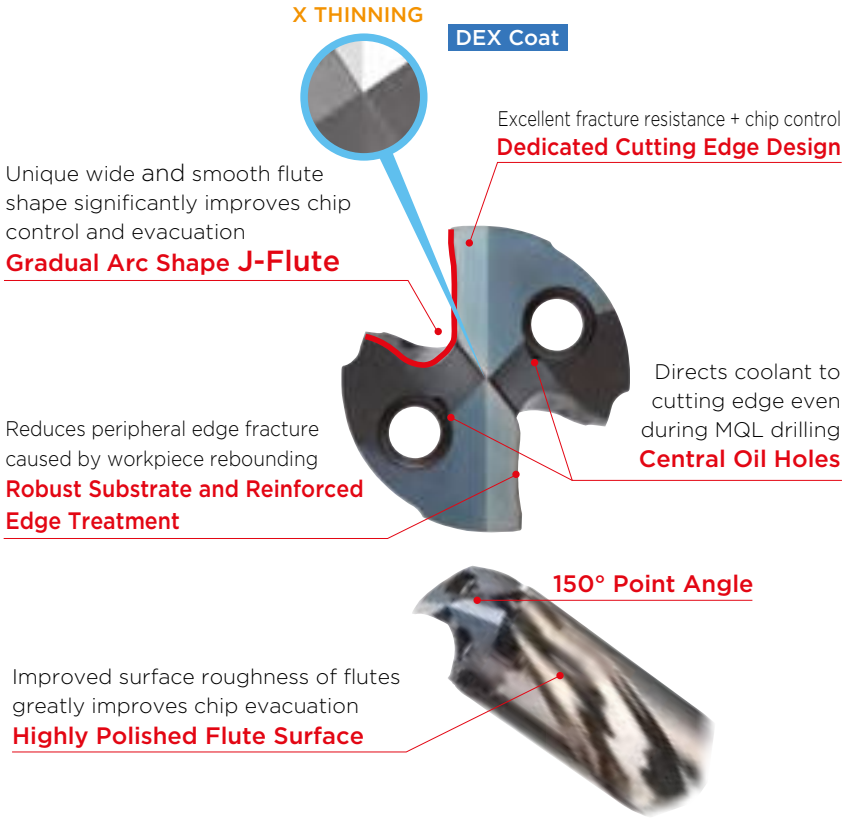
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw		Wrench
													
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5D	★	39.0	117.1	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3D	★	73.0	161.3	56	30	25		1			
	5	220-5D	★	119.0	201.3	56	30	25		1			
	8	220-8D	★	187.0	271.3	56	30	25		1			
	12	220-12D	★	264.0	343.2	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5D	★	40.0	118.0	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3D	★	76.0	160.7	56	30	25		1			
	5	230-5D	★	124.0	210.7	56	30	25		1			
	8	230-8D	★	195.0	280.7	56	30	25		1			
	12	230-12D	★	276.0	355.0	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5D	★	42.0	124.3	60	37	32	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3D	★	79.0	170.5	60	37	32		1			
	5	240-5D	★	129.0	220.5	60	37	32		1			
	8	240-8D	★	203.0	295.5	60	37	32		1			
	12	240-12D	★	288.0	372.0	60	37	32		1			
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5D	★	43.0	124.7	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3D	★	82.0	170.4	60	37	32		1			
	5	250-5D	★	134.0	225.4	60	37	32		1			
	8	250-8D	★	211.0	300.4	60	37	32		1			
	12	250-12D	★	300.0	384.2	60	37	32		1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5D	★	45.0	127.3	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3D	★	85.0	175.5	60	37	32		1			
	5	260-5D	★	139.0	230.5	60	37	32		1			
	8	260-8D	★	219.0	310.5	60	37	32		1			
	12	260-12D	★	312.0	396.6	60	37	32		1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5D	★	46.0	127.8	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3D	★	88.0	175.5	60	37	32		1			
	5	270-5D	★	144.0	235.5	60	37	32		1			
	8	270-8D	★	227.0	320.5	60	37	32		1			
	12	270-12D	★	324.0	408.9	60	37	32		1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5D	★	48.0	129.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3D	★	91.0	180.6	60	37	32		1			
	5	280-5D	★	149.0	240.6	60	37	32		1			
	8	280-8D	★	235.0	325.6	60	37	32		1			
	12	280-12D	★	336.0	421.3	60	37	32		1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5D	★	49.0	130.8	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3D	★	94.0	185.4	60	37	32		1			
	5	290-5D	★	154.0	245.4	60	37	32		1			
	8	290-8D	★	243.0	335.4	60	37	32		1			
	12	290-12D	★	348.0	433.5	60	37	32		1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5D	★	51.0	133.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3D	★	97.0	185.6	60	37	32		1			
	5	300-5D	★	159.0	255.6	60	37	32		1			
	8	300-8D	★	251.0	345.6	60	37	32		1			
	12	300-12D	★	360.0	445.9	60	37	32		1			

Recommended Cutting Conditions ☞ J149 | MFS type Head ☞ J150

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SMD-MB type for welded structures

MB type Ideal for drilling rolled steels for welded structures for welded structures (single layer and stacked)



■ Chip Control

MB type for welded structures — Good chip control



Work Material: S355J2G3
Cutting Conditions: vc = 87m/min, f = 0.29mm/rev

Competitor's Product — Elongated chips



Work Material: S355J2G3
Cutting Conditions: vc = 87m/min, f = 0.29mm/rev

■ Cutting Length Comparison (MB type)

Case	Current Tool	Tool Life Comparison (Cutting Length)	Cutting Conditions
1	Competitor's Product A Indexable Head type	MB type 42m; Competitor's Product A 17m; 2.5x tool life	vc=46m/min f=0.35mm/rev Coolant: MQL
2	Competitor's Product B Indexable Head type	MB type 87m; Competitor's Product B 50m; 1.7x tool life	vc=56m/min f=0.30mm/rev Coolant: MQL
3	Competitor's Product C Brazed	MB type 95m; Competitor's Product C 32m; 3.0x tool life	vc=54m/min f=0.30mm/rev Coolant: MQL
4	Competitor's Product D Indexable Head type	MB type 120m; Competitor's Product D 70m; 1.7x tool life	vc=60m/min f=0.30mm/rev Coolant: MQL

1.7 to 3 times
the current tool life

Tool Cost
Major Potential Savings

■ Recommended Cutting Conditions (MB type)

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Work Material		Rolled Steel for Welded Structures S235JR	Rolled Steel for Welded Structures S355J2	Rolled Steel for Welded Structures S420	Rolled Steel for Welded Structures S460
Diameter DC (mm)	Cutting Conditions	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.
ø24.7	n	900	840	700	700
	vc	60-**70**-80	55-**65**-75	45-**55**-65	45-**55**-65
	f	0.20-**0.30**-0.40	0.20-**0.30**-0.40	0.20-**0.25**-0.30	0.20-**0.25**-0.30
ø26.7	n	830	770	650	650
	vc	60-**70**-80	55-**65**-75	45-**55**-65	45-**55**-65
	f	0.20-**0.30**-0.40	0.20-**0.30**-0.40	0.20-**0.25**-0.30	0.20-**0.25**-0.30

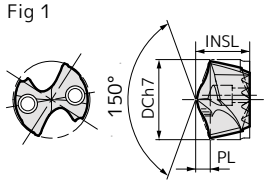
SMD-MB type for welded structures (Internal Coolant Supply)

MB | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29%

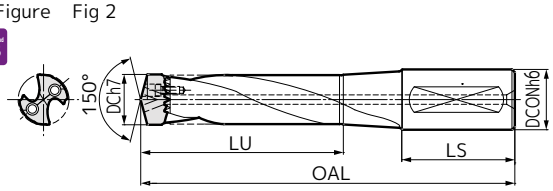
DEX Coat | Indexable head MB | Coolant Hole | Indexable Head type | 3D

Only use the special MB type head with a B3 type holder. *For tolerances, refer to Chapter N - References.

Indexable Head Fig 1



● Set Figure Fig 2



Indexable Head MB type Diameter ø24.5/24.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
24.5	★	SMDT 2450 MB	14.1	3.3	SMDH 240B3	1
24.7	★	SMDT 2470 MB	14.1	3.3	SMDH 240B3	1

Grade: ACX80

Indexable Head MB type Diameter ø26.5/26.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
26.5	★	SMDT 2650 MB	15.3	3.6	SMDH 260B3	1
26.7	★	SMDT 2670 MB	15.3	3.6	SMDH 260B3	1

Grade: ACX80

Holder ø24.5 to 26.7mm with MB type set

Dimensions (mm)

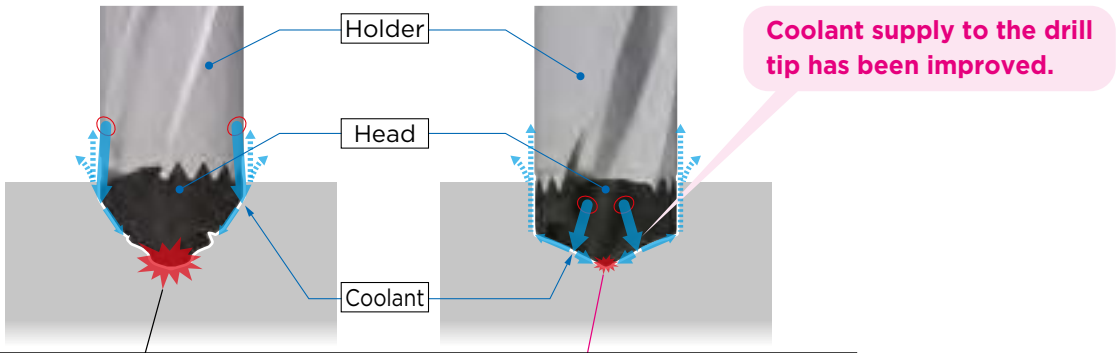
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Parts: Cap Screw	Parts: Cap Screw N·m	Parts: Wrench
24.5 < D ≤ 24.7	3	SMDH 240B3	★	90.3	173.3	60	32	MB	2	BXD03512IP	2.79 to 3.72	TRDR15IP
26.5 < D ≤ 26.7	3	SMDH 260B3	★	95.6	178.6	60	32	MB	2	BXD04014IP	4.14 to 5.52	TRDR20IP

Inquire about production of holders not listed in stock.

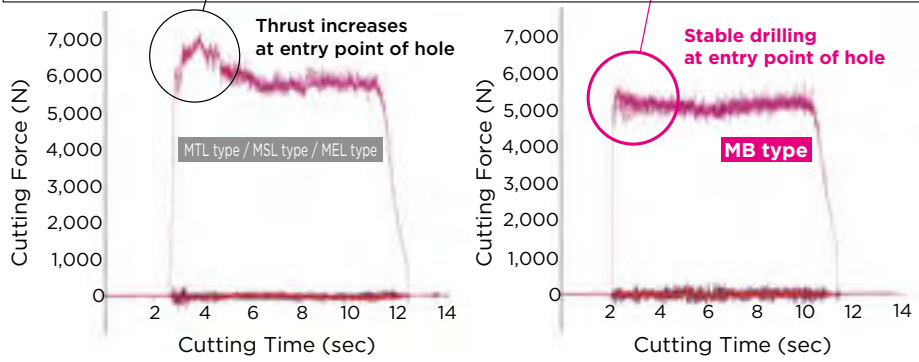
Coolant Supply for Improved Lubricity

MTL type / MSL type / MEL type

MB type



Comparison of Cutting Force (Thrust)





Work Material: S235JR, Diameter: ø24.7mm, Cutting Conditions: vc = 70m/min, f = 0.35mm/rev, Coolant: MQL

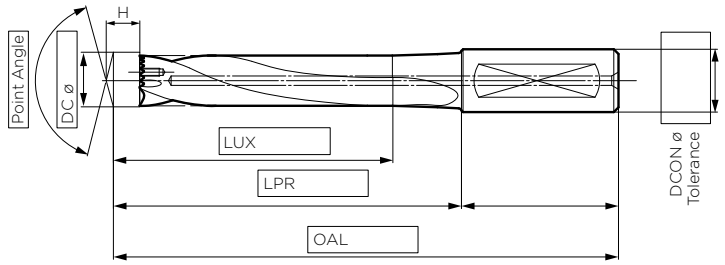
*Due to the difference in oil hole positions and flute shapes, MTL type / MSL type / MEL type drill heads are not compatible to use with B3 type drill holders (for welded structures); similarly, MB type drill heads (for welded structures) are not compatible for use with -1.5D(F) to -12D type / M type / L type / D type drill holders.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

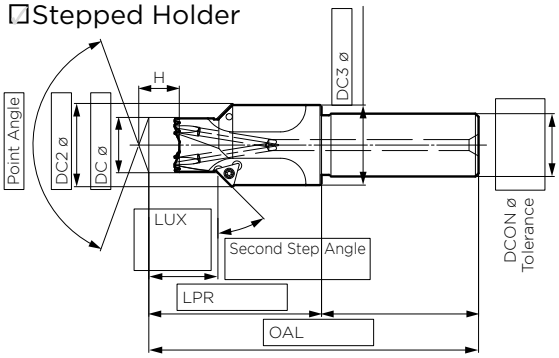
SEC-MULTIDRILL Made-to-Order Design Request Sheet

■ Drill Shape

☐Straight Holder

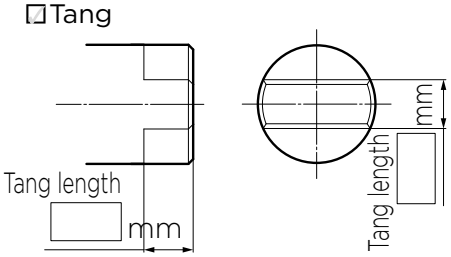


☐Stepped Holder



■ End Shape

☐Tang



☐Tang not required

■ Shank Shape

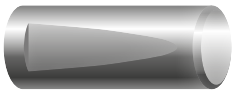
☐Cylindrical



☐Side Lock Flat



☐Whistle Notch



Dc [Diameter]: ø12 to ø42.5 h7 DC2. DC3: Less than ø50
OAL [Overall length]: Holder overall length max. 450mm
H: Not for designation
Tip Angle: 118° to 179° (180°)
*For blind holes, please let us know if there is a hole bottom profile requirement.
*We may not be able to fulfill requests for cutting edge specifications if the drill point angle is not within 130° to 160°.

■ Head Details

Cutting Edge Specification: type
Material:
Oil Hole: Y/N
Submargin: Y/N
Corner Edge Chamfer: Angle Width
Corner Edge Radius: R
Purpose for Corner Edge: Burrs / Chipping / Others

■ Machine Information

Coolant: ☐Water-soluble ☐Oil-based ☐MQL
Coolant Supply Information: ☐ Internal Coolant Supply
☐ External Coolant Supply

■ Current Tool

Cutting Conditions:
Tool Life:
Tool Life Criteria:

■ Other Requests

■ Workpiece Information

Work Material:
Hole Type: Through / Blind
Stepped Part Application: Chamfer/Counterbore
Part Name:

After filling in the required dimensions and other information, contact our nearest sales office or distributor.
Feel free to contact us with other requests as well.

Company Name/Contact

MEMO

GDX series

New



■ Features

The SumiDrill GDX series drastically reduces drilling vibration through a high-rigidity holder design. In addition, insert design is individually optimised for the central and peripheral cutting edges to achieve excellent drilling balance and chip evacuation. Dramatically improved stability for deep hole drilling up to L/D=7.

■ Product Range

Insert Size	GDXT05	GDXT06	GDXT07
Drilling Depth	Compatible Holders (Dia. mm)		
2D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
3D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
4D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
5D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
6D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
7D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0

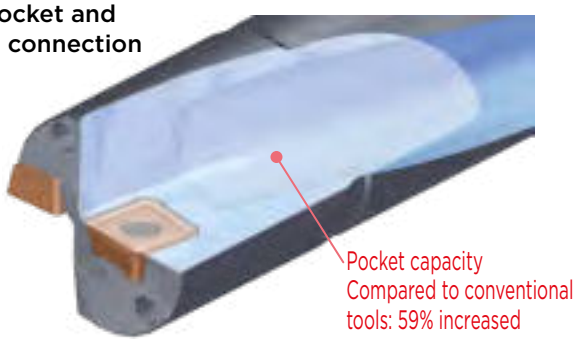
■ High-rigidity Holder Design

Proprietary flute design balances chip evacuation and holder rigidity at a high level.
Machining vibration is effectively suppressed and cutting force reduced to realise stable deep hole drilling.

Evacuation flute design



Wide pocket and smooth connection



Expanded pocket capacity essential for chip evacuation

High-rigidity evacuation flute design

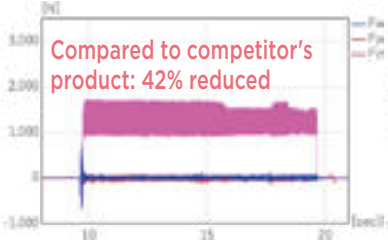


Tool deflection amount
Compared to conventional tools: 35% reduced
*When the same load is applied to the leading edge

Design increases thickness in load direction to suppress deformation

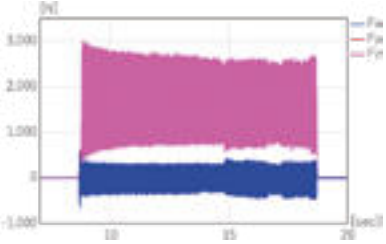
Cutting Force

GDX series (5D)



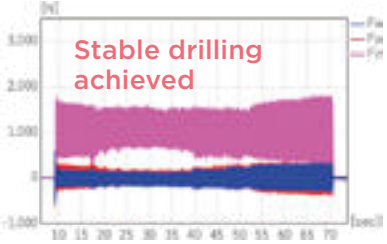
Max. 1,752N

Competitor's Product A (5D)



Max. 3,014N

GDX series (7D)



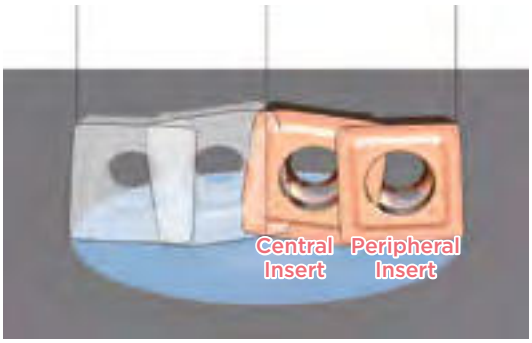
Max. 1,847N

Work Material: Cf53 Tool: GDXH200D5S25-06 (ø20, 5D) GDXH200D7S25-06 (ø20, 7D)
Insert: Peripheral Insert GDXT06T204P-G (ACU2500) Central Insert: GDXT06T206C-G (ACU2500)
Cutting Conditions (5D Holder): vc = 150m/min f = 0.10mm/rev H = 85mm (Stop Hole) Internal Coolant Supply (Water-soluble)
(7D Holder): vc = 150m/min f = 0.06mm/rev H = 140mm (Stop Hole) Internal Coolant Supply (Water-soluble)

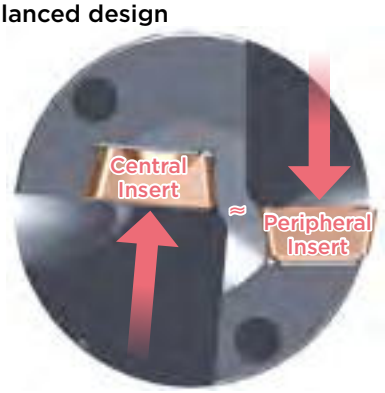
■ Dedicated Insert Design

Dedicated central and peripheral inserts, with shapes and relative positioning adjusted to improve cutting force balance. In addition, the wiper flat shape has been optimised to achieve excellent machined surface quality.

Dedicated insert design



Balanced design



Using simulations to create dedicated designs for the central insert and peripheral insert to ensure uniform cutting resistance

Machined Surface Quality

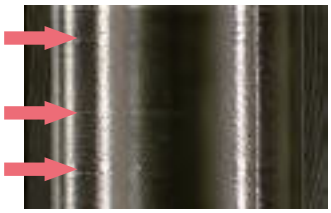
GDX series



Glossy surface with no scratches

Ra = 0.80μm

Competitor's Product B



Wavy pattern



Ra = 1.04μm

Work Material: Cf53 Tool: GDXH200D5S25-06 (ø20, 5D) Insert: Peripheral Insert: GDXT06T204P-G (ACU2500) Central Insert: GDXT06T206C-G (ACU2500)
Cutting Conditions: vc = 150m/min f = 0.10mm/rev H = 85mm (Stop Hole) Internal Coolant Supply (Water-soluble)

■ Insert Combinations

Utilising different chipbreakers for the central and peripheral inserts enables the drilling of stainless steel and general structural rolled steel.

Peripheral Insert

Chipbreaker	L type	G type
Features	Chip Control	General-purpose
Appearance		
Cross Section		

*Shape of GDXT06

×

Central Insert

Chipbreaker	L type	G type
Features	Chip Control	General-purpose
Appearance		
Cross Section		

*Shape of GDXT06

Example of drilling in general structure rolled steel (SS400)

GDX series



Glossy surface with no scratches



Competitor's Product C



Wavy pattern



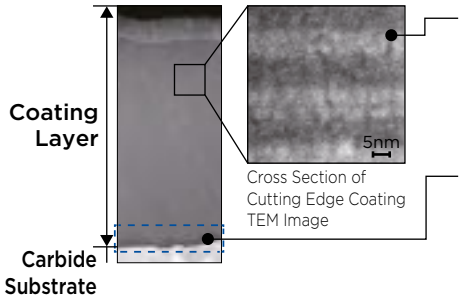
Work Material: S235JR, Tool: GDXH200D5S25-06 (ø20, 5D)
Insert: Peripheral Insert GDXT06T204P-L (ACU2500) Central Insert: GDXT06T206C-L (ACU2500)
Cutting Conditions: vc = 200m/min, f = 0.05mm/rev, H = 85mm (Stop Hole), Internal Coolant Supply (Water-soluble)

GDX series

■ Insert Grade Features

Utilise ACU2500, the latest general-purpose grade, coupled with dedicated grades for different work materials ACP2000 or ACS3000 for the peripheral insert, to achieve a long tool life.

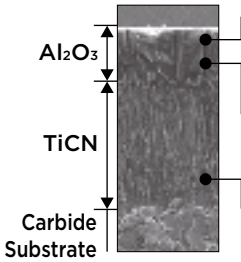
ABSOTECH PVD — Applicable Grade: **ACU2500**



New Super Multi-Layered Structure
Higher hardness and more than twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion and more than twice the conventional chipping resistance

ABSOTECH CVD — Applicable Grade: **ACP2000**

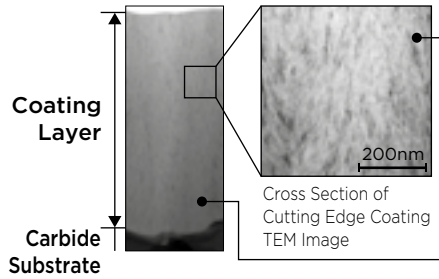


Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice that of conventional coatings

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice that of conventional coatings

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice that of conventional coatings

ABSOTECH PVD — Applicable Grade: **ACS3000**

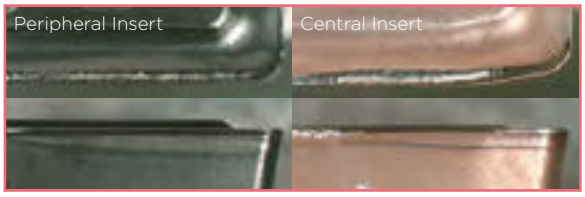


Ultra-fine Grained B Additive
New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion and more than twice the conventional chipping resistance

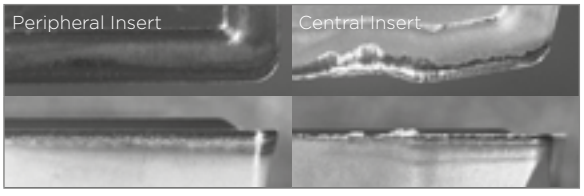
Comparison of Wear Resistance

GDX series (Output: 156 holes)



Normal wear

Competitor's Product A (Output: 156 holes)



Rake face wear/fracture

Work Material: Cf53, Tool: GDXH200D5S25-06 (ø20, 5D)
Insert: Peripheral Insert GDXT06T204P-G (ACP2000) Central Insert: GDXT06T206C-G (ACU2500)
Cutting Conditions: vc = 150m/min, f = 0.10mm/rev, H = 38mm (Through Hole), Internal Coolant Supply (Water-soluble)

■ Compatible Drilling Applications/Workpiece Shapes

Depending on the application or workpiece shape, set the cutting conditions with reference to the table below.

	OK	OK	OK	OK	OK	OK	NG	NG
Machining Application / Workpiece Shape	Flat Surface 	Inclined Surface 	Intersecting Holes 	Plunge Drilling 	Boring 	Irregular Surface 	Stacked Plates 	Back Boring 
Recommended Holder	See Recommended Cutting Conditions	5D or below	5D or below	5D or below	5D or below	5D or below	—	—
Recommended Cutting Conditions	See Recommended Cutting Conditions	Feed Rate 70%	Feed Rate 50%	Feed Rate 70%	Feed Rate 50%	Feed Rate 50%		

■ Insert Selection Guide

The GDX insert series has a variety of options

ISO	Work Material	1st Recommendation		2nd Recommendation	
		Peripheral Insert	Central Insert	Peripheral Insert	Central Insert
P	Steel/ Carbon Steel	G type Chipbreaker ACU2500 	G type Chipbreaker ACU2500 	Initial chipping countermeasures Insufficient wear resistance → G type Chipbreaker ACP2000 	G type Chipbreaker ACU2500 
				Improved chip control (long chips) → L type Chipbreaker ACU2500 	L type Chipbreaker ACU2500 
	General Structure Rolled Steel / Low Carbon Steel (SS400/S15C, etc.)	L type Chipbreaker ACU2500 	L type Chipbreaker ACU2500 	Insufficient wear resistance → L type Chipbreaker ACP2000 	L type Chipbreaker ACU2500 
				Improved chip control (for poor evacuation) → G type Chipbreaker ACU2500 	L type Chipbreaker ACU2500 
M	Stainless Steel	L type Chipbreaker ACU2500 	L type Chipbreaker ACU2500 	Insufficient fracture resistance → L type Chipbreaker ACS3000 	L type Chipbreaker ACU2500 
				Improved chip control (for poor evacuation) → G type Chipbreaker ACU2500 	L type Chipbreaker ACU2500 
K	Cast Iron	G type Chipbreaker ACU2500 	G type Chipbreaker ACU2500 	Insufficient wear resistance → G type Chipbreaker ACP2000 	G type Chipbreaker ACU2500 

*If chips from the peripheral insert are long or chips at the central insert cannot be easily evacuated, causing jamming or clogging, select a L type chipbreaker.

GDX series Recommended Cutting Conditions (2D/3D/4D)

L/D	Classification	Work Material		Work Material Hardness	Chipbreaker		Recommended Peripheral Insert Grade	Cutting Speed, vc (m/min)	Feed Rate, f (mm/rev) (Min. - **Optimum** - Max.)		
				HB	Peripheral Insert	Central Insert			ø15.5 to ø18.0	ø18.5 to ø22.0	ø22.5 to ø27.0
2D	P	Steel, Carbon Steel	S235JR	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C15	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45	190	G	G	ACP2000 ACU2500	170 - **210** - 250 100 - **160** - 220	0.06 - **0.13** - 0.20	0.06 - **0.13** - 0.20	0.06 - **0.14** - 0.22
			C45 Hardened	250	G	G	ACP2000 ACU2500	110 - **180** - 250 90 - **140** - 200	0.05 - **0.10** - 0.14	0.05 - **0.10** - 0.14	0.05 - **0.10** - 0.14
			C75	270	G	G	ACP2000 ACU2500	110 - **180** - 250 70 - **140** - 200	0.06 - **0.12** - 0.17	0.06 - **0.12** - 0.17	0.06 - **0.12** - 0.17
			C75 Hardened	300	G	G	ACP2000 ACU2500	100 - **150** - 200 90 - **120** - 150	0.05 - **0.10** - 0.14	0.05 - **0.10** - 0.14	0.05 - **0.10** - 0.14
		Low-alloy Steel	Cr-Mo / Ni-Cr-Mo	180	G	G	ACP2000 ACU2500	140 - **180** - 220 110 - **140** - 170	0.05 - **0.10** - 0.14	0.05 - **0.10** - 0.14	0.05 - **0.10** - 0.14
			Cr-Mo / Ni-Cr-Mo Hardened	275	G	G	ACP2000 ACU2500	130 - **170** - 210 100 - **130** - 140	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14
			Cr-Mo / Ni-Cr-Mo Hardened	300	G	G	ACP2000 ACU2500	120 - **150** - 180 65 - **100** - 135	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14
			Cr-Mo / Ni-Cr-Mo Hardened	350	G	G	ACP2000 ACU2500	80 - **120** - 160 50 - **80** - 110	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - **180** - 210 100 - **150** - 180	0.08 - **0.13** - 0.17	0.08 - **0.13** - 0.18	0.08 - **0.13** - 0.18
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - **150** - 180 60 - **80** - 100	0.06 - **0.11** - 0.15	0.06 - **0.11** - 0.15	0.06 - **0.11** - 0.15
	M	Stainless Steel	X6Cr17 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - **160** - 180	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15
			X6Cr17 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - **150** - 170	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	L	L	ACU2500	120 - **180** - 210	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - **210** - 240 120 - **180** - 210	0.10 - **0.19** - 0.28	0.10 - **0.19** - 0.28	0.09 - **0.21** - 0.32
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - **150** - 180 100 - **125** - 150	0.10 - **0.19** - 0.28	0.10 - **0.19** - 0.28	0.09 - **0.21** - 0.32
3D	P	Steel, Carbon Steel	S235JR	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C15	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45	190	G	G	ACP2000 ACU2500	170 - **210** - 250 100 - **160** - 220	0.06 - **0.12** - 0.18	0.06 - **0.12** - 0.18	0.06 - **0.13** - 0.20
			C45 Hardened	250	G	G	ACP2000 ACU2500	110 - **180** - 250 90 - **140** - 200	0.05 - **0.09** - 0.13	0.05 - **0.09** - 0.13	0.05 - **0.09** - 0.13
			C75	270	G	G	ACP2000 ACU2500	110 - **180** - 250 70 - **140** - 200	0.06 - **0.11** - 0.15	0.06 - **0.11** - 0.15	0.06 - **0.11** - 0.15
			C75 Hardened	300	G	G	ACP2000 ACU2500	100 - **150** - 200 90 - **120** - 150	0.05 - **0.09** - 0.13	0.05 - **0.09** - 0.13	0.05 - **0.09** - 0.13
		Low-alloy Steel	Cr-Mo / Ni-Cr-Mo	180	G	G	ACP2000 ACU2500	140 - **180** - 220 110 - **140** - 170	0.05 - **0.09** - 0.13	0.05 - **0.09** - 0.13	0.05 - **0.09** - 0.13
			Cr-Mo / Ni-Cr-Mo Hardened	275	G	G	ACP2000 ACU2500	130 - **170** - 210 100 - **130** - 140	0.06 - **0.09** - 0.13	0.06 - **0.09** - 0.13	0.06 - **0.09** - 0.13
			Cr-Mo / Ni-Cr-Mo Hardened	300	G	G	ACP2000 ACU2500	120 - **150** - 180 65 - **100** - 135	0.06 - **0.09** - 0.13	0.06 - **0.09** - 0.13	0.06 - **0.09** - 0.13
			Cr-Mo / Ni-Cr-Mo Hardened	350	G	G	ACP2000 ACU2500	80 - **120** - 160 50 - **80** - 110	0.06 - **0.09** - 0.13	0.06 - **0.09** - 0.13	0.06 - **0.09** - 0.13
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - **180** - 210 100 - **150** - 180	0.07 - **0.11** - 0.15	0.07 - **0.12** - 0.16	0.07 - **0.12** - 0.16
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - **150** - 180 60 - **80** - 100	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14
	M	Stainless Steel	X6Cr17 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - **160** - 180	0.05 - **0.09** - 0.14	0.05 - **0.09** - 0.14	0.05 - **0.09** - 0.14
			X6Cr17 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - **150** - 170	0.05 - **0.09** - 0.14	0.05 - **0.09** - 0.14	0.05 - **0.09** - 0.14
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	L	L	ACU2500	120 - **180** - 210	0.05 - **0.09** - 0.14	0.05 - **0.09** - 0.14	0.05 - **0.09** - 0.14
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - **210** - 240 120 - **180** - 210	0.09 - **0.17** - 0.25	0.10 - **0.18** - 0.25	0.09 - **0.19** - 0.29
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - **150** - 180 100 - **125** - 150	0.09 - **0.17** - 0.25	0.10 - **0.18** - 0.25	0.09 - **0.19** - 0.29
4D	P	Steel, Carbon Steel	S235JR	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C15	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45	190	G	G	ACP2000 ACU2500	170 - **210** - 250 100 - **160** - 220	0.06 - **0.11** - 0.16	0.06 - **0.11** - 0.16	0.06 - **0.12** - 0.18
			C45 Hardened	250	G	G	ACP2000 ACU2500	110 - **180** - 250 90 - **140** - 200	0.05 - **0.08** - 0.11	0.05 - **0.08** - 0.11	0.05 - **0.08** - 0.11
			C75	270	G	G	ACP2000 ACU2500	110 - **180** - 250 70 - **140** - 200	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14
			C75 Hardened	300	G	G	ACP2000 ACU2500	100 - **150** - 200 90 - **120** - 150	0.05 - **0.08** - 0.11	0.05 - **0.08** - 0.11	0.05 - **0.08** - 0.11
		Low-alloy Steel	Cr-Mo / Ni-Cr-Mo	180	G	G	ACP2000 ACU2500	140 - **180** - 220 110 - **140** - 170	0.05 - **0.08** - 0.11	0.05 - **0.08** - 0.11	0.05 - **0.08** - 0.11
			Cr-Mo / Ni-Cr-Mo Hardened	275	G	G	ACP2000 ACU2500	130 - **170** - 210 100 - **130** - 140	0.06 - **0.09** - 0.11	0.06 - **0.09** - 0.11	0.06 - **0.09** - 0.11
			Cr-Mo / Ni-Cr-Mo Hardened	300	G	G	ACP2000 ACU2500	120 - **150** - 180 65 - **100** - 135	0.06 - **0.09** - 0.11	0.06 - **0.09** - 0.11	0.06 - **0.09** - 0.11
			Cr-Mo / Ni-Cr-Mo Hardened	350	G	G	ACP2000 ACU2500	80 - **120** - 160 50 - **80** - 110	0.06 - **0.09** - 0.11	0.06 - **0.09** - 0.11	0.06 - **0.09** - 0.11
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - **180** - 210 100 - **150** - 180	0.06 - **0.10** - 0.14	0.06 - **0.11** - 0.15	0.06 - **0.11** - 0.15
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - **150** - 180 60 - **80** - 100	0.06 - **0.09** - 0.12	0.06 - **0.09** - 0.12	0.06 - **0.09** - 0.12
	M	Stainless Steel	X6Cr17 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - **160** - 180	0.05 - **0.09** - 0.12	0.05 - **0.09** - 0.12	0.05 - **0.09** - 0.12
			X6Cr17 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - **150** - 170	0.05 - **0.09** - 0.12	0.05 - **0.09** - 0.12	0.05 - **0.09** - 0.12
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	L	L	ACU2500	120 - **180** - 210	0.05 - **0.09** - 0.12	0.05 - **0.09** - 0.12	0.05 - **0.09** - 0.12
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - **210** - 240 120 - **180** - 210	0.09 - **0.16** - 0.23	0.10 - **0.16** - 0.23	0.09 - **0.18** - 0.26
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - **150** - 180 100 - **125** - 150	0.09 - **0.16** - 0.23	0.10 - **0.16** - 0.23	0.09 - **0.18** - 0.26

· The recommended conditions may not be practical depending on the operating conditions (e.g. machine tool, workpiece shape, clamping system).

*Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, and other factors.

GDX series Recommended Cutting Conditions (5D/6D/7D)

L/D	Classification	Work Material		Work Material Hardness	Chipbreaker		Recommended Peripheral Insert Grade	Cutting Speed, vc (m/min)	Feed Rate, f (mm/rev) (Min. - **Optimum** - Max.)		
				HB	Peripheral Insert	Central Insert			ø15.5 to ø18.0	ø18.5 to ø22.0	ø22.5 to ø27.0
5D	P	Steel, Carbon Steel	S235JR	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C15	125	L	L	ACP2000 ACU2500	160 - **220** - 280 120 - **170** - 220	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45	190	G	G	ACP2000 ACU2500	170 - **210** - 250 100 - **160** - 220	0.06 - **0.10** - 0.14	0.06 - **0.10** - 0.14	0.06 - **0.11** - 0.15
			C45 Hardened	250	G	G	ACP2000 ACU2500	110 - **180** - 250 90 - **140** - 200	0.05 - **0.07** - 0.10	0.05 - **0.07** - 0.10	0.05 - **0.07** - 0.10
			C75	270	G	G	ACP2000 ACU2500	110 - **180** - 250 70 - **140** - 200	0.06 - **0.09** - 0.12	0.06 - **0.09** - 0.12	0.06 - **0.09** - 0.12
			C75 Hardened	300	G	G	ACP2000 ACU2500	100 - **150** - 200 90 - **120** - 150	0.05 - **0.07** - 0.10	0.05 - **0.07** - 0.10	0.05 - **0.07** - 0.10
		Low-alloy Steel	Cr-Mo / Ni-Cr-Mo	180	G	G	ACP2000 ACU2500	140 - **180** - 220 110 - **140** - 170	0.05 - **0.07** - 0.10	0.05 - **0.07** - 0.10	0.05 - **0.07** - 0.10
			Cr-Mo / Ni-Cr-Mo Hardened	275	G	G	ACP2000 ACU2500	130 - **170** - 210 100 - **130** - 140	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10
			Cr-Mo / Ni-Cr-Mo Hardened	300	G	G	ACP2000 ACU2500	120 - **150** - 180 65 - **100** - 135	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10
			Cr-Mo / Ni-Cr-Mo Hardened	350	G	G	ACP2000 ACU2500	80 - **120** - 160 50 - **80** - 110	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - **180** - 210 100 - **150** - 180	0.06 - **0.09** - 0.12	0.06 - **0.09** - 0.12	0.06 - **0.09** - 0.12
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - **150** - 180 60 - **80** - 100	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10	0.06 - **0.08** - 0.10
	M	Stainless Steel	X6Cr17 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - **160** - 180	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
			X6Cr17 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - **150** - 170	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	L	L	ACU2500	120 - **180** - 210	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - **210** - 240 120 - **180** - 210	0.09 - **0.14** - 0.19	0.10 - **0.15** - 0.19	0.09 - **0.16** - 0.22
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - **150** - 180 100 - **125** - 150	0.09 - **0.14** - 0.19	0.10 - **0.15** - 0.19	0.09 - **0.16** - 0.22
6D	P	Steel, Carbon Steel	S235JR	125	L	L	ACP2000 ACU2500	160 - **200** - 240 120 - **150** - 180	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C15	125	L	L	ACP2000 ACU2500	160 - **200** - 240 120 - **150** - 180	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45	190	G	G	ACP2000 ACU2500	170 - **190** - 210 100 - **140** - 180	0.05 - **0.07** - 0.09	0.05 - **0.07** - 0.09	0.05 - **0.07** - 0.09
			C45 Hardened	250	G	G	ACP2000 ACU2500	110 - **160** - 210 90 - **120** - 160	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07
			C75	270	G	G	ACP2000 ACU2500	110 - **160** - 210 70 - **120** - 160	0.06 - **0.07** - 0.09	0.06 - **0.07** - 0.09	0.06 - **0.07** - 0.09
			C75 Hardened	300	G	G	ACP2000 ACU2500	100 - **130** - 160 90 - **100** - 110	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07
		Low-alloy Steel	Cr-Mo / Ni-Cr-Mo	180	G	G	ACP2000 ACU2500	140 - **160** - 180 110 - **120** - 130	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07
			Cr-Mo / Ni-Cr-Mo Hardened	275	G	G	ACP2000 ACU2500	130 - **150** - 170 100 - **110** - 100	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07
			Cr-Mo / Ni-Cr-Mo Hardened	300	G	G	ACP2000 ACU2500	120 - **130** - 140 65 - **80** - 95	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07
			Cr-Mo / Ni-Cr-Mo Hardened	350	G	G	ACP2000 ACU2500	80 - **100** - 120 50 - **60** - 70	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - **170** - 190 100 - **140** - 160	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - **140** - 160 60 - **70** - 80	0.06 - **0.07** - 0.08	0.06 - **0.07** - 0.08	0.06 - **0.07** - 0.08
	M	Stainless Steel	X6Cr17 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - **150** - 160	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
			X6Cr17 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - **140** - 150	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	L	L	ACU2500	120 - **170** - 190	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - **200** - 220 120 - **170** - 190	0.09 - **0.12** - 0.14	0.10 - **0.12** - 0.14	0.09 - **0.13** - 0.16
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - **140** - 160 100 - **115** - 130	0.09 - **0.12** - 0.14	0.10 - **0.12** - 0.14	0.09 - **0.13** - 0.16
7D	P	Steel, Carbon Steel	S235JR	125	L	L	ACP2000 ACU2500	160 - **200** - 240 120 - **150** - 180	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C15	125	L	L	ACP2000 ACU2500	160 - **200** - 240 120 - **150** - 180	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45	190	G	G	ACP2000 ACU2500	170 - **190** - 210 100 - **140** - 180	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08
			C45 Hardened	250	G	G	ACP2000 ACU2500	110 - **160** - 210 90 - **120** - 160	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07
			C75	270	G	G	ACP2000 ACU2500	110 - **160** - 210 70 - **120** - 160	0.06 - **0.07** - 0.08	0.06 - **0.07** - 0.08	0.06 - **0.07** - 0.08
			C75 Hardened	300	G	G	ACP2000 ACU2500	100 - **130** - 160 90 - **100** - 110	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07
		Low-alloy Steel	Cr-Mo / Ni-Cr-Mo	180	G	G	ACP2000 ACU2500	140 - **160** - 180 110 - **120** - 130	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07	0.05 - **0.06** - 0.07
			Cr-Mo / Ni-Cr-Mo Hardened	275	G	G	ACP2000 ACU2500	130 - **150** - 170 100 - **110** - 100	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07
			Cr-Mo / Ni-Cr-Mo Hardened	300	G	G	ACP2000 ACU2500	120 - **130** - 140 65 - **80** - 95	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07
			Cr-Mo / Ni-Cr-Mo Hardened	350	G	G	ACP2000 ACU2500	80 - **100** - 120 50 - **60** - 70	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07	0.06 - **0.07** - 0.07
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - **170** - 190 100 - **140** - 160	0.04 - **0.06** - 0.08	0.04 - **0.07** - 0.08	0.04 - **0.07** - 0.08
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - **140** - 160 60 - **70** - 80	0.06 - **0.07** - 0.08	0.06 - **0.07** - 0.08	0.06 - **0.07** - 0.08
	M	Stainless Steel	X6Cr17 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - **150** - 160	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
			X6Cr17 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - **140** - 150	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	L	L	ACU2500	120 - **170** - 190	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - **200** - 220 120 - **170** - 190	0.09 - **0.12** - 0.14	0.10 - **0.12** - 0.14	0.09 - **0.13** - 0.16
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - **140** - 160 100 - **115** - 130	0.09 - **0.12** - 0.14	0.10 - **0.12** - 0.14	0.09 - **0.13** - 0.16

· The recommended conditions may not be practical depending on the operating conditions (e.g. machine tool, workpiece shape, clamping system).
· For 6D and 7D drilling, reduce the feed to 75% of recommended conditions at engagement (3mm from entrance). Use the lower recommended limit feed at the exit of through holes (5mm from exit).
*Note · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, and other factors.

GDX series 2D (Internal Coolant Supply)

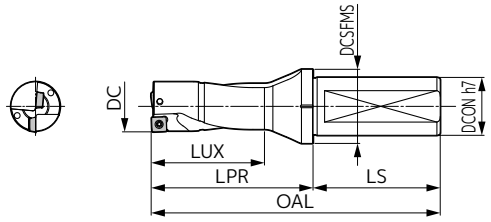
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New | CVD Coat | PVD Coat | Coolant Hole | 2D | Indexable Insert type

Drilling tolerance: -0.05 to +0.15mm

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø15.5 to 27.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert (Peripheral Insert)	Applicable Insert (Central Insert)	Fig
15.5	★	**GDXH 155D2S20-05**	36.0	53.75	102.75	49.0	25.0	20.0	0.40	GDXT050203P	GDXT050205C	1
16.0	★	**160D2S20-05**	37.0	55.00	104.00	49.0	25.0	20.0	0.35			1
16.5	★	**165D2S20-05**	38.0	56.25	105.25	49.0	25.0	20.0	0.30			1
17.0	★	**170D2S20-05**	39.0	57.50	106.50	49.0	25.0	20.0	0.25			1
17.5	★	**GDXH 175D2S25-05**	40.0	58.75	113.75	55.0	32.0	25.0	0.15			1
18.0	★	**180D2S25-05**	41.0	60.00	115.00	55.0	32.0	25.0	0.10			1
18.5	★	**GDXH 185D2S25-06**	42.0	61.25	116.25	55.0	32.0	25.0	0.55	GDXT06T204P	GDXT06T206C	1
19.0	★	**190D2S25-06**	43.0	62.50	117.50	55.0	32.0	25.0	0.50			1
19.5	★	**195D2S25-06**	44.0	63.75	118.75	55.0	32.0	25.0	0.45			1
20.0	★	**200D2S25-06**	45.0	65.00	120.00	55.0	32.0	25.0	0.40			1
20.5	★	**205D2S25-06**	46.0	66.25	121.25	55.0	32.0	25.0	0.35			1
21.0	★	**210D2S25-06**	47.0	67.50	122.50	55.0	32.0	25.0	0.30			1
21.5	★	**215D2S25-06**	48.0	68.75	123.75	55.0	32.0	25.0	0.20			1
22.0	★	**220D2S25-06**	49.0	70.00	125.00	55.0	32.0	25.0	0.15			1
22.5	★	**GDXH 225D2S25-07**	50.0	71.25	126.25	55.0	32.0	25.0	0.70	GDXT070305P	GDXT070308C	1
23.0	★	**230D2S25-07**	51.0	72.50	127.50	55.0	32.0	25.0	0.65			1
23.5	★	**235D2S25-07**	52.0	73.75	128.75	55.0	32.0	25.0	0.60			1
24.0	★	**240D2S25-07**	53.0	75.00	130.00	55.0	32.0	25.0	0.55			1
24.5	★	**245D2S25-07**	54.0	76.25	131.25	55.0	32.0	25.0	0.50			1
25.0	★	**250D2S25-07**	55.0	77.50	132.50	55.0	32.0	25.0	0.45			1
25.5	★	**255D2S25-07**	56.0	78.75	133.75	55.0	32.0	25.0	0.35			1
26.0	★	**GDXH 260D2S32-07**	57.0	80.00	139.00	59.0	40.0	32.0	0.30			1
26.5	★	**265D2S32-07**	58.0	81.25	140.25	59.0	40.0	32.0	0.25			1
27.0	★	**270D2S32-07**	59.0	82.50	141.50	59.0	40.0	32.0	0.20			1

Recommended Cutting Conditions J165

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
GDXH155D2S20-05 to GDXH180D2S25-05	BFTX0204IP	**0.5**	TRX06IP	—	SUMI-P
GDXH185D2S25-06 to GDXH220D2S25-06	BFTX02205IP	**1.0**	—	TRDR07IP	
GDXH225D2S25-07 to GDXH270D2S32-07	BFTX02506IP	**1.5**	—	TRDR08IP	

Identification Code

GDXH 200 D2 S25 - 06

Series Code	Diameter (ø20.0)	L/D (2D)	Shank Dia (ø25.0)	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 2D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	PKM	P	
	Medium Cutting	PKM		M
	Roughing	PKM		M

	Cat. No.	ACU2500	ACP2000	ACS3000	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Holder
Peripheral Insert	**GDXT 050203P-L**	★	★	★	5.1	2.58	0.3	1	GDXH155D2S20-05
	050203P-G	★	★	★	5.1	2.51	0.3	2	to GDXH180D2S25-05
	GDXT 06T204P-L	★	★	★	6.3	2.98	0.4	1	GDXH185D2S25-06
	06T204P-G	★	★	★	6.3	2.93	0.4	2	to GDXH220D2S25-06
	GDXT 070305P-L	★	★	★	7.7	3.43	0.5	1	GDXH225D2S25-07
	070305P-G	★	★	★	7.7	3.38	0.5	2	to GDXH270D2S32-07
Central Insert	**GDXT 050205C-L**	★	—	—	5.6	2.38	0.5	3	GDXH155D2S20-05
	050205C-G	★	—	—	5.6	2.38	0.5	4	to GDXH180D2S25-05
	GDXT 06T206C-L	★	—	—	6.9	2.78	0.6	3	GDXH185D2S25-06
	06T206C-G	★	—	—	6.9	2.88	0.6	4	to GDXH220D2S25-06
	GDXT 070308C-L	★	—	—	8.6	3.18	0.8	3	GDXH225D2S25-07
	070308C-G	★	—	—	8.6	3.18	0.8	4	to GDXH270D2S32-07

Fig 1 Peripheral insert L type

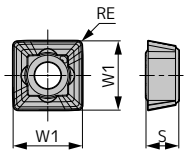


Fig 2 Peripheral insert G type

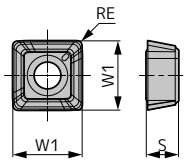


Fig 3 Central insert L type

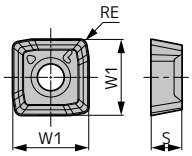
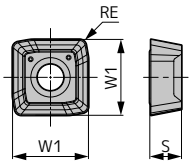


Fig 4 Central insert G type



Precautions for Mounting and Removing Inserts J180

Identification Code

GDXT 06 T2 04 P - G

- GDXT: Series Code
- 06: Insert Size
- T2: Thickness
- 04: Corner Radius
- P: Peripheral Insert, C: Central Insert
- G: Chipbreaker type

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 3D (Internal Coolant Supply)

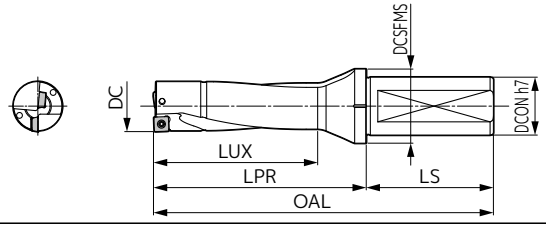
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New | CVD Coat | PVD Coat | Coolant Hole | 3D | Indexable Insert type

Drilling tolerance: 0 to +0.20mm

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø15.5 to 27.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert (Peripheral Insert)	Applicable Insert (Central Insert)	Fig
15.5	★	**GDXH 155D3S20-05**	51.5	69.25	118.25	49.0	25.0	20.0	0.40	GDXT050203P	GDXT050205C	1
16.0	★	**160D3S20-05**	53.0	71.00	120.00	49.0	25.0	20.0	0.35			1
16.5	★	**165D3S20-05**	54.5	72.75	121.75	49.0	25.0	20.0	0.30			1
17.0	★	**170D3S20-05**	56.0	74.50	123.50	49.0	25.0	20.0	0.25			1
17.5	★	**GDXH 175D3S25-05**	57.5	76.25	131.25	55.0	32.0	25.0	0.15			1
18.0	★	**180D3S25-05**	59.0	78.00	133.00	55.0	32.0	25.0	0.10			1
18.5	★	**GDXH 185D3S25-06**	60.5	79.75	134.75	55.0	32.0	25.0	0.55	GDXT06T204P	GDXT06T206C	1
19.0	★	**190D3S25-06**	62.0	81.50	136.50	55.0	32.0	25.0	0.50			1
19.5	★	**195D3S25-06**	63.5	83.25	138.25	55.0	32.0	25.0	0.45			1
20.0	★	**200D3S25-06**	65.0	85.00	140.00	55.0	32.0	25.0	0.40			1
20.5	★	**205D3S25-06**	66.5	86.75	141.75	55.0	32.0	25.0	0.35			1
21.0	★	**210D3S25-06**	68.0	88.50	143.50	55.0	32.0	25.0	0.30			1
21.5	★	**215D3S25-06**	69.5	90.25	145.25	55.0	32.0	25.0	0.20			1
22.0	★	**220D3S25-06**	71.0	92.00	147.00	55.0	32.0	25.0	0.15			1
22.5	★	**GDXH 225D3S25-07**	72.5	93.75	148.75	55.0	32.0	25.0	0.70	GDXT070305P	GDXT070308C	1
23.0	★	**230D3S25-07**	74.0	95.50	150.50	55.0	32.0	25.0	0.65			1
23.5	★	**235D3S25-07**	75.5	97.25	152.25	55.0	32.0	25.0	0.60			1
24.0	★	**240D3S25-07**	77.0	99.00	154.00	55.0	32.0	25.0	0.55			1
24.5	★	**245D3S25-07**	78.5	100.75	155.75	55.0	32.0	25.0	0.50			1
25.0	★	**250D3S25-07**	80.0	102.50	157.50	55.0	32.0	25.0	0.45			1
25.5	★	**255D3S25-07**	81.5	104.25	159.25	55.0	32.0	25.0	0.35			1
26.0	★	**GDXH 260D3S32-07**	83.0	106.00	165.00	59.0	40.0	32.0	0.30			1
26.5	★	**265D3S32-07**	84.5	107.75	166.75	59.0	40.0	32.0	0.25			1
27.0	★	**270D3S32-07**	86.0	109.50	168.50	59.0	40.0	32.0	0.20			1

Recommended Cutting Conditions J165

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
GDXH155D3S20-05 to GDXH180D3S25-05	BFTX0204IP	**0.5**	TRX06IP	—	SUMI-P
GDXH185D3S25-06 to GDXH220D3S25-06	BFTX02205IP	**1.0**	—	TRDR07IP	
GDXH225D3S25-07 to GDXH270D3S32-07	BFTX02506IP	**1.5**	—	TRDR08IP	

Identification Code

GDXH 200 D3 S25 - 06

Series Code	Diameter (ø20.0)	L/D (3D)	Shank Dia (ø25.0)	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 3D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	PKM	P	
	Medium Cutting	PKM		M
	Roughing	PKM		M

	Cat. No.	ACU2500	ACP2000	ACS3000	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Holder
Peripheral Insert	**GDXT 050203P-L**	★	★	★	5.1	2.58	0.3	1	GDXH155D3S20-05
	050203P-G	★	★	★	5.1	2.51	0.3	2	to GDXH180D3S25-05
	GDXT 06T204P-L	★	★	★	6.3	2.98	0.4	1	GDXH185D3S25-06
	06T204P-G	★	★	★	6.3	2.93	0.4	2	to GDXH220D3S25-06
	GDXT 070305P-L	★	★	★	7.7	3.43	0.5	1	GDXH225D3S25-07
	070305P-G	★	★	★	7.7	3.38	0.5	2	to GDXH270D3S32-07
Central Insert	**GDXT 050205C-L**	★	—	—	5.6	2.38	0.5	3	GDXH155D3S20-05
	050205C-G	★	—	—	5.6	2.38	0.5	4	to GDXH180D3S25-05
	GDXT 06T206C-L	★	—	—	6.9	2.78	0.6	3	GDXH185D3S25-06
	06T206C-G	★	—	—	6.9	2.88	0.6	4	to GDXH220D3S25-06
	GDXT 070308C-L	★	—	—	8.6	3.18	0.8	3	GDXH225D3S25-07
	070308C-G	★	—	—	8.6	3.18	0.8	4	to GDXH270D3S32-07

Fig 1 Peripheral insert L type

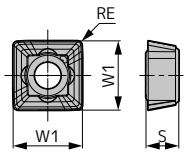


Fig 2 Peripheral insert G type

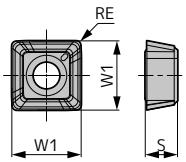


Fig 3 Central insert L type

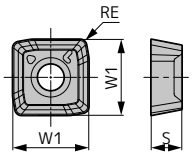
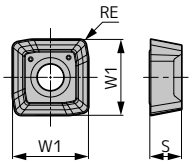


Fig 4 Central insert G type



Precautions for Mounting and Removing Inserts J180

Identification Code

GDXT 06 T2 04 P - G

- GDXT: Series Code
- 06: Insert Size
- T2: Thickness
- 04: Corner Radius
- P: Peripheral Insert, C: Central Insert
- G: Chipbreaker type

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 4D (Internal Coolant Supply)

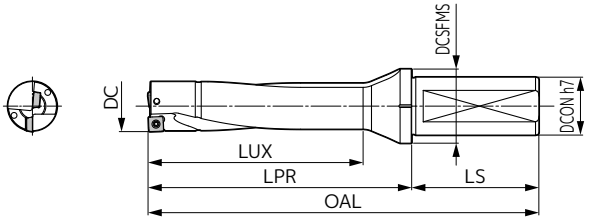
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New | CVD Coat | PVD Coat | Coolant Hole | 4D | Indexable Insert type

Drilling tolerance: 0 to +0.25mm

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø15.5 to 27.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert (Peripheral Insert)	Applicable Insert (Central Insert)	Fig
15.5	★	**GDXH 155D4S20-05**	67.0	84.75	133.75	49.0	25.0	20.0	0.40	GDXT050203P	GDXT050205C	1
16.0	★	**160D4S20-05**	69.0	87.00	136.00	49.0	25.0	20.0	0.35			1
16.5	★	**165D4S20-05**	71.0	89.25	138.25	49.0	25.0	20.0	0.30			1
17.0	★	**170D4S20-05**	73.0	91.50	140.50	49.0	25.0	20.0	0.25			1
17.5	★	**GDXH 175D4S25-05**	75.0	93.75	148.75	55.0	32.0	25.0	0.15			1
18.0	★	**180D4S25-05**	77.0	96.00	151.00	55.0	32.0	25.0	0.10			1
18.5	★	**GDXH 185D4S25-06**	79.0	98.25	153.25	55.0	32.0	25.0	0.55	GDXT06T204P	GDXT06T206C	1
19.0	★	**190D4S25-06**	81.0	100.50	155.50	55.0	32.0	25.0	0.50			1
19.5	★	**195D4S25-06**	83.0	102.75	157.75	55.0	32.0	25.0	0.45			1
20.0	★	**200D4S25-06**	85.0	105.00	160.00	55.0	32.0	25.0	0.40			1
20.5	★	**205D4S25-06**	87.0	107.25	162.25	55.0	32.0	25.0	0.35			1
21.0	★	**210D4S25-06**	89.0	109.50	164.50	55.0	32.0	25.0	0.30			1
21.5	★	**215D4S25-06**	91.0	111.75	166.75	55.0	32.0	25.0	0.20			1
22.0	★	**220D4S25-06**	93.0	114.00	169.00	55.0	32.0	25.0	0.15			1
22.5	★	**GDXH 225D4S25-07**	95.0	116.25	171.25	55.0	32.0	25.0	0.70	GDXT070305P	GDXT070308C	1
23.0	★	**230D4S25-07**	97.0	118.50	173.50	55.0	32.0	25.0	0.65			1
23.5	★	**235D4S25-07**	99.0	120.75	175.75	55.0	32.0	25.0	0.60			1
24.0	★	**240D4S25-07**	101.0	123.00	178.00	55.0	32.0	25.0	0.55			1
24.5	★	**245D4S25-07**	103.0	125.25	180.25	55.0	32.0	25.0	0.50			1
25.0	★	**250D4S25-07**	105.0	127.50	182.50	55.0	32.0	25.0	0.45			1
25.5	★	**255D4S25-07**	107.0	129.75	184.75	55.0	32.0	25.0	0.35			1
26.0	★	**GDXH 260D4S32-07**	109.0	132.00	191.00	59.0	40.0	32.0	0.30			1
26.5	★	**265D4S32-07**	111.0	134.25	193.25	59.0	40.0	32.0	0.25			1
27.0	★	**270D4S32-07**	113.0	136.50	195.50	59.0	40.0	32.0	0.20			1

Recommended Cutting Conditions J165

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
GDXH155D4S20-05 to GDXH180D4S25-05	BFTX0204IP	**0.5**	TRX06IP	—	SUMI-P
GDXH185D4S25-06 to GDXH220D4S25-06	BFTX02205IP	**1.0**	—	TRDR07IP	
GDXH225D4S25-07 to GDXH270D4S32-07	BFTX02506IP	**1.5**	—	TRDR08IP	

Identification Code

GDXH 200 D4 S25 - 06

Series Code	Diameter (ø20.0)	L/D (4D)	Shank Dia (ø25.0)	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 4D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	P K M	P	
	Medium Cutting	P K M		M
	Roughing	P K M		M

	Cat. No.	ACU2500	ACP2000	ACS3000	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Holder
Peripheral Insert	**GDXT 050203P-L**	★	★	★	5.1	2.58	0.3	1	GDXH155D4S20-05
	050203P-G	★	★	★	5.1	2.51	0.3	2	to GDXH180D4S25-05
	GDXT 06T204P-L	★	★	★	6.3	2.98	0.4	1	GDXH185D4S25-06
	06T204P-G	★	★	★	6.3	2.93	0.4	2	to GDXH220D4S25-06
	GDXT 070305P-L	★	★	★	7.7	3.43	0.5	1	GDXH225D4S25-07
	070305P-G	★	★	★	7.7	3.38	0.5	2	to GDXH270D4S32-07
Central Insert	**GDXT 050205C-L**	★	—	—	5.6	2.38	0.5	3	GDXH155D4S20-05
	050205C-G	★	—	—	5.6	2.38	0.5	4	to GDXH180D4S25-05
	GDXT 06T206C-L	★	—	—	6.9	2.78	0.6	3	GDXH185D4S25-06
	06T206C-G	★	—	—	6.9	2.88	0.6	4	to GDXH220D4S25-06
	GDXT 070308C-L	★	—	—	8.6	3.18	0.8	3	GDXH225D4S25-07
	070308C-G	★	—	—	8.6	3.18	0.8	4	to GDXH270D4S32-07

Fig 1 Peripheral insert L type

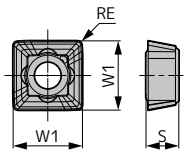


Fig 2 Peripheral insert G type

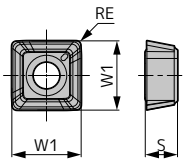


Fig 3 Central insert L type

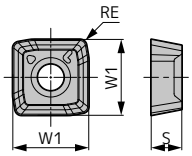
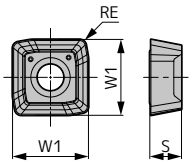


Fig 4 Central insert G type



Precautions for Mounting and Removing Inserts J180

Identification Code

GDXT 06 T2 04 P - G

- GDXT: Series Code
- 06: Insert Size
- T2: Thickness
- 04: Corner Radius
- P: Peripheral Insert, C: Central Insert
- G: Chipbreaker type

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 5D (Internal Coolant Supply)

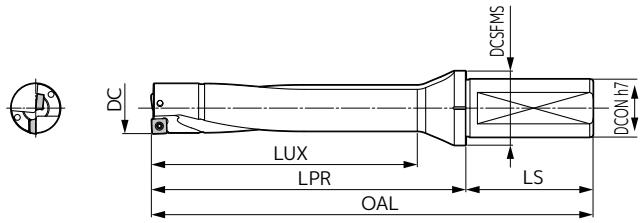
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New | CVD Coat | PVD Coat | Coolant Hole | 5D | Indexable Insert type

Drilling tolerance: 0 to +0.25mm

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø15.5 to 27.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert (Peripheral Insert)	Applicable Insert (Central Insert)	Fig
15.5	★	**GDXH 155D5S20-05**	82.5	100.25	149.25	49.0	25.0	20.0	0.40	GDXT050203P	GDXT050205C	1
16.0	★	**160D5S20-05**	85.0	103.00	152.00	49.0	25.0	20.0	0.35			1
16.5	★	**165D5S20-05**	87.5	105.75	154.75	49.0	25.0	20.0	0.30			1
17.0	★	**170D5S20-05**	90.0	108.50	157.50	49.0	25.0	20.0	0.25			1
17.5	★	**GDXH 175D5S25-05**	92.5	111.25	166.25	55.0	32.0	25.0	0.15			1
18.0	★	**180D5S25-05**	95.0	114.00	169.00	55.0	32.0	25.0	0.10			1
18.5	★	**GDXH 185D5S25-06**	97.5	116.75	171.75	55.0	32.0	25.0	0.55	GDXT06T204P	GDXT06T206C	1
19.0	★	**190D5S25-06**	100.0	119.50	174.50	55.0	32.0	25.0	0.50			1
19.5	★	**195D5S25-06**	102.5	122.25	177.25	55.0	32.0	25.0	0.45			1
20.0	★	**200D5S25-06**	105.0	125.00	180.00	55.0	32.0	25.0	0.40			1
20.5	★	**205D5S25-06**	107.5	127.75	182.75	55.0	32.0	25.0	0.35			1
21.0	★	**210D5S25-06**	110.0	130.50	185.50	55.0	32.0	25.0	0.30			1
21.5	★	**215D5S25-06**	112.5	133.25	188.25	55.0	32.0	25.0	0.20			1
22.0	★	**220D5S25-06**	115.0	136.00	191.00	55.0	32.0	25.0	0.15			1
22.5	★	**GDXH 225D5S25-07**	117.5	138.75	193.75	55.0	32.0	25.0	0.70	GDXT070305P	GDXT070308C	1
23.0	★	**230D5S25-07**	120.0	141.50	196.50	55.0	32.0	25.0	0.65			1
23.5	★	**235D5S25-07**	122.5	144.25	199.25	55.0	32.0	25.0	0.60			1
24.0	★	**240D5S25-07**	125.0	147.00	202.00	55.0	32.0	25.0	0.55			1
24.5	★	**245D5S25-07**	127.5	149.75	204.75	55.0	32.0	25.0	0.50			1
25.0	★	**250D5S25-07**	130.0	152.50	207.50	55.0	32.0	25.0	0.45			1
25.5	★	**255D5S25-07**	132.5	155.25	210.25	55.0	32.0	25.0	0.35			1
26.0	★	**GDXH 260D5S32-07**	135.0	158.00	217.00	59.0	40.0	32.0	0.30			1
26.5	★	**265D5S32-07**	137.5	160.75	219.75	59.0	40.0	32.0	0.25			1
27.0	★	**270D5S32-07**	140.0	163.50	222.50	59.0	40.0	32.0	0.20			1

Recommended Cutting Conditions J166

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
GDXH155D5S20-05 to GDXH180D5S25-05	BFTX0204IP	**0.5**	TRX06IP	—	SUMI-P
GDXH185D5S25-06 to GDXH220D5S25-06	BFTX02205IP	**1.0**	—	TRDR07IP	
GDXH225D5S25-07 to GDXH270D5S32-07	BFTX02506IP	**1.5**	—	TRDR08IP	

Identification Code

GDXH 200 D5 S25 - 06

Series Code	Diameter (ø20.0)	L/D (5D)	Shank Dia (ø25.0)	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	P K M	P	
	Medium Cutting	P K M		M
	Roughing	P K M		M

	Cat. No.	ACU2500	ACP2000	ACS3000	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Holder
Peripheral Insert	**GDXT 050203P-L**	★	★	★	5.1	2.58	0.3	1	GDXH155D5S20-05
	050203P-G	★	★	★	5.1	2.51	0.3	2	to GDXH180D5S25-05
	GDXT 06T204P-L	★	★	★	6.3	2.98	0.4	1	GDXH185D5S25-06
	06T204P-G	★	★	★	6.3	2.93	0.4	2	to GDXH220D5S25-06
	GDXT 070305P-L	★	★	★	7.7	3.43	0.5	1	GDXH225D5S25-07
	070305P-G	★	★	★	7.7	3.38	0.5	2	to GDXH270D5S32-07
Central Insert	**GDXT 050205C-L**	★	—	—	5.6	2.38	0.5	3	GDXH155D5S20-05
	050205C-G	★	—	—	5.6	2.38	0.5	4	to GDXH180D5S25-05
	GDXT 06T206C-L	★	—	—	6.9	2.78	0.6	3	GDXH185D5S25-06
	06T206C-G	★	—	—	6.9	2.88	0.6	4	to GDXH220D5S25-06
	GDXT 070308C-L	★	—	—	8.6	3.18	0.8	3	GDXH225D5S25-07
	070308C-G	★	—	—	8.6	3.18	0.8	4	to GDXH270D5S32-07

Fig 1 Peripheral insert L type

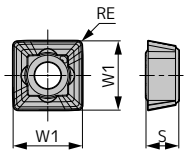


Fig 2 Peripheral insert G type

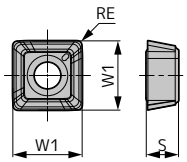


Fig 3 Central insert L type

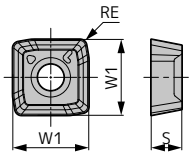
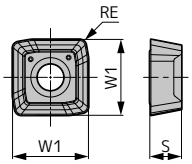


Fig 4 Central insert G type



Precautions for Mounting and Removing Inserts J180

Identification Code

GDXT 06 T2 04 P - G

- GDXT: Series Code
- 06: Insert Size
- T2: Thickness
- 04: Corner Radius
- P: Chipbreaker type
  - P: Peripheral Insert
  - C: Central Insert

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 6D (Internal Coolant Supply)

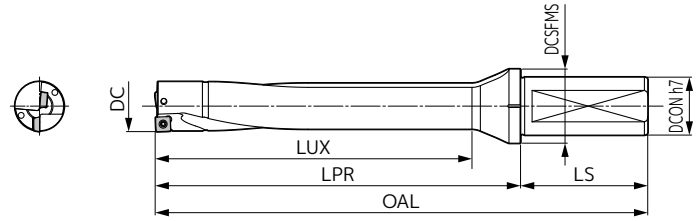
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New | CVD Coat | PVD Coat | Coolant Hole | 6D | Indexable Insert type

Drilling tolerance: 0 to +0.40mm

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø15.5 to 27.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert (Peripheral Insert)	Applicable Insert (Central Insert)	Fig
15.5	★	**GDXH 155D6S20-05**	98.0	115.75	164.75	49.0	25.0	20.0	0.40	GDXT050203P	GDXT050205C	1
16.0	★	**160D6S20-05**	101.0	119.00	168.00	49.0	25.0	20.0	0.35			1
16.5	★	**165D6S20-05**	104.0	122.25	171.25	49.0	25.0	20.0	0.30			1
17.0	★	**170D6S20-05**	107.0	125.50	174.50	49.0	25.0	20.0	0.25			1
17.5	★	**GDXH 175D6S25-05**	110.0	128.75	183.75	55.0	32.0	25.0	0.15			1
18.0	★	**180D6S25-05**	113.0	132.00	187.00	55.0	32.0	25.0	0.10			1
18.5	★	**GDXH 185D6S25-06**	116.0	135.25	190.25	55.0	32.0	25.0	0.55	GDXT06T204P	GDXT06T206C	1
19.0	★	**190D6S25-06**	119.0	138.50	193.50	55.0	32.0	25.0	0.50			1
19.5	★	**195D6S25-06**	122.0	141.75	196.75	55.0	32.0	25.0	0.45			1
20.0	★	**200D6S25-06**	125.0	145.00	200.00	55.0	32.0	25.0	0.40			1
20.5	★	**205D6S25-06**	128.0	148.25	203.25	55.0	32.0	25.0	0.35			1
21.0	★	**210D6S25-06**	131.0	151.50	206.50	55.0	32.0	25.0	0.30			1
21.5	★	**215D6S25-06**	134.0	154.75	209.75	55.0	32.0	25.0	0.20			1
22.0	★	**220D6S25-06**	137.0	158.00	213.00	55.0	32.0	25.0	0.15			1
22.5	★	**GDXH 225D6S25-07**	140.0	161.25	216.25	55.0	32.0	25.0	0.70	GDXT070305P	GDXT070308C	1
23.0	★	**230D6S25-07**	143.0	164.50	219.50	55.0	32.0	25.0	0.65			1
23.5	★	**235D6S25-07**	146.0	167.75	222.75	55.0	32.0	25.0	0.60			1
24.0	★	**240D6S25-07**	149.0	171.00	226.00	55.0	32.0	25.0	0.55			1
24.5	★	**245D6S25-07**	152.0	174.25	229.25	55.0	32.0	25.0	0.50			1
25.0	★	**250D6S25-07**	155.0	177.50	232.50	55.0	32.0	25.0	0.45			1
25.5	★	**255D6S25-07**	158.0	180.75	235.75	55.0	32.0	25.0	0.35			1
26.0	★	**GDXH 260D6S32-07**	161.0	184.00	243.00	59.0	40.0	32.0	0.30			1
26.5	★	**265D6S32-07**	164.0	187.25	246.25	59.0	40.0	32.0	0.25			1
27.0	★	**270D6S32-07**	167.0	190.50	249.50	59.0	40.0	32.0	0.20			1

Recommended Cutting Conditions J166

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
GDXH155D6S20-05 to GDXH180D6S25-05	BFTX0204IP	**0.5**	TRX06IP	—	SUMI-P
GDXH185D6S25-06 to GDXH220D6S25-06	BFTX02205IP	**1.0**	—	TRDR07IP	
GDXH225D6S25-07 to GDXH270D6S32-07	BFTX02506IP	**1.5**	—	TRDR08IP	

Identification Code

GDXH 200 D6 S25 - 06

Series Code	Diameter (ø20.0)	L/D (6D)	Shank Dia (ø25.0)	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 6D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	P K M	P	
	Medium Cutting	P K M		M
	Roughing	P K M		M

	Cat. No.	ACU2500	ACP2000	ACS3000	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Holder
Peripheral Insert	**GDXT 050203P-L**	★	★	★	5.1	2.58	0.3	1	GDXH155D6S20-05
	050203P-G	★	★	★	5.1	2.51	0.3	2	to GDXH180D6S25-05
	GDXT 06T204P-L	★	★	★	6.3	2.98	0.4	1	GDXH185D6S25-06
	06T204P-G	★	★	★	6.3	2.93	0.4	2	to GDXH220D6S25-06
	GDXT 070305P-L	★	★	★	7.7	3.43	0.5	1	GDXH225D6S25-07
	070305P-G	★	★	★	7.7	3.38	0.5	2	to GDXH270D6S32-07
Central Insert	**GDXT 050205C-L**	★	—	—	5.6	2.38	0.5	3	GDXH155D6S20-05
	050205C-G	★	—	—	5.6	2.38	0.5	4	to GDXH180D6S25-05
	GDXT 06T206C-L	★	—	—	6.9	2.78	0.6	3	GDXH185D6S25-06
	06T206C-G	★	—	—	6.9	2.88	0.6	4	to GDXH220D6S25-06
	GDXT 070308C-L	★	—	—	8.6	3.18	0.8	3	GDXH225D6S25-07
	070308C-G	★	—	—	8.6	3.18	0.8	4	to GDXH270D6S32-07

Fig 1 Peripheral insert L type

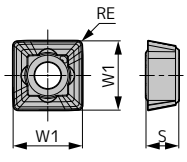


Fig 2 Peripheral insert G type

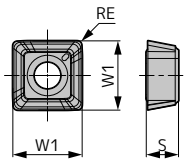


Fig 3 Central insert L type

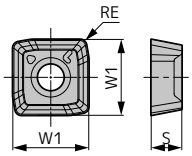
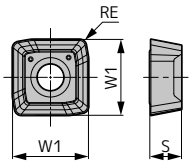


Fig 4 Central insert G type



Precautions for Mounting and Removing Inserts J180

Identification Code

GDXT 06 T2 04 P - G

GDXT	06	T2	04	P	G
Series Code	Insert Size	Thickness	Corner Radius	Chipbreaker type	

P: Peripheral Insert
C: Central Insert

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 7D (Internal Coolant Supply)

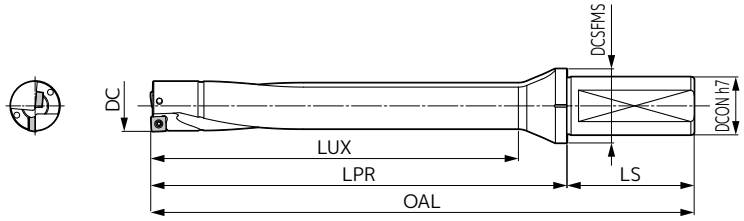
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New | CVD Coat | PVD Coat | Coolant Hole | 7D | Indexable Insert type

Drilling tolerance: 0 to +0.50mm

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø15.5 to 27.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert (Peripheral Insert)	Applicable Insert (Central Insert)	Fig
15.5	★	**GDXH 155D7S20-05**	113.5	131.25	180.25	49.0	25.0	20.0	0.40	GDXT050203P	GDXT050205C	1
16.0	★	**160D7S20-05**	117.0	135.00	184.00	49.0	25.0	20.0	0.35			1
16.5	★	**165D7S20-05**	120.5	138.75	187.75	49.0	25.0	20.0	0.30			1
17.0	★	**170D7S20-05**	124.0	142.50	191.50	49.0	25.0	20.0	0.25			1
17.5	★	**GDXH 175D7S25-05**	127.5	146.25	201.25	55.0	32.0	25.0	0.15			1
18.0	★	**180D7S25-05**	131.0	150.00	205.00	55.0	32.0	25.0	0.10			1
18.5	★	**GDXH 185D7S25-06**	134.5	153.75	208.75	55.0	32.0	25.0	0.55	GDXT06T204P	GDXT06T206C	1
19.0	★	**190D7S25-06**	138.0	157.50	212.50	55.0	32.0	25.0	0.50			1
19.5	★	**195D7S25-06**	141.5	161.25	216.25	55.0	32.0	25.0	0.45			1
20.0	★	**200D7S25-06**	145.0	165.00	220.00	55.0	32.0	25.0	0.40			1
20.5	★	**205D7S25-06**	148.5	168.75	223.75	55.0	32.0	25.0	0.35			1
21.0	★	**210D7S25-06**	152.0	172.50	227.50	55.0	32.0	25.0	0.30			1
21.5	★	**215D7S25-06**	155.5	176.25	231.25	55.0	32.0	25.0	0.20			1
22.0	★	**220D7S25-06**	159.0	180.00	235.00	55.0	32.0	25.0	0.15			1
22.5	★	**GDXH 225D7S25-07**	162.5	183.75	238.75	55.0	32.0	25.0	0.70	GDXT070305P	GDXT070308C	1
23.0	★	**230D7S25-07**	166.0	187.50	242.50	55.0	32.0	25.0	0.65			1
23.5	★	**235D7S25-07**	169.5	191.25	246.25	55.0	32.0	25.0	0.60			1
24.0	★	**240D7S25-07**	173.0	195.00	250.00	55.0	32.0	25.0	0.55			1
24.5	★	**245D7S25-07**	176.5	198.75	253.75	55.0	32.0	25.0	0.50			1
25.0	★	**250D7S25-07**	180.0	202.50	257.50	55.0	32.0	25.0	0.45			1
25.5	★	**255D7S25-07**	183.5	206.25	261.25	55.0	32.0	25.0	0.35			1
26.0	★	**GDXH 260D7S32-07**	187.0	210.00	269.00	59.0	40.0	32.0	0.30			1
26.5	★	**265D7S32-07**	190.5	213.75	272.75	59.0	40.0	32.0	0.25			1
27.0	★	**270D7S32-07**	194.0	217.50	276.50	59.0	40.0	32.0	0.20			1

Recommended Cutting Conditions J166

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
GDXH155D7S20-05 to GDXH180D7S25-05	BFTX0204IP	**0.5**	TRX06IP	—	SUMI-P
GDXH185D7S25-06 to GDXH220D7S25-06	BFTX02205IP	**1.0**	—	TRDR07IP	
GDXH225D7S25-07 to GDXH270D7S32-07	BFTX02506IP	**1.5**	—	TRDR08IP	

Identification Code

GDXH 200 D7 S25 - 06

Series Code	Diameter (ø20.0)	L/D (7D)	Shank Dia (ø25.0)	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

GDX series 7D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron

New

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	PKM	P	
	Medium Cutting	PKM		M
	Roughing	PKM		M

	Cat. No.	ACU2500	ACP2000	ACS3000	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Holder
Peripheral Insert	**GDXT 050203P-L**	★	★	★	5.1	2.58	0.3	1	GDXH155D7S20-05
	050203P-G	★	★	★	5.1	2.51	0.3	2	to GDXH180D7S25-05
	GDXT 06T204P-L	★	★	★	6.3	2.98	0.4	1	GDXH185D7S25-06
	06T204P-G	★	★	★	6.3	2.93	0.4	2	to GDXH220D7S25-06
	GDXT 070305P-L	★	★	★	7.7	3.43	0.5	1	GDXH225D7S25-07
	070305P-G	★	★	★	7.7	3.38	0.5	2	to GDXH270D7S32-07
Central Insert	**GDXT 050205C-L**	★	—	—	5.6	2.38	0.5	3	GDXH155D7S20-05
	050205C-G	★	—	—	5.6	2.38	0.5	4	to GDXH180D7S25-05
	GDXT 06T206C-L	★	—	—	6.9	2.78	0.6	3	GDXH185D7S25-06
	06T206C-G	★	—	—	6.9	2.88	0.6	4	to GDXH220D7S25-06
	GDXT 070308C-L	★	—	—	8.6	3.18	0.8	3	GDXH225D7S25-07
	070308C-G	★	—	—	8.6	3.18	0.8	4	to GDXH270D7S32-07

Fig 1 Peripheral insert L type

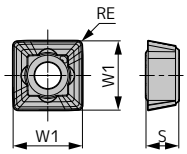


Fig 2 Peripheral insert G type

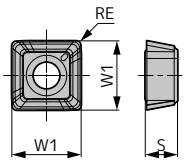


Fig 3 Central insert L type

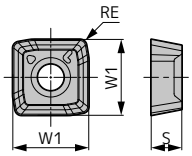
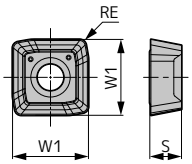


Fig 4 Central insert G type



Precautions for Mounting and Removing Inserts J180

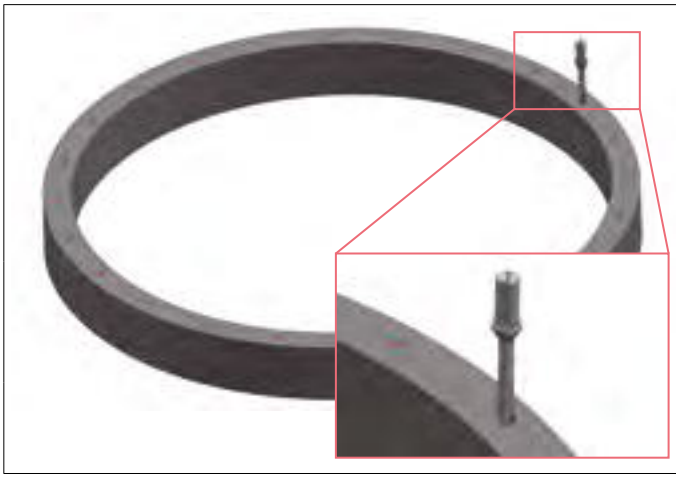
Identification Code

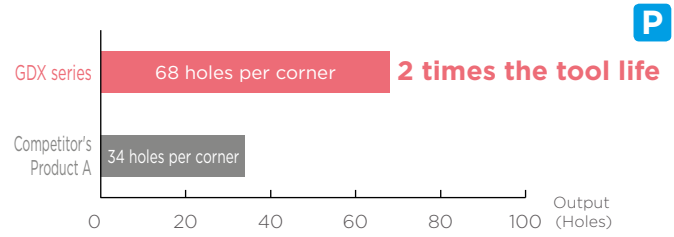
GDXT 06 T2 04 P - G

- GDXT: Series Code
- 06: Insert Size
- T2: Thickness
- 04: Corner Radius
- P: Chipbreaker type
  - P: Peripheral Insert
  - C: Central Insert

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

■ Application Examples





Work Material : Flange (C45 [230HB])
Tool : GDXH190D5S25-06 (ø19, 5D)
Insert : Peripheral Insert GDXT06T204P-G (ACU2500)
Central Insert: GDXT06T206C-G (ACU2500)
Cutting Conditions : vc = 120m/min, f = 0.085mm/rev, H = 76mm (Through), Internal Coolant Supply (Water-soluble)

Realises stable drilling and double the tool life compared to competitor's products



Deep hole drilling of H75mm from both ends



Work Material : Nut (S235JR)
Tool : GDXH210D6S25-06 (ø21, 6D)
Insert : Peripheral Insert GDXT06T204P-L (ACU2500)
Central Insert: GDXT06T206C-L (ACU2500)
Cutting Conditions : vc = 80m/min, f = 0.03→0.05mm/rev, H = 75mm x 2 (Flipped Drilling, Through), Internal Coolant Supply (Water-soluble)

Compared to competitor's product, stable drilling was realised with short chips

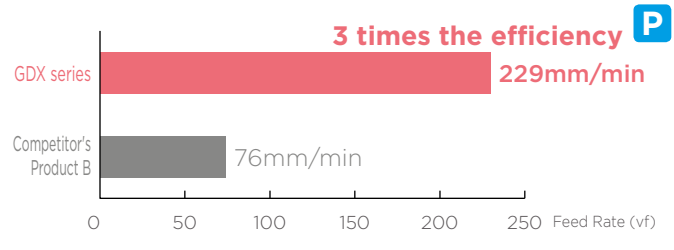


GDX series: One-pass drilling
Competitor's Product: Step drilling (1mm)

Work Material : Flange (S235JR)
Tool : GDXH190D3S25-06 (ø19, 3D)
Insert : Peripheral Insert GDXT06T204P-L (ACU2500)
Central Insert: GDXT06T206C-L (ACU2500)
Cutting Conditions : vc = 240m/min, f = 0.055mm/rev, H = 22mm (Through), Internal Coolant Supply (Water-soluble)

While competitor's product performs step drilling (1mm per step), the GDX series breaks chips into small pieces even with one-pass drilling, achieving stable high-efficiency drilling.





Work Material : Flange (Ck25, C45)
Tool : GDXH200D3S25-06 (ø20, 3D)
Insert : Peripheral Insert GDXT06T204P-G (ACU2500)
Central Insert: GDXT06T206C-G (ACU2500)
Cutting Conditions : vc = 180m/min, f = 0.08mm/rev, H = 38mm (Through), Internal Coolant Supply (Water-soluble)

Significantly improved chip control as compared to competitor's product, with 3 times higher efficiency

■ Lathe Drilling Guidelines

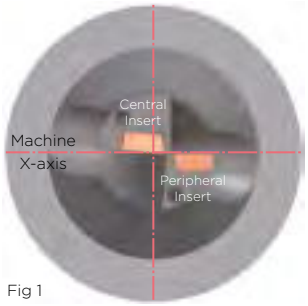


Fig 1

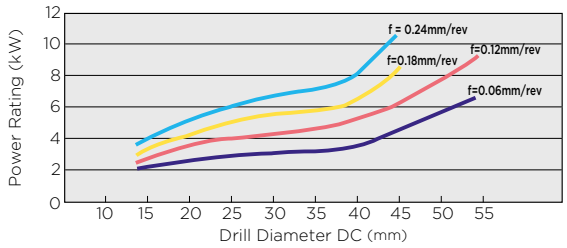

Fig 2

Drill installation
· Set the drill so that the peripheral insert is parallel to the X-axis of the machine. (Fig 1)
We also recommend mounting in an orientation such that the worker can see the peripheral insert.
(although usage is possible even at 180° in reverse orientation)

Other notes
· When the drill is mounted on a lathe, the centre of the central insert is designed to be 0.1 to 0.2mm below the centre of the spindle.
· If the spindle deviates so far off centre that the centre of the central insert lies above the spindle centre, the central insert will break.
Also take note that, if the off-centre amount is larger than the normal value, the pip at the bottom of the hole will become larger (ø1mm or more) and wall precision will suffer.
· Install a cover to prevent injury from possible chip fly-out (see disc-shaped chip in Fig 2) when through drilling on a lathe.
If your machine has no cover, attach a cover or similar part for your safety.
· Set the depth of cut for external turning or internal boring work to 20% or less of the drill diameter.
(Ex.: For ø20.0mm, depth of cut 4mm or below)
Also, use a feed rate 30% to 70% lower than the recommended rate.

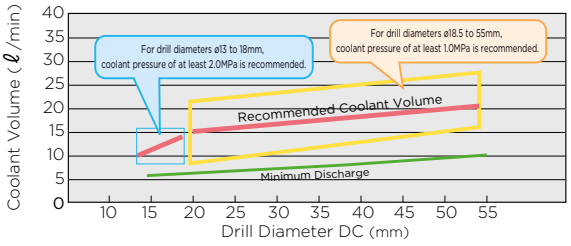
Adjusting Work Diameter (offset)
· When used on a lathe, the work diameter is adjustable by moving the machine X-axis.
· Make the adjustment by moving in the positive direction of the X-axis (enlarging the bore diameter). Moving the X-axis in the negative direction (to reduce the bore diameter) is not recommended as the holder may interfere with the hole.
· Refer to Radial Offset (Max) in the body dimension tables on pages J167-J177.

■ Typical Power Ratings



<CAUTIONS>
● Power ratings are subject to change based on conditions such as work material and cutting speed, and should only be used for reference.
● Cutting Conditions (Reference)
Work Material: Cf53 (230HB)
Cutting Speed: vc = 150m/min

■ Typical Coolant Volume





<CAUTIONS>
● Coolant volume is a factor that affects drilling performance, particularly with respect to chip evacuation and lubricity.
● Coolant pressure should be set higher for small drills. (Below ø18.0mm)
● Coolant volume is usually adjusted by changing the coolant pressure provided on most CNC machine tools.
● This table provides guideline values only. More coolant may be required depending on the machine, coolant and work material.
● Internal coolant supply is recommended.
Dry machining and external coolant supply are not recommended, as chips will not be evacuated.

■ Precautions for Attaching and Removing Inserts

· Before mounting the insert, remove all traces of foreign matter on the insert seat surface using air blow or other means.
· When using the wrench, align it to the axis of the screw and press while turning. (Fig 3)
If the wrench is not aligned with the screw, the insert will be insufficiently clamped and the tip of the wrench and/or the Torx hole of the screw may become deformed.
· Do not allow clearance between the insert seat and drill when mounting the insert. (Fig 4, A)
Figure 4 shows a properly attached insert.

*It is normal for the outer side of the central insert to have clearance as the insert retaining surfaces are on the inside and back.

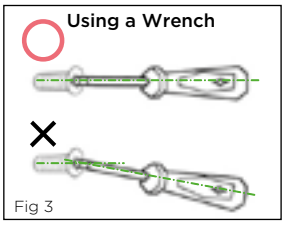


Fig 3

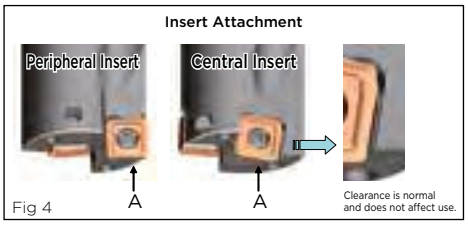


Fig 4

■ Troubleshooting

Problem	Phenomenon	Cause	Countermeasures
Too much variation in hole diameter	Drilled hole diameter is larger than desired	· Deflection of the holder due to high cutting force	· Decrease the feed speed to decrease cutting force · When using the drill on a lathe, adjust by moving in the X-axis direction
	Drilled hole diameter is smaller than desired	· The cutting edge backs off and does not enter the workpiece	· Increase the feed rate · When using the drill on a lathe, adjust by moving in the X-axis direction
	Significant difference in hole diameter at entrance and bottom	· Packing of chips	· Increase the feed rate to improve chip evacuation · Use an L type chipbreaker for chip control
Poor quality machined hole surface	Poor machined surface from entrance to bottom of hole	· High cutting force · Low rigidity of workpiece	· Decrease cutting speed · Review tooling to improve rigidity
	Poor machined surface at bottom of hole	· Machined surfaces damaged by chips	· Increase the feed rate to improve chip evacuation · Use an L type chipbreaker for chip control
	Scratches around hole exit	· Holder is vibrating during through cutting	· Drop cutting speed at hole exit to vc = 50m/min · Drop feed rate at hole exit to 0.05mm/rev
	Return scratches are generated	· Drilled diameter has shrunk	· Increase feed rate
Insert is broken	Fracture on central insert (centre)	· Central insert is off centre · Insert is not strong enough	· Reconfirm and adjust centre height · When using with a lathe, rotate the drill 180° to mount · Decrease the feed rate to decrease cutting load
	Fracture on peripheral insert	· High cutting load on cutting edge	· Decrease the feed rate to decrease cutting load

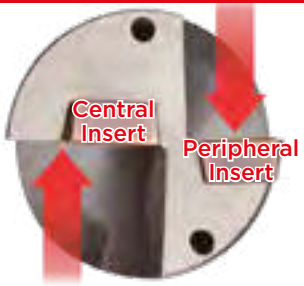
WDX series

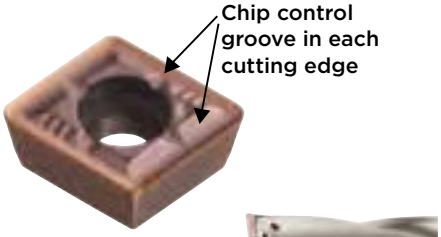


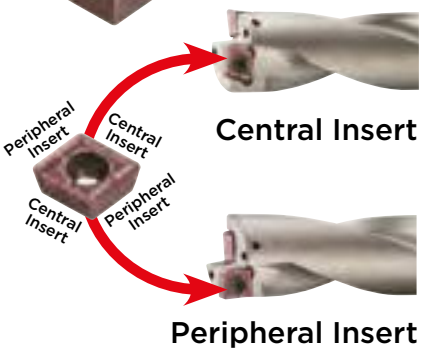
■ General Features

The SumiDrill WDX series has excellent cutting balance that provides stable drilling in a wide range of work materials from general steel to stainless steel and aluminum alloy.
Available in four original chipbreaker styles, the inserts feature improved chip evacuation and reduced cutting force for use in low-rigidity contexts.

Balanced design
Cutting force of central insert ≈ that of peripheral insert







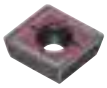
■ Features and Applications

● Balanced Design
Cutting force during drilling is balanced between central insert and peripheral insert. The relative position of each insert is optimised to provide stable drilling.

● Excellent Chip Control
The chip evacuation direction can be controlled with the chip control groove at the centre of the chipbreaker, enabling good chip control.

● Versatile Tool for a Variety of Drilling Applications
Select among four types of chipbreakers for different applications, allowing optimal drilling for a variety of work materials and conditions. Suitable for a wide range of applications including hole expansion, flat bottom drilling, external turning and internal boring.

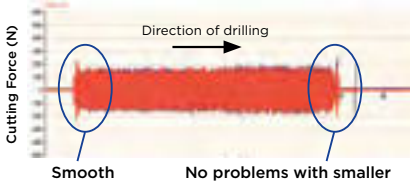
● Economical Four-Cornered Insert
This product has an extremely economical design where a single insert type can be used for the central insert or peripheral insert, with two corners for each position - a total of four corners.

Chipbreaker	L type	G type		H type	M type
Features	For Low Feed with Chip Control	General-purpose	For Non-Ferrous Metal	Strong Edged	For Stainless Steel
Appearance					
Cross Section					

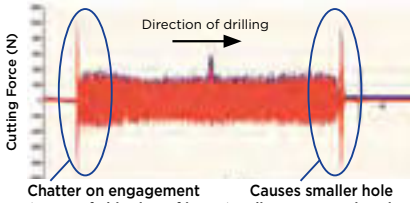
■ Cutting Performance

● Balanced Design
(Comparison of Horizontal Component Values)
Balance is maintained from the hole entry through to the hole exit for stable drilling.

WDX series



Conventional and Competitor's Products



● Improved chip control
Tool : WDX 200D3S25 (ø20.0)
Work Material : X5CrNi18-10
Cutting Conditions : vc = 130m/min, f = 0.06mm/rev, H = 50mm Wet

WDX series

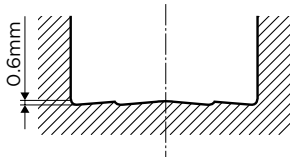


Conventional and Competitor's Products

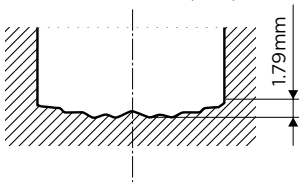


● Finishing is easy because the hole bottom is almost flat.

Bottom of hole after drilling with WDX200D3S25



Bottom of hole after drilling with conventional tool (ø20)



M type Chipbreaker Dedicated for Stainless Steel Drilling + ACM300 Grade

■ Features

Newly developed M type chipbreaker dedicated for stainless steel drilling achieves stable hole quality through chip control.

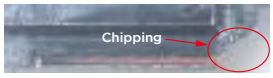
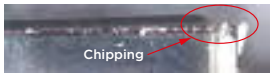
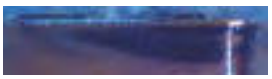
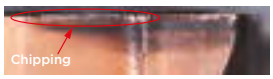
Tool	WDX series M type + ACM300	WDX series G type + ACP300	Competitor's Product For Stainless Steel Drilling
Hole Quality			
Chip			

Tool: WDX200D3S25
Insert: WDXT063006-M (ACM300)
Work Material: X2CrNiMo17-12-2
Cutting Conditions: vc = 150m/min, f = 0.08mm/rev,
H = 60mm Wet

For High-speed Drilling of Steel and Cast Iron ACP100

■ Features

Our proprietary technology for "Super FF Coat", with its ultra-fine crystal grain structure and coating stress control technology, provides excellent wear resistance and high reliability.

		ACP100	Competitor's Product
Peripheral Insert	Rake Face		
	Flank		
Central Insert	Rake Face		
	Flank		

Tool: WDX250D3S25
Insert: WDXT063006-G (ACP100)
Work Material: Cf53
Cutting Conditions: vc = 200m/min, f = 0.12mm/rev,
H = 50mm (Through Hole) Wet

Drills for Deep Hole Drilling L/D = 5 (In stock from ø13.0 to ø55.0mm)

■ Features

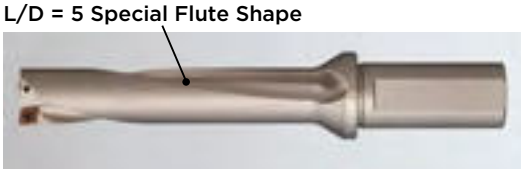
The SumiDrill WDX series for 5D drilling features a specially designed flute shape and large coolant holes for excellent chip evacuation even during deep hole drilling.

Large coolant hole

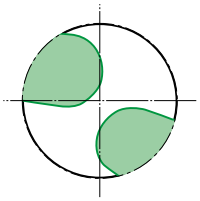
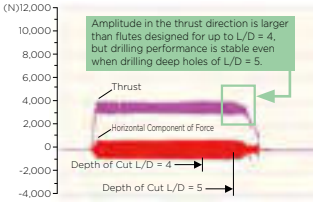
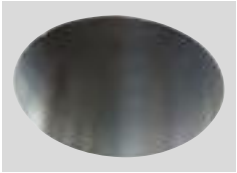
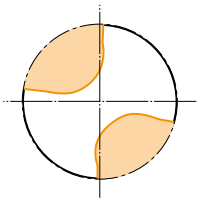
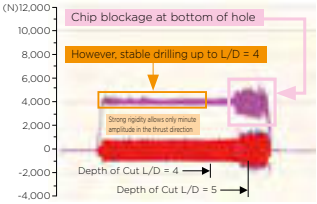


Coolant supply guide

L/D = 5 Special Flute Shape



■ Performance

Tool Holder Features	Cross Section	Cutting Force	Drilled Hole Surface (Exit)
WDX 260D5S32 **Special Flute Shape for L/D=5** * Designed with emphasis on chip evacuation Expanded flute design improves chip evacuation for stable drilling performance even with holes up to L/D = 5.			Good drilled hole surface down to end of hole 
Comparison Tool **Flute Shape for L/D=4** * Designed with emphasis on drill rigidity Flute design enables greater rigidity of the drill, achieving stable drilling of shallow holes up to L/D = 4.			Poor drilled hole surface due to chip blockage at bottom of hole (near L/D = 5) 

Work Material: X5CrNi18-10 Tool: WDX260D5S32 Insert: WDXT 073506-G
Cutting Conditions: vc = 150m/min, f = 0.05mm/rev, H = 130mm (Through Hole) Wet

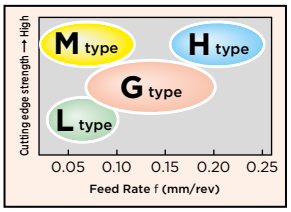
Insert Selection Guide —— The WDX insert series has a variety of options

5 grades

Work Material \ Grade	ACP100	ACP300	ACS3000 ACM300	ACK300	DL1500
P Steel (High-speed Drilling)	○				
P Steel (General Drilling)		○			
M Stainless Steel		○	○		
K Cast Iron (High-speed Drilling)	○				
K Cast Iron (General Drilling)				○	
N Non-Ferrous Metal					○

+

4 types of chipbreakers



→

11 combinations are possible!

ACP100	ACP300	ACS3000 ACM300	ACK300	DL1500
P K L type	P L type		P K L type	
P K G type	P M G type		P K G type	N G type
P K H type	P H type		K H type	
		M M type		

2nd Recommendation (P)

P Steel — For Low Feed with Chip Control

L type ACP300

- For drilling of S235JR, 15CrMo5, 42CrMo4, etc.
- High speed and low feed are recommended if there are issues with chip control.
- Decrease the feed if vibration occurs due to burnt chips.

P Steel — General-purpose

G type ACP100

- For drilling of general steel and alloy steel, when prone to significantly large flank wear

P Steel — For Low Feed with Chip Control

L type ACP100

- For low-feed conditions

P Steel — Strong Edged

H type ACP300

- For drilling with interruptions (entry/exit) due to slanted entry, reduce the feed rate at the interrupted part (around f = 0.05mm/rev).
- For insufficient cutting edge strength due to drilling of hardened steel (heat treated)

P Steel Improved chip control (low carbon steel, etc.)

P Steel Insufficient wear resistance

P Steel Initial chipping measures (interruption, high hardness, etc.)

1st Recommendation (P M K N)

General-purpose

G type

P Steel For general steel and alloy steel drilling — **ACP300**

K Cast Iron For cast iron drilling — **ACK300**

N Non-Ferrous Metal For non-ferrous metal drilling — **DL1500**

M Stainless Steel For stainless steel drilling — **ACS3000 ACM300**

Stainless Steel Dedicated

M type

K Cast Iron Insufficient wear resistance (high-speed drilling)

K Cast Iron Initial chipping measures (interruption, high feed, etc.)

M Stainless Steel Lack of chip evacuation (long chips)

2nd Recommendation (M K)

K Cast Iron — General-purpose

G type ACP100

- When heavy flank wear occurs in cast iron drilling
- To limit wear in high-speed, low to medium feed conditions

K Cast Iron — Strong Edged

H type ACK300

- When interrupted drilling is performed due to slanted entry, etc. as with steel drilling.
- For insufficient cutting edge strength due to high-feed drilling

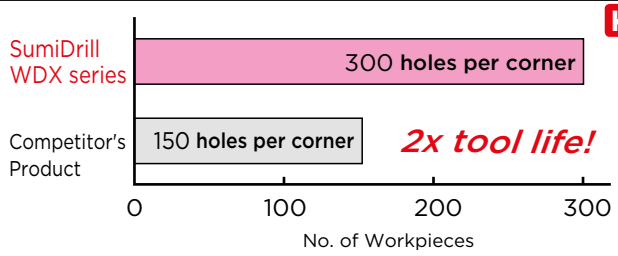
M Stainless Steel — General-purpose

G type ACP300

- When chips becomes long and tangled

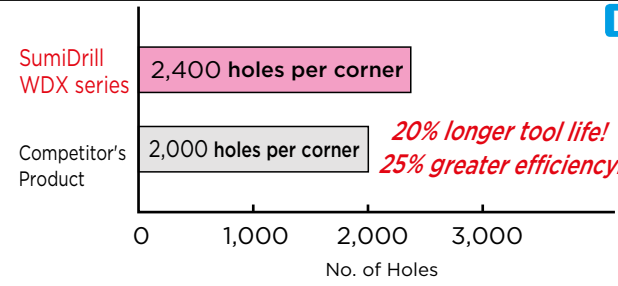
*ACP100 is the first recommendation for steel with a hardness of 200HB or greater, or for high-speed drilling of steel.

■ Application Examples



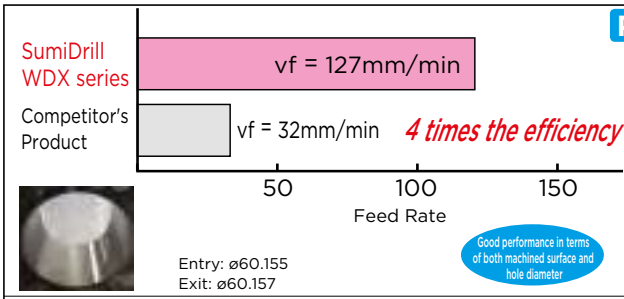
Work Material : Machine Component (GGG-40.3)
Tool : WDX 205D3S25
Insert : WDXT 063006-G (ACK300)
Cutting Conditions : vc = 122m/min, f = 0.15mm/rev, H = 33mm Through Wet

- Significant increase in tool life: twice that of conventional tools.
- Stable drilling with minimal cutting force.



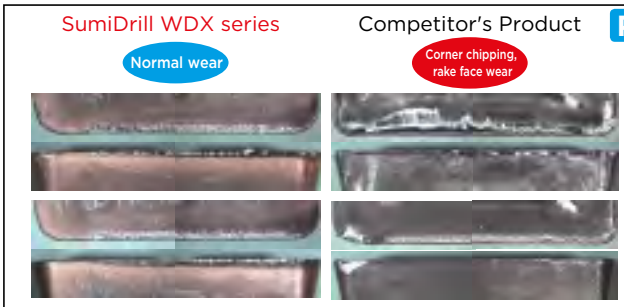
Work Material : Machine Component (42CrMo4)
Tool : WDX 200D3S25, Insert: WDXT 063006-G (ACP300)
Cutting Conditions : vc = 157m/min, f = 0.19mm/rev, H = 19mm Through Wet
(Competitor's Product : vc = 157m/min, f = 0.15mm/rev, H = 19mm Through Wet)

Good chip control even in high-efficiency conditions. Good stability with low vibration during drilling. 25% greater efficiency and 20% longer tool life.



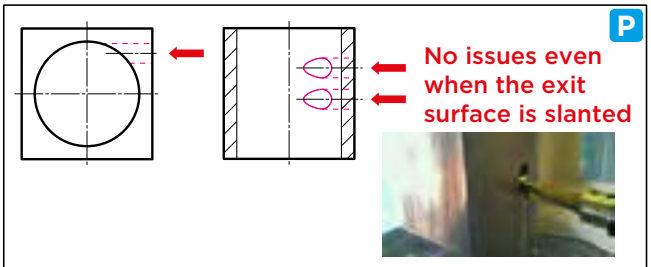
Work Material : Plate (C45E)
Tool : WDX 600D3S40
Insert : WDXT 186012-G (ACP300)
Cutting Conditions : vc = 150m/min, f = 0.16mm/rev, H = 60mm, Through, Wet
(Conventional Tool : vc = 30m/min, f = 0.20mm/rev, H = 60mm Through Wet)

- Achieves steady drilling even at large diameters
- Achieves 4 times the efficiency of conventional tools



Work Material : Tractor Link (30MnB5)
Tool : WDX 205D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : vc = 100m/min, f = 0.11mm/rev, H = 60mm Through Wet

- Achieves steady drilling even at L/D=5
- Reduces insert chipping and wear for stable tool life



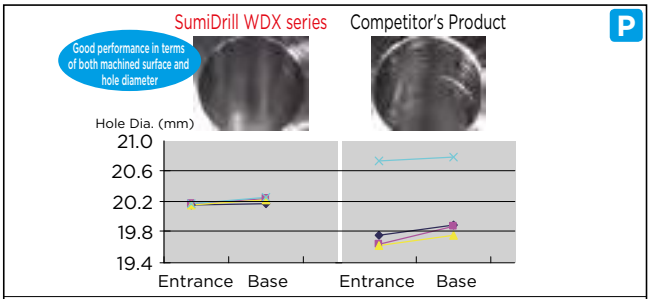
Work Material : Plate (C15)
Tool : WDX 430D3S40, Insert: WDXT 125012-H (ACP300)
Cutting Conditions : vc = 136m/min f = 0.15mm/rev H = 60+50mm (Semicircle Area) Through Wet

- Enables stable drilling even in unstable cutting conditions (interrupted drilling at the back end of the hole).
- Quieter drilling than conventional tools.



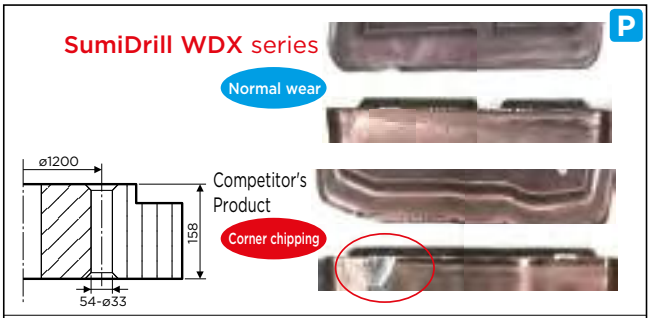
Work Material : Piping Component (X5CrNi18-10)
Tool : WDX210D3S25 Insert: WDXT063006-M (ACM300)
Cutting Conditions : vc = 105mm/min, f = 0.08mm/rev, H = 34mm, Wet

- Enables improved chip evacuation and stable drilling.



Work Material : Machine Component (15CrMo5)
Tool : WDX 200D3S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : vc = 185m/min, f = 0.12mm/rev, H = 87mm, Through, Wet

- Good machined surface
- Consistent drilled diameter



Work Material : Bearing for Wind Power Generator (42CrMo)
Tool : WDX330D5S40
Insert : WDXT094008-L (ACP300)
Cutting Conditions : vc = 146m/min, f = 0.10mm/rev, H = 158mm Through Wet

- Eliminates defects in workpieces caused by insert chipping

WDX series for 2D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 2D | Indexable Insert type

Drilling tolerance: -0.05 to +0.15mm

*For tolerances, refer to Chapter N - References.

Fig 1

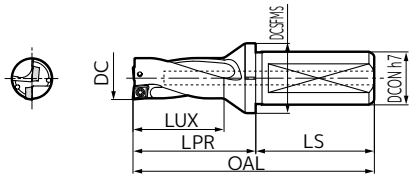


Fig 2

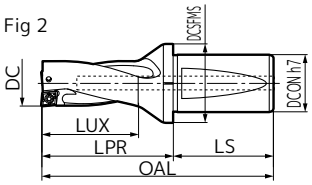
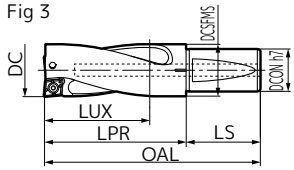


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	★	**WDX 130D2S20**	29	44	88	44	28.0	20	0.35	WDXT 042004	1
13.5	★	**135D2S20**	30	45	89	44	28.0	20	0.30		1
14.0	★	**140D2S20**	31	46	90	44	28.0	20	0.25		1
14.5	★	**145D2S20**	32	47	91	44	28.0	20	0.20		1
15.0	★	**150D2S20**	33	48	92	44	28.0	20	0.15		1
15.5	★	**WDX 155D2S20**	34	49	93	44	30.0	20	0.40	WDXT 052504	1
16.0	★	**160D2S20**	35	50	94	44	30.0	20			1
16.5	★	**165D2S20**	36	51	95	44	30.0	20	0.35		1
17.0	★	**170D2S20**	37	52	96	44	30.0	20	0.30		1
17.5	★	**WDX 175D2S25**	38	53	109	56	32.0	25	0.25		1
18.0	★	**180D2S25**	39	54	110	56	32.0	25	0.20		1
18.5	★	**WDX 185D2S25**	40	55	111	56	33.0	25	0.50	WDXT 063006	1
19.0	★	**190D2S25**	41	56	112	56	33.0	25	0.45		1
19.5	★	**195D2S25**	42	57	113	56	33.0	25	0.40		1
20.0	★	**200D2S25**	43	58	114	56	33.0	25	0.30		1
20.5	★	**205D2S25**	44	59	115	56	33.0	25			1
21.0	★	**210D2S25**	45	60	116	56	33.0	25	0.20		1
21.5	★	**215D2S25**	46	61	117	56	33.0	25	0.15		1
22.0	★	**220D2S25**	47	62	118	56	33.0	25	0.10		1
22.5	★	**225D2S25**	48	63	119	56	33.0	25	0.05		1
23.0	★	**WDX 230D2S25**	49	67	123	56	37.0	25	0.70	WDXT 073506	1
23.5	★	**235D2S25**	50	68	124	56	37.0	25			1
24.0	★	**240D2S25**	51	69	125	56	37.0	25	0.60		1
24.5	★	**245D2S25**	52	70	126	56	37.0	25	0.50		1
25.0	★	**250D2S25**	53	71	127	56	37.0	25			1
25.5	★	**WDX 255D2S32**	54	74	134	60	41.0	32	0.45		2
26.0	★	**260D2S32**	55	75	135	60	41.0	32	0.40		2
26.5	★	**265D2S32**	56	76	136	60	41.0	32	0.35		2
27.0	★	**270D2S32**	57	77	137	60	41.0	32	0.25		2
27.5	★	**275D2S32**	58	78	138	60	41.0	32	0.20		2
28.0	★	**280D2S32**	59	79	139	60	41.0	32	0.15		2
28.5	★	**285D2S32**	60	80	140	60	41.0	32	0.10		2
29.0	★	**WDX 290D2S32**	62	83	143	60	50.0	32	1.00	WDXT 094008	2
29.5	★	**295D2S32**	63	84	144	60	50.0	32	0.95		2
30.0*	★	**300D2S32**	64	88	148	60	54.0	32	0.90		2
31.0*	★	**310D2S32**	66	90	150	60	54.0	32	0.80		2
32.0*	★	**320D2S32**	68	92	152	60	54.0	32	0.70		2
30.0*	★	**WDX 300D2S40**	64	88	158	70	54.0	40	0.90		2
31.0*	★	**310D2S40**	66	90	160	70	54.0	40	0.80		2
32.0*	★	**320D2S40**	68	92	162	70	54.0	40	0.70		2
33.0	★	**330D2S40**	70	94	164	70	54.0	40	0.55		2
34.0	★	**340D2S40**	72	96	166	70	54.0	40	0.45		2
35.0	★	**350D2S40**	74	98	168	70	54.0	40	0.35		2
36.0	★	**360D2S40**	76	100	170	70	54.0	40	0.20		2
37.0	★	**WDX 370D2S40**	79	109	179	70	49.5	40	1.00	WDXT 125012	2
38.0	★	**380D2S40**	81	111	181	70	49.5	40			2
39.0	★	**390D2S40**	83	113	183	70	49.5	40	0.90		2
40.0	★	**400D2S40**	85	115	185	70	49.5	40	0.80		2
41.0	★	**410D2S40**	87	117	187	70	49.5	40	0.70		2
42.0	★	**420D2S40**	89	119	189	70	49.5	40	0.60		2
43.0	★	**430D2S40**	91	121	191	70	49.5	40	0.50		2
44.0	★	**440D2S40**	93	123	193	70	49.5	40			2
45.0	★	**450D2S40**	95	125	195	70	49.5	40	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J193

Diameter ø46.0 to 68.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	★	**WDX 460D2S40**	97	127	197	70	49.5	40	1.50	WDXT 156012	2
47.0	★	**470D2S40**	99	129	199	70	49.5	40	1.40		2
48.0	★	**480D2S40**	101	131	201	70	49.5	40	1.30		2
49.0	★	**490D2S40**	103	133	203	70	49.5	40	1.20		2
50.0	★	**500D2S40**	105	135	205	70	49.5	40	1.10		2
51.0	★	**510D2S40**	107	137	207	70	49.5	40	1.00		3
52.0	★	**520D2S40**	109	139	209	70	50.5	40	0.90		3
53.0	★	**530D2S40**	111	141	211	70	51.5	40	0.80		3
54.0	★	**540D2S40**	113	143	213	70	52.5	40	0.60		3
55.0	★	**550D2S40**	115	145	215	70	53.5	40	0.50		3
56.0	★	**WDX 560D2S40**	120	152	222	70	54.0	40	2.00	WDXT 186012	3
57.0	★	**570D2S40**	122	154	224	70	55.0	40	1.80		3
58.0	★	**580D2S40**	124	156	226	70	56.0	40	1.70		3
59.0	★	**590D2S40**	126	158	228	70	57.0	40	1.60		3
60.0	★	**600D2S40**	128	160	230	70	58.0	40	1.50		3
61.0	★	**610D2S40**	130	162	232	70	59.0	40	1.40		3
62.0	★	**620D2S40**	132	164	234	70	60.0	40	1.30		3
63.0	★	**630D2S40**	134	166	236	70	61.0	40	1.20		3
64.0	★	**640D2S40**	136	168	238	70	62.0	40	1.00		3
65.0	★	**650D2S40**	138	170	240	70	63.0	40	0.90		3
66.0	★	**660D2S40**	140	172	242	70	64.0	40	0.70		3
67.0	★	**670D2S40**	142	174	244	70	65.0	40	0.60		3
68.0	★	**680D2S40**	144	176	246	70	66.0	40	0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
WDX130D2S20 to WDX150D2S20	BFTX01604N	**0.3**	TRX06	—	SUMI-P
WDX155D2S20 to WDX180D2S25	BFTX0204N	**0.5**	TRX06	—	
WDX185D2S25 to WDX225D2S25	BFTY02206	**1.0**	—	TRD07	
WDX230D2S25 to WDX285D2S32	BFTX02506N	**1.5**	—	TRD08	
WDX290D2S32 to WDX360D2S40	BFTX03584	**3.5**	—	TRD15	
WDX370D2S40 to WDX450D2S40	BFTX0511N	**5.0**	—	TRD20	
WDX460D2S40 to WDX680D2S40	BFTX0615N	**5.0**	—	TRD25	

Identification Code

WDX 200 D2 S25

- WDX: Dia. DC (ø20.0)
- D2: Flute Length L/D (2D)
- S25: Shank Dia. DCON (ø25.0)

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WDX series for 2D (Internal Coolant Supply)

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting	P K					N						
	Medium Cutting		P	M S	M								
	Roughing		P			K							
Cat. No.		ACP100	ACP300	ACS3000	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder
WDXT 042004-L		★	★			★		1	4.2	2.0	0.4	0.4	WDX130D2S20 to WDX150D2S20
042004-G		★	★			★	★	2	4.2	2.0	0.4	0.4	
042004-H		★	★			★		3	4.2	2.0	0.4	0.4	
042004-M				★	▲			4	4.2	2.0	0.4	0.8	
WDXT 052504-L		★	★			★		1	5.0	2.5	0.4	0.4	WDX155D2S20 to WDX180D2S25
052504-G		★	★			★	★	2	5.0	2.5	0.4	0.4	
052504-H		★	★			★		3	5.0	2.5	0.4	0.4	
052504-M				★	▲			4	5.0	2.5	0.4	1.0	
WDXT 063006-L		★	★			★		1	6.0	3.0	0.6	0.6	WDX185D2S25 to WDX225D2S25
063006-G		★	★			★	★	2	6.0	3.0	0.6	0.6	
063006-H		★	★			★		3	6.0	3.0	0.6	0.6	
063006-M				★	▲			4	6.0	3.0	0.6	1.4	
WDXT 073506-L		★	★			★		1	7.5	3.5	0.6	0.6	WDX230D2S25 to WDX285D2S32
073506-G		★	★			★	★	2	7.5	3.5	0.6	0.6	
073506-H		★	★			★		3	7.5	3.5	0.6	0.6	
073506-M				★	▲			4	7.5	3.5	0.6	1.6	
WDXT 094008-L		★	★			★		1	9.6	4.0	0.8	0.8	WDX290D2S32 to WDX360D2S40
094008-G		★	★			★	★	2	9.6	4.0	0.8	0.8	
094008-H		★	★			★		3	9.6	4.0	0.8	0.8	
094008-M				★	▲			4	9.6	4.0	0.8	2.4	
WDXT 125012-L		★	★			★		1	12.4	5.0	1.2	1.2	WDX370D2S40 to WDX450D2S40
125012-G		★	★			★	★	2	12.4	5.0	1.2	1.2	
125012-H		★	★			★		3	12.4	5.0	1.2	1.2	
125012-M				★	▲			4	12.4	5.0	1.2	3.2	
WDXT 156012-L		★	★			★		1	15.2	6.0	1.2	1.2	WDX460D2S40 to WDX550D2S40
156012-G		★	★			★	★	2	15.2	6.0	1.2	1.2	
156012-H		★	★			★		3	15.2	6.0	1.2	1.2	
WDXT 186012-L		★	★			★		1	18.0	6.0	1.2	1.2	WDX560D2S40 to WDX680D2S40
186012-G		★	★			★		2	18.0	6.0	1.2	1.2	
186012-H		★	★			★		3	18.0	6.0	1.2	1.2	

Fig 1 For low feed with chip control

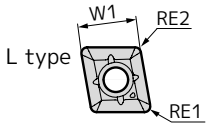


Fig 2 General-purpose

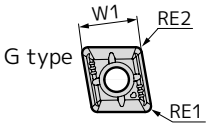


Fig 3 Strong-edged type

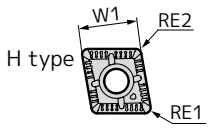
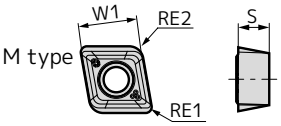


Fig 4 For stainless steel drilling



Identification Code

WDXT 06 30 06 -G

- WDXT: Width across Flats (6.0)
- 06: Thickness x 10 (3.0)
- 30: Corner Radius x 10 (0.6)
- 06: Chipbreaker type
- -G: Chipbreaker type

Recommended Cutting Conditions (for 2D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	f Feed Rate (mm/rev) <Min. - **Optimum** - Max.> ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø68.0
2D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.06**-0.10	0.05-**0.06**-0.10	0.05-**0.06**-0.11	0.05-**0.07**-0.12	0.06-**0.08**-0.13
			C15	125	L	ACP300	130-**170**-220	0.04-**0.06**-0.12	0.04-**0.06**-0.12	0.04-**0.06**-0.13	0.05-**0.07**-0.15	0.06-**0.08**-0.17
			C45	190	G	ACP300	100-**150**-200	0.08-**0.13**-0.24	0.08-**0.13**-0.24	0.08-**0.14**-0.26	0.09-**0.16**-0.29	0.10-**0.17**-0.32
			C45 Hardened	250	G	ACP100	100-**170**-240	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.17	0.06-**0.11**-0.18
			C75	270	G	ACP100	120-**180**-240	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.07-**0.12**-0.19	0.08-**0.13**-0.21
			C75 Hardened	300	G	ACP100	85-**150**-210	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.15	0.06-**0.11**-0.17
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.08**-0.14	0.05-**0.08**-0.14	0.05-**0.08**-0.16	0.06-**0.09**-0.17	0.07-**0.10**-0.19
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16	0.08-**0.11**-0.17
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16	0.08-**0.11**-0.17
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16	0.08-**0.11**-0.17
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.08-**0.12**-0.17	0.08-**0.12**-0.17	0.08-**0.12**-0.18	0.09-**0.12**-0.21	0.10-**0.13**-0.22
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.15	0.07-**0.11**-0.16	0.08-**0.11**-0.17
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
	K	Cast Iron			G	ACK300	120-**160**-200	0.09-**0.20**-0.32	0.10-**0.22**-0.36	0.11-**0.24**-0.39	0.12-**0.26**-0.44	0.13-**0.29**-0.48
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.09-**0.20**-0.32	0.10-**0.22**-0.36	0.11-**0.24**-0.39	0.12-**0.26**-0.44	0.13-**0.29**-0.48
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25-**50**-70	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22	0.08-**0.14**-0.24
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20	0.08-**0.14**-0.22
		Copper Alloy			G	DL1500	180-**230**-280	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20	0.08-**0.14**-0.22

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WDX series for 3D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 3D | Indexable Insert type

Drilling tolerance: 0 to +0.20mm

*For tolerances, refer to Chapter N - References.

Fig 1

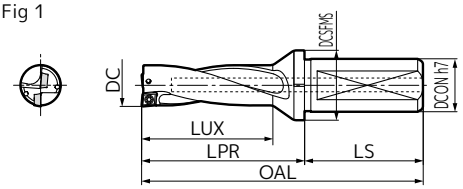


Fig 2

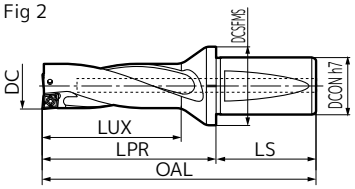
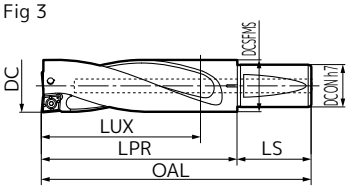


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	★	WDX 130D3S20	42.0	57.0	101.0	44	28.0	20	0.35	WDXT 042004	1
13.5	★	135D3S20	43.5	58.5	102.5	44	28.0	20	0.30		1
14.0	★	140D3S20	45.0	60.0	104.0	44	28.0	20	0.25		1
14.5	★	145D3S20	46.5	61.5	105.5	44	28.0	20	0.20		1
15.0	★	150D3S20	48.0	63.0	107.0	44	28.0	20	0.15		1
15.5	★	WDX 155D3S20	49.5	64.5	108.5	44	30.0	20	0.40	WDXT 052504	1
16.0	★	160D3S20	51.0	66.0	110.0	44	30.0	20			1
16.5	★	165D3S20	52.5	67.5	111.5	44	30.0	20	0.35		1
17.0	★	170D3S20	54.0	69.0	113.0	44	30.0	20	0.30		1
17.5	★	WDX 175D3S25	55.5	70.5	126.5	56	32.0	25	0.25		1
18.0	★	180D3S25	57.0	72.0	128.0	56	32.0	25	0.20		1
18.5	★	WDX 185D3S25	58.5	73.5	129.5	56	33.0	25	0.50	WDXT 063006	1
19.0	★	190D3S25	60.0	75.0	131.0	56	33.0	25	0.45		1
19.5	★	195D3S25	61.5	76.5	132.5	56	33.0	25	0.40		1
20.0	★	200D3S25	63.0	78.0	134.0	56	33.0	25	0.30		1
20.5	★	205D3S25	64.5	79.5	135.5	56	33.0	25			1
21.0	★	210D3S25	66.0	81.0	137.0	56	33.0	25	0.20		1
21.5	★	215D3S25	67.5	82.5	138.5	56	33.0	25	0.15		1
22.0	★	220D3S25	69.0	84.0	140.0	56	33.0	25	0.10		1
22.5	★	225D3S25	70.5	85.5	141.5	56	33.0	25	0.05		1
23.0	★	WDX 230D3S25	72.0	90.0	146.0	56	37.0	25	0.70	WDXT 073506	1
23.5	★	235D3S25	73.5	91.5	147.5	56	37.0	25			1
24.0	★	240D3S25	75.0	93.0	149.0	56	37.0	25	0.60		1
24.5	★	245D3S25	76.5	94.5	150.5	56	37.0	25	0.50		1
25.0	★	250D3S25	78.0	96.0	152.0	56	37.0	25			1
25.5	★	WDX 255D3S32	79.5	99.5	159.5	60	41.0	32	0.45		2
26.0	★	260D3S32	81.0	101.0	161.0	60	41.0	32	0.40		2
26.5	★	265D3S32	82.5	102.5	162.5	60	41.0	32	0.35		2
27.0	★	270D3S32	84.0	104.0	164.0	60	41.0	32	0.25		2
27.5	★	275D3S32	85.5	105.5	165.5	60	41.0	32	0.20		2
28.0	★	280D3S32	87.0	107.0	167.0	60	41.0	32	0.15		2
28.5	★	285D3S32	88.5	108.5	168.5	60	41.0	32	0.10		2
29.0	★	WDX 290D3S32	91.0	112.0	172.0	60	50.0	32	1.00	WDXT 094008	2
29.5	★	295D3S32	92.5	113.5	173.5	60	50.0	32	0.95		2
30.0*	★	300D3S32	94.0	118.0	178.0	60	54.0	32	0.90		2
31.0*	★	310D3S32	97.0	121.0	181.0	60	54.0	32	0.80		2
32.0*	★	320D3S32	100.0	124.0	184.0	60	54.0	32	0.70		2
30.0*	★	WDX 300D3S40	94.0	118.0	188.0	70	54.0	40	0.90		2
31.0*	★	310D3S40	97.0	121.0	191.0	70	54.0	40	0.80		2
32.0*	★	320D3S40	100.0	124.0	194.0	70	54.0	40	0.70		2
33.0	★	330D3S40	103.0	127.0	197.0	70	54.0	40	0.55		2
34.0	★	340D3S40	106.0	130.0	200.0	70	54.0	40	0.45		2
35.0	★	350D3S40	109.0	133.0	203.0	70	54.0	40	0.35		2
36.0	★	360D3S40	112.0	136.0	206.0	70	54.0	40	0.20		2
37.0	★	WDX 370D3S40	116.0	146.0	216.0	70	49.5	40	1.00	WDXT 125012	2
38.0	★	380D3S40	119.0	149.0	219.0	70	49.5	40			2
39.0	★	390D3S40	122.0	152.0	222.0	70	49.5	40	0.90		2
40.0	★	400D3S40	125.0	155.0	225.0	70	49.5	40	0.80		2
41.0	★	410D3S40	128.0	158.0	228.0	70	49.5	40	0.70		2
42.0	★	420D3S40	131.0	161.0	231.0	70	49.5	40	0.60		2
43.0	★	430D3S40	134.0	164.0	234.0	70	49.5	40	0.50		2
44.0	★	440D3S40	137.0	167.0	237.0	70	49.5	40			2
45.0	★	450D3S40	140.0	170.0	240.0	70	49.5	40	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J193

Diameter ø46.0 to 68.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	★	WDX 460D3S40	143.0	173.0	243.0	70	49.5	40	1.50	WDXT 156012	2
47.0	★	470D3S40	146.0	176.0	246.0	70	49.5	40	1.40		2
48.0	★	480D3S40	149.0	179.0	249.0	70	49.5	40	1.30		2
49.0	★	490D3S40	152.0	182.0	252.0	70	49.5	40	1.20		2
50.0	★	500D3S40	155.0	185.0	255.0	70	49.5	40	1.10		2
51.0	★	510D3S40	158.0	188.0	258.0	70	49.5	40	1.00		3
52.0	★	520D3S40	161.0	191.0	261.0	70	50.5	40	0.90		3
53.0	★	530D3S40	164.0	194.0	264.0	70	51.5	40	0.80		3
54.0	★	540D3S40	167.0	197.0	267.0	70	52.5	40	0.60		3
55.0	★	550D3S40	170.0	200.0	270.0	70	53.5	40	0.50		3
56.0	★	WDX 560D3S40	176.0	208.0	278.0	70	54.0	40	2.00	WDXT 186012	3
57.0	★	570D3S40	179.0	211.0	281.0	70	55.0	40	1.80		3
58.0	★	580D3S40	182.0	214.0	284.0	70	56.0	40	1.70		3
59.0	★	590D3S40	185.0	217.0	287.0	70	57.0	40	1.60		3
60.0	★	600D3S40	188.0	220.0	290.0	70	58.0	40	1.50		3
61.0	★	610D3S40	191.0	223.0	293.0	70	59.0	40	1.40		3
62.0	★	620D3S40	194.0	226.0	296.0	70	60.0	40	1.30		3
63.0	★	630D3S40	197.0	229.0	299.0	70	61.0	40	1.20		3
64.0	★	640D3S40	200.0	232.0	302.0	70	62.0	40	1.00		3
65.0	★	650D3S40	203.0	235.0	305.0	70	63.0	40	0.90		3
66.0	★	660D3S40	206.0	238.0	308.0	70	64.0	40	0.70		3
67.0	★	670D3S40	209.0	241.0	311.0	70	65.0	40	0.60		3
68.0	★	680D3S40	212.0	244.0	314.0	70	66.0	40	0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
WDX130D3S20 to WDX150D3S20	BFTX01604N	0.3	TRX06	—	SUMI-P
WDX155D3S20 to WDX180D3S25	BFTX0204N	0.5	TRX06	—	
WDX185D3S25 to WDX225D3S25	BFTY02206	1.0	—	TRD07	
WDX230D3S25 to WDX285D3S32	BFTX02506N	1.5	—	TRD08	
WDX290D3S32 to WDX360D3S40	BFTX03584	3.5	—	TRD15	
WDX370D3S40 to WDX450D3S40	BFTX0511N	5.0	—	TRD20	
WDX460D3S40 to WDX680D3S40	BFTX0615N	5.0	—	TRD25	

Identification Code

WDX 200 D3 S25

- WDX: Dia. DC (ø20.0)
- D3: Flute Length L/D (3D)
- S25: Shank Dia. DCON (ø25.0)

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

WDX series for 3D (Internal Coolant Supply)

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting	P,K					N						
	Medium Cutting		P	M,S	M								
	Roughing		P			K							
Cat. No.		ACP100	ACP300	ACS3000	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder
WDXT 042004-L		★	★			★		1	4.2	2.0	0.4	0.4	WDX130D3S20 to WDX150D3S20
042004-G		★	★			★	★	2	4.2	2.0	0.4	0.4	
042004-H		★	★			★		3	4.2	2.0	0.4	0.4	
042004-M				★	▲			4	4.2	2.0	0.4	0.8	
WDXT 052504-L		★	★			★		1	5.0	2.5	0.4	0.4	WDX155D3S20 to WDX180D3S25
052504-G		★	★			★	★	2	5.0	2.5	0.4	0.4	
052504-H		★	★			★		3	5.0	2.5	0.4	0.4	
052504-M				★	▲			4	5.0	2.5	0.4	1.0	
WDXT 063006-L		★	★			★		1	6.0	3.0	0.6	0.6	WDX185D3S25 to WDX225D3S25
063006-G		★	★			★	★	2	6.0	3.0	0.6	0.6	
063006-H		★	★			★		3	6.0	3.0	0.6	0.6	
063006-M				★	▲			4	6.0	3.0	0.6	1.4	
WDXT 073506-L		★	★			★		1	7.5	3.5	0.6	0.6	WDX230D3S25 to WDX285D3S32
073506-G		★	★			★	★	2	7.5	3.5	0.6	0.6	
073506-H		★	★			★		3	7.5	3.5	0.6	0.6	
073506-M				★	▲			4	7.5	3.5	0.6	1.6	
WDXT 094008-L		★	★			★		1	9.6	4.0	0.8	0.8	WDX290D3S32 to WDX360D3S40
094008-G		★	★			★	★	2	9.6	4.0	0.8	0.8	
094008-H		★	★			★		3	9.6	4.0	0.8	0.8	
094008-M				★	▲			4	9.6	4.0	0.8	2.4	
WDXT 125012-L		★	★			★		1	12.4	5.0	1.2	1.2	WDX370D3S40 to WDX450D3S40
125012-G		★	★			★	★	2	12.4	5.0	1.2	1.2	
125012-H		★	★			★		3	12.4	5.0	1.2	1.2	
125012-M				★	▲			4	12.4	5.0	1.2	3.2	
WDXT 156012-L		★	★			★		1	15.2	6.0	1.2	1.2	WDX460D3S40 to WDX550D3S40
156012-G		★	★			★	★	2	15.2	6.0	1.2	1.2	
156012-H		★	★			★		3	15.2	6.0	1.2	1.2	
WDXT 186012-L		★	★			★		1	18.0	6.0	1.2	1.2	WDX560D3S40 to WDX680D3S40
186012-G		★	★			★		2	18.0	6.0	1.2	1.2	
186012-H		★	★			★		3	18.0	6.0	1.2	1.2	

Fig 1 For low feed with chip control

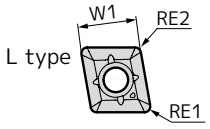


Fig 2 General-purpose

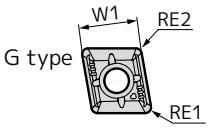


Fig 3 Strong-edged type

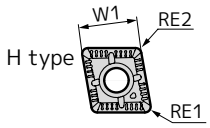
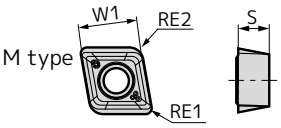


Fig 4 For stainless steel drilling



Identification Code

WDXT 06 30 06 -G

- 06: Width across Flats (6.0)
- 30: Thickness x 10 (3.0)
- 06: Corner Radius x 10 (0.6)
- -G: Chipbreaker type

Recommended Cutting Conditions (for 3D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	f Feed Rate (mm/rev) <Min. - **Optimum** - Max.> ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø68.0
3D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.06**-0.10	0.05-**0.06**-0.10	0.05-**0.06**-0.11	0.05-**0.07**-0.12	0.06-**0.08**-0.13
			C15	125	L	ACP300	130-**170**-220	0.04-**0.06**-0.10	0.04-**0.06**-0.10	0.04-**0.06**-0.11	0.05-**0.07**-0.12	0.06-**0.08**-0.13
			C45	190	G	ACP300	100-**150**-200	0.08-**0.12**-0.20	0.08-**0.12**-0.20	0.08-**0.13**-0.22	0.09-**0.14**-0.24	0.10-**0.16**-0.27
			C45 Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.09**-0.14	0.06-**0.10**-0.15
			C75	270	G	ACP100	120-**180**-240	0.06-**0.09**-0.14	0.06-**0.09**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.17	0.08-**0.12**-0.18
			C75 Hardened	300	G	ACP100	85-**150**-210	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.09**-0.14	0.06-**0.10**-0.14
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.12	0.05-**0.07**-0.12	0.05-**0.08**-0.13	0.06-**0.08**-0.15	0.07-**0.09**-0.16
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.08-**0.11**-0.14	0.08-**0.12**-0.15	0.08-**0.12**-0.16	0.09-**0.14**-0.18	0.10-**0.14**-0.19
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
	K	Cast Iron			G	ACK300	120-**160**-200	0.09-**0.18**-0.27	0.10-**0.20**-0.30	0.11-**0.22**-0.32	0.12-**0.24**-0.36	0.13-**0.26**-0.40
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.09-**0.18**-0.27	0.10-**0.20**-0.30	0.11-**0.22**-0.32	0.12-**0.24**-0.36	0.13-**0.26**-0.40
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25-**50**-70	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18	0.08-**0.13**-0.20
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20	0.08-**0.14**-0.22
		Copper Alloy			G	DL1500	180-**230**-280	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20	0.08-**0.14**-0.22

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WDX series for 4D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 4D | Indexable insert type

Drilling tolerance: 0 to +0.25mm

*For tolerances, refer to Chapter N - References.

Fig 1

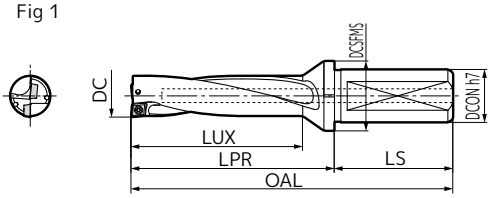


Fig 2

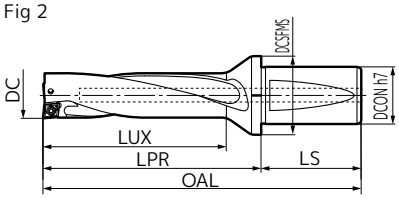
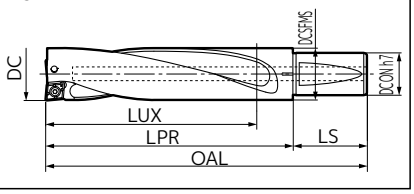


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	★	WDX 130D4S20	55	70	114	44	28.0	20	0.35	WDXT 042004	1
13.5	★	135D4S20	57	72	116	44	28.0	20	0.30		1
14.0	★	140D4S20	59	74	118	44	28.0	20	0.25		1
14.5	★	145D4S20	61	76	120	44	28.0	20	0.20		1
15.0	★	150D4S20	63	78	122	44	28.0	20	0.15		1
15.5	★	WDX 155D4S20	65	80	124	44	30.0	20	0.40		1
16.0	★	160D4S20	67	82	126	44	30.0	20			1
16.5	★	165D4S20	69	84	128	44	30.0	20	0.35	WDXT 052504	1
17.0	★	170D4S20	71	86	130	44	30.0	20	0.30		1
17.5	★	WDX 175D4S25	73	88	144	56	32.0	25	0.25		1
18.0	★	180D4S25	75	90	146	56	32.0	25	0.20		1
18.5	★	WDX 185D4S25	77	92	148	56	33.0	25	0.50		1
19.0	★	190D4S25	79	94	150	56	33.0	25	0.45		1
19.5	★	195D4S25	81	96	152	56	33.0	25	0.40		1
20.0	★	200D4S25	83	98	154	56	33.0	25	0.30		1
20.5	★	205D4S25	85	100	156	56	33.0	25			1
21.0	★	210D4S25	87	102	158	56	33.0	25	0.20	WDXT 063006	1
21.5	★	215D4S25	89	104	160	56	33.0	25	0.15		1
22.0	★	220D4S25	91	106	162	56	33.0	25	0.10		1
22.5	★	225D4S25	93	108	164	56	33.0	25	0.05		1
23.0	★	WDX 230D4S25	95	113	169	56	37.0	25	0.70		1
23.5	★	235D4S25	97	115	171	56	37.0	25			1
24.0	★	240D4S25	99	117	173	56	37.0	25	0.60		1
24.5	★	245D4S25	101	119	175	56	37.0	25	0.50		1
25.0	★	250D4S25	103	121	177	56	37.0	25			1
25.5	★	WDX 255D4S32	105	125	185	60	41.0	32	0.45	WDXT 073506	2
26.0	★	260D4S32	107	127	187	60	41.0	32	0.40		2
26.5	★	265D4S32	109	129	189	60	41.0	32	0.35		2
27.0	★	270D4S32	111	131	191	60	41.0	32	0.25		2
27.5	★	275D4S32	113	133	193	60	41.0	32	0.20		2
28.0	★	280D4S32	115	135	195	60	41.0	32	0.15		2
28.5	★	285D4S32	117	137	197	60	41.0	32	0.10		2
29.0	★	WDX 290D4S32	120	141	201	60	50.0	32	1.00		2
29.5	★	295D4S32	122	143	203	60	50.0	32	0.95		2
30.0*	★	300D4S32	124	148	208	60	54.0	32	0.90		2
31.0*	★	310D4S32	128	152	212	60	54.0	32	0.80		2
32.0*	★	320D4S32	132	156	216	60	54.0	32	0.70		2
30.0*	★	WDX 300D4S40	124	148	218	70	54.0	40	0.90	WDXT 094008	2
31.0*	★	310D4S40	128	152	222	70	54.0	40	0.80		2
32.0*	★	320D4S40	132	156	226	70	54.0	40	0.70		2
33.0	★	330D4S40	136	160	230	70	54.0	40	0.55		2
34.0	★	340D4S40	140	164	234	70	54.0	40	0.45		2
35.0	★	350D4S40	144	168	238	70	54.0	40	0.35		2
36.0	★	360D4S40	148	172	242	70	54.0	40	0.20		2
37.0	★	WDX 370D4S40	153	183	253	70	49.5	40	1.00		2
38.0	★	380D4S40	157	187	257	70	49.5	40			2
39.0	★	390D4S40	161	191	261	70	49.5	40	0.90		2
40.0	★	400D4S40	165	195	265	70	49.5	40	0.80		2
41.0	★	410D4S40	169	199	269	70	49.5	40	0.70	WDXT 125012	2
42.0	★	420D4S40	173	203	273	70	49.5	40	0.60		2
43.0	★	430D4S40	177	207	277	70	49.5	40	0.50		2
44.0	★	440D4S40	181	211	281	70	49.5	40			2
45.0	★	450D4S40	185	215	285	70	49.5	40	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J193

Diameter ø46.0 to 63.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	★	WDX 460D4S40	189	219	289	70	49.5	40	1.50		2
47.0	★	470D4S40	193	223	293	70	49.5	40	1.40		2
48.0	★	480D4S40	197	227	297	70	49.5	40	1.30		2
49.0	★	490D4S40	201	231	301	70	49.5	40	1.20		2
50.0	★	500D4S40	205	235	305	70	49.5	40	1.10	WDXT 156012	2
51.0	★	510D4S40	209	239	309	70	49.5	40	1.00		3
52.0	★	520D4S40	213	243	313	70	50.5	40	0.90		3
53.0	★	530D4S40	217	247	317	70	51.5	40	0.80		3
54.0	★	540D4S40	221	251	321	70	52.5	40	0.60		3
55.0	★	550D4S40	225	255	325	70	53.5	40	0.50		3
56.0	★	WDX 560D4S40	232	264	334	70	54.0	40	2.00		3
57.0	★	570D4S40	236	268	338	70	55.0	40	1.80		3
58.0	★	580D4S40	240	272	342	70	56.0	40	1.70		3
59.0	★	590D4S40	244	276	346	70	57.0	40	1.60	WDXT 186012	3
60.0	★	600D4S40	248	280	350	70	58.0	40	1.50		3
61.0	★	610D4S40	252	284	354	70	59.0	40	1.40		3
62.0	★	620D4S40	256	288	358	70	60.0	40	1.30		3
63.0	★	630D4S40	260	292	362	70	61.0	40	1.20		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
WDX130D4S20 to WDX150D4S20	BFTX01604N	0.3	TRX06	—	SUMI-P
WDX155D4S20 to WDX180D4S25	BFTX0204N	0.5	TRX06	—	
WDX185D4S25 to WDX225D4S25	BFTY02206	1.0	—	TRD07	
WDX230D4S25 to WDX285D4S32	BFTX02506N	1.5	—	TRD08	
WDX290D4S32 to WDX360D4S40	BFTX03584	3.5	—	TRD15	
WDX370D4S40 to WDX450D4S40	BFTX0511N	5.0	—	TRD20	
WDX460D4S40 to WDX630D4S40	BFTX0615N	5.0	—	TRD25	

Identification Code

WDX 200 D4 S25

- WDX: Dia. DC (ø20.0)
- D4: Flute Length L/D (4D)
- S25: Shank Dia. DCON (ø25.0)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WDX series for 4D (Internal Coolant Supply)

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting	P K					N						
	Medium Cutting		P	M S	M								
	Roughing		P			K							
Cat. No.		ACP100	ACP300	ACS3000	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder
WDXT 042004-L		★	★			★		1	4.2	2.0	0.4	0.4	WDX130D4S20 to WDX150D4S20
042004-G		★	★			★	★	2	4.2	2.0	0.4	0.4	
042004-H		★	★			★		3	4.2	2.0	0.4	0.4	
042004-M				★	▲			4	4.2	2.0	0.4	0.8	
WDXT 052504-L		★	★			★		1	5.0	2.5	0.4	0.4	WDX155D4S20 to WDX180D4S25
052504-G		★	★			★	★	2	5.0	2.5	0.4	0.4	
052504-H		★	★			★		3	5.0	2.5	0.4	0.4	
052504-M				★	▲			4	5.0	2.5	0.4	1.0	
WDXT 063006-L		★	★			★		1	6.0	3.0	0.6	0.6	WDX185D4S25 to WDX225D4S25
063006-G		★	★			★	★	2	6.0	3.0	0.6	0.6	
063006-H		★	★			★		3	6.0	3.0	0.6	0.6	
063006-M				★	▲			4	6.0	3.0	0.6	1.4	
WDXT 073506-L		★	★			★		1	7.5	3.5	0.6	0.6	WDX230D4S25 to WDX285D4S32
073506-G		★	★			★	★	2	7.5	3.5	0.6	0.6	
073506-H		★	★			★		3	7.5	3.5	0.6	0.6	
073506-M				★	▲			4	7.5	3.5	0.6	1.6	
WDXT 094008-L		★	★			★		1	9.6	4.0	0.8	0.8	WDX290D4S32 to WDX360D4S40
094008-G		★	★			★	★	2	9.6	4.0	0.8	0.8	
094008-H		★	★			★		3	9.6	4.0	0.8	0.8	
094008-M				★	▲			4	9.6	4.0	0.8	2.4	
WDXT 125012-L		★	★			★		1	12.4	5.0	1.2	1.2	WDX370D4S40 to WDX450D4S40
125012-G		★	★			★	★	2	12.4	5.0	1.2	1.2	
125012-H		★	★			★		3	12.4	5.0	1.2	1.2	
125012-M				★	▲			4	12.4	5.0	1.2	3.2	
WDXT 156012-L		★	★			★		1	15.2	6.0	1.2	1.2	WDX460D4S40 to WDX550D4S40
156012-G		★	★			★	★	2	15.2	6.0	1.2	1.2	
156012-H		★	★			★		3	15.2	6.0	1.2	1.2	
WDXT 186012-L		★	★			★		1	18.0	6.0	1.2	1.2	WDX560D4S40 to WDX630D4S40
186012-G		★	★			★		2	18.0	6.0	1.2	1.2	
186012-H		★	★			★		3	18.0	6.0	1.2	1.2	

Fig 1 For low feed with chip control

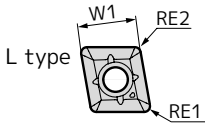


Fig 2 General-purpose

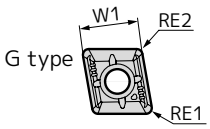


Fig 3 Strong-edged type

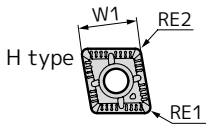
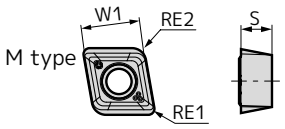


Fig 4 For stainless steel drilling



Identification Code

WDXT 06 30 06 -G

- 06: Width across Flats (6.0)
- 30: Thickness x 10 (3.0)
- 06: Corner Radius x 10 (0.6)
- -G: Chipbreaker type

Recommended Cutting Conditions (for 4D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	f Feed Rate (mm/rev) <Min. - **Optimum** - Max.> ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø63.0
4D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.06**-0.10	0.05-**0.06**-0.10	0.05-**0.06**-0.10	0.05-**0.07**-0.10	0.06-**0.08**-0.11
			C15	125	L	ACP300	130-**170**-220	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10	0.06-**0.08**-0.11
			C45	190	G	ACP300	100-**150**-200	0.08-**0.11**-0.17	0.08-**0.11**-0.17	0.08-**0.12**-0.18	0.09-**0.14**-0.21	0.10-**0.15**-0.23
			C45 Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.09**-0.13
			C75	270	G	ACP100	120-**180**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.09**-0.13	0.07-**0.11**-0.14	0.08-**0.11**-0.15
			C75 Hardened	300	G	ACP100	85-**150**-210	0.05-**0.07**-0.09	0.05-**0.07**-0.09	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.09**-0.12
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.11	0.06-**0.08**-0.12	0.07-**0.09**-0.14
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.06-**0.10**-0.13	0.07-**0.11**-0.14	0.07-**0.11**-0.15	0.08-**0.12**-0.16	0.09-**0.13**-0.17
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	120-**150**-180	0.06-**0.08**-0.13	0.06-**0.08**-0.13	0.06-**0.08**-0.14	0.07-**0.09**-0.14	0.08-**0.11**-0.14
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.06-**0.08**-0.13	0.06-**0.08**-0.13	0.06-**0.08**-0.14	0.07-**0.09**-0.14	0.08-**0.11**-0.14
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	120-**150**-180	0.06-**0.08**-0.13	0.06-**0.08**-0.13	0.06-**0.08**-0.14	0.07-**0.09**-0.14	0.08-**0.11**-0.14
	K	Cast Iron			G	ACK300	120-**160**-200	0.09-**0.17**-0.23	0.10-**0.19**-0.26	0.11-**0.21**-0.28	0.12-**0.23**-0.31	0.13-**0.25**-0.34
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.09-**0.17**-0.23	0.10-**0.19**-0.26	0.11-**0.21**-0.28	0.12-**0.23**-0.31	0.13-**0.25**-0.34
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25-**50**-70	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15	0.08-**0.12**-0.17
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18	0.07-**0.13**-0.20
		Copper Alloy			G	DL1500	180-**230**-280	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18	0.07-**0.13**-0.20

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WDX series for 5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 5D | Indexable insert type

Drilling tolerance: 0 to +0.25mm

*For tolerances, refer to Chapter N - References.

Fig 1

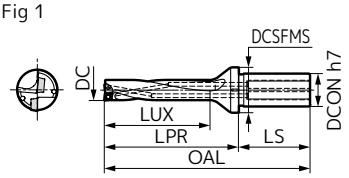


Fig 2

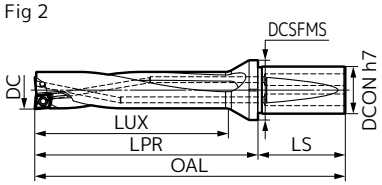
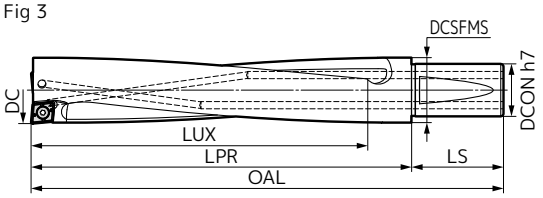


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	★	**WDX 130D5S20**	68.0	83.0	127.0	44	28.0	20.0	0.35	WDXT 042004	1
13.5	★	**135D5S20**	70.5	85.5	129.5	44	28.0	20.0	0.30		1
14.0	★	**140D5S20**	73.0	88.0	132.0	44	28.0	20.0	0.25		1
14.5	★	**145D5S20**	75.5	90.5	134.5	44	28.0	20.0	0.20		1
15.0	★	**150D5S20**	78.0	93.0	137.0	44	28.0	20.0	0.15		1
15.5	★	**WDX 155D5S20**	80.5	95.5	139.5	44	30.0	20.0	0.40	WDXT 052504	1
16.0	★	**160D5S20**	83.0	98.0	142.0	44	30.0	20.0			1
16.5	★	**165D5S20**	85.5	100.5	144.5	44	30.0	20.0	0.35		1
17.0	★	**170D5S20**	88.0	103.0	147.0	44	30.0	20.0	0.30		1
17.5	★	**WDX 175D5S25**	90.5	105.5	161.5	56	32.0	25.0	0.25		1
18.0	★	**180D5S25**	93.0	108.0	164.0	56	32.0	25.0	0.20		1
18.5	★	**WDX 185D5S25**	95.5	110.5	166.5	56	33.0	25.0	0.50	WDXT 063006	1
19.0	★	**190D5S25**	98.0	113.0	169.0	56	33.0	25.0	0.45		1
19.5	★	**195D5S25**	100.5	115.5	171.5	56	33.0	25.0	0.40		1
20.0	★	**200D5S25**	103.0	118.0	174.0	56	33.0	25.0	0.30		1
20.5	★	**205D5S25**	105.5	120.5	176.5	56	33.0	25.0			1
21.0	★	**210D5S25**	108.0	123.0	179.0	56	33.0	25.0	0.20		1
21.5	★	**215D5S25**	110.5	125.5	181.5	56	33.0	25.0	0.15		1
22.0	★	**220D5S25**	113.0	128.0	184.0	56	33.0	25.0	0.10		1
22.5	★	**225D5S25**	115.5	130.5	186.5	56	33.0	25.0	0.05		1
23.0	★	**WDX 230D5S25**	118.0	136.0	192.0	56	37.0	25.0	0.70	WDXT 073506	1
23.5	★	**235D5S25**	120.5	138.5	194.5	56	37.0	25.0			1
24.0	★	**240D5S25**	123.0	141.0	197.0	56	37.0	25.0	0.60		1
24.5	★	**245D5S25**	125.5	143.5	199.5	56	37.0	25.0	0.50		1
25.0	★	**250D5S25**	128.0	146.0	202.0	56	37.0	25.0			1
26.0	★	**WDX 260D5S32**	133.0	153.0	213.0	60	41.0	32.0	0.40		2
27.0	★	**270D5S32**	138.0	158.0	218.0	60	41.0	32.0	0.25		2
28.0	★	**280D5S32**	143.0	163.0	223.0	60	41.0	32.0	0.15		2
29.0	★	**WDX 290D5S32**	149.0	170.0	230.0	60	50.0	32.0	1.00	WDXT 094008	2
30.0*	★	**300D5S32**	154.0	178.0	238.0	60	54.0	32.0	0.90		2
31.0*	★	**310D5S32**	159.0	183.0	243.0	60	54.0	32.0	0.80		2
32.0*	★	**320D5S32**	164.0	188.0	248.0	60	54.0	32.0	0.70		2
30.0*	★	**WDX 300D5S40**	154.0	178.0	248.0	70	54.0	40.0	0.90		2
31.0*	★	**310D5S40**	159.0	183.0	253.0	70	54.0	40.0	0.80		2
32.0*	★	**320D5S40**	164.0	188.0	258.0	70	54.0	40.0	0.70		2
33.0	★	**330D5S40**	169.0	193.0	263.0	70	54.0	40.0	0.55		2
34.0	★	**340D5S40**	174.0	198.0	268.0	70	54.0	40.0	0.45		2
35.0	★	**350D5S40**	179.0	203.0	273.0	70	54.0	40.0	0.35		2
36.0	★	**360D5S40**	184.0	208.0	278.0	70	54.0	40.0	0.20		2
37.0	★	**WDX 370D5S40**	190.0	220.0	290.0	70	49.5	40.0	1.00	WDXT 125012	2
38.0	★	**380D5S40**	195.0	225.0	295.0	70	49.5	40.0			2
39.0	★	**390D5S40**	200.0	230.0	300.0	70	49.5	40.0	0.90		2
40.0	★	**400D5S40**	205.0	235.0	305.0	70	49.5	40.0	0.80		2
41.0	★	**410D5S40**	210.0	240.0	310.0	70	49.5	40.0	0.70		2
42.0	★	**420D5S40**	215.0	245.0	315.0	70	49.5	40.0	0.60		2
43.0	★	**430D5S40**	220.0	250.0	320.0	70	49.5	40.0	0.50		2
44.0	★	**440D5S40**	225.0	255.0	325.0	70	49.5	40.0			2
45.0	★	**450D5S40**	230.0	260.0	330.0	70	49.5	40.0	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J193

Diameter ø46.0 to 55.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	★	**WDX 460D5S40**	235.0	265.0	335.0	70	49.5	40.0	1.50	WDXT 156012	2
47.0	★	**470D5S40**	240.0	270.0	340.0	70	49.5	40.0	1.40		2
48.0	★	**480D5S40**	245.0	275.0	345.0	70	49.5	40.0	1.30		2
49.0	★	**490D5S40**	250.0	280.0	350.0	70	49.5	40.0	1.20		2
50.0	★	**500D5S40**	255.0	285.0	355.0	70	49.5	40.0	1.10		2
51.0	★	**510D5S40**	260.0	290.0	360.0	70	49.5	40.0	1.00		3
52.0	★	**520D5S40**	265.0	295.0	365.0	70	50.5	40.0	0.90		3
53.0	★	**530D5S40**	270.0	300.0	370.0	70	51.5	40.0	0.80		3
54.0	★	**540D5S40**	275.0	305.0	375.0	70	52.5	40.0	0.60		3
55.0	★	**550D5S40**	280.0	310.0	380.0	70	53.5	40.0	0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
WDX130D5S20 to WDX150D5S20	BFTX01604N	**0.3**	TRX06	—	SUMI-P
WDX155D5S20 to WDX180D5S25	BFTX0204N	**0.5**	TRX06	—	
WDX185D5S25 to WDX225D5S25	BFTY02206	**1.0**	—	TRD07	
WDX230D5S25 to WDX280D5S32	BFTX02506N	**1.5**	—	TRD08	
WDX290D5S32 to WDX360D5S40	BFTX03584	**3.5**	—	TRD15	
WDX370D5S40 to WDX450D5S40	BFTX0511N	**5.0**	—	TRD20	
WDX460D5S40 to WDX550D5S40	BFTX0615N	**5.0**	—	TRD25	

Identification Code

WDX 200 D5 S25

- 200: Dia. DC (ø20.0)
- D5: Flute Length L/D (5D)
- S25: Shank Dia. DCON (ø25.0)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

WDX series for 5D (Internal Coolant Supply)

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting	P K					N						
	Medium Cutting		P	M S	M								
	Roughing		P			K							
Cat. No.		ACP100	ACP300	ACS3000	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder
WDXT 042004-L		★	★			★		1	4.2	2.0	0.4	0.4	WDX130D5S20 to WDX150D5S20
042004-G		★	★			★	★	2	4.2	2.0	0.4	0.4	
042004-H		★	★			★		3	4.2	2.0	0.4	0.4	
042004-M				★	▲			4	4.2	2.0	0.4	0.8	
WDXT 052504-L		★	★			★		1	5.0	2.5	0.4	0.4	WDX155D5S20 to WDX180D5S25
052504-G		★	★			★	★	2	5.0	2.5	0.4	0.4	
052504-H		★	★			★		3	5.0	2.5	0.4	0.4	
052504-M				★	▲			4	5.0	2.5	0.4	1.0	
WDXT 063006-L		★	★			★		1	6.0	3.0	0.6	0.6	WDX185D5S25 to WDX225D5S25
063006-G		★	★			★	★	2	6.0	3.0	0.6	0.6	
063006-H		★	★			★		3	6.0	3.0	0.6	0.6	
063006-M				★	▲			4	6.0	3.0	0.6	1.4	
WDXT 073506-L		★	★			★		1	7.5	3.5	0.6	0.6	WDX230D5S25 to WDX280D5S32
073506-G		★	★			★	★	2	7.5	3.5	0.6	0.6	
073506-H		★	★			★		3	7.5	3.5	0.6	0.6	
073506-M				★	▲			4	7.5	3.5	0.6	1.6	
WDXT 094008-L		★	★			★		1	9.6	4.0	0.8	0.8	WDX290D5S32 to WDX360D5S40
094008-G		★	★			★	★	2	9.6	4.0	0.8	0.8	
094008-H		★	★			★		3	9.6	4.0	0.8	0.8	
094008-M				★	▲			4	9.6	4.0	0.8	2.4	
WDXT 125012-L		★	★			★		1	12.4	5.0	1.2	1.2	WDX370D5S40 to WDX450D5S40
125012-G		★	★			★	★	2	12.4	5.0	1.2	1.2	
125012-H		★	★			★		3	12.4	5.0	1.2	1.2	
125012-M				★	▲			4	12.4	5.0	1.2	3.2	
WDXT 156012-L		★	★			★		1	15.2	6.0	1.2	1.2	WDX460D5S40 to WDX550D5S40
156012-G		★	★			★	★	2	15.2	6.0	1.2	1.2	
156012-H		★	★			★		3	15.2	6.0	1.2	1.2	

Fig 1 For low feed with chip control

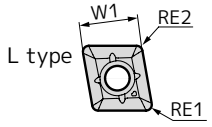


Fig 2 General-purpose

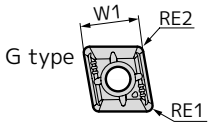


Fig 3 Strong-edged type

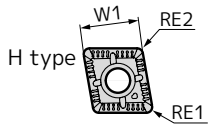
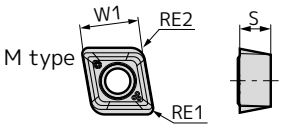


Fig 4 For stainless steel drilling



Identification Code

WDXT 06 30 06 -G

- WDXT: Width across Flats (6.0)
- 06: Thickness x 10 (3.0)
- 30: Corner Radius x 10 (0.6)
- 06: Chipbreaker type
- -G: Chipbreaker type

Recommended Cutting Conditions (for 5D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	f Feed Rate (mm/rev) <Min. - **Optimum** - Max.> ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0
5D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.07**-0.09
			C15	125	L	ACP300	130-**170**-220	0.04-**0.06**-0.08	0.04-**0.06**-0.08	0.04-**0.06**-0.08	0.05-**0.07**-0.09
			C45	190	G	ACP300	100-**150**-200	0.07-**0.10**-0.15	0.07-**0.10**-0.15	0.08-**0.11**-0.17	0.09-**0.12**-0.19
			C45 Hardened	250	G	ACP100	100-**170**-240	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.11
			C75	270	G	ACP100	120-**180**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.09**-0.13
			C75 Hardened	300	G	ACP100	85-**150**-210	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.10
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.06**-0.10	0.05-**0.07**-0.11
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.05-**0.08**-0.12	0.06-**0.09**-0.12	0.06-**0.09**-0.13	0.07-**0.10**-0.14
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	120-**150**-180	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.08**-0.12	0.06-**0.09**-0.12
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.08**-0.12	0.06-**0.09**-0.12
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	120-**150**-180	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.08**-0.12	0.06-**0.09**-0.12
	K	Cast Iron			G	ACK300	120-**160**-200	0.08-**0.15**-0.21	0.09-**0.17**-0.23	0.09-**0.18**-0.25	0.11-**0.20**-0.28
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.08-**0.15**-0.21	0.09-**0.17**-0.23	0.09-**0.18**-0.25	0.11-**0.20**-0.28
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25-**50**-70	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18
		Copper Alloy			G	DL1500	180-**230**-280	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

■ Lathe Drilling Guidelines

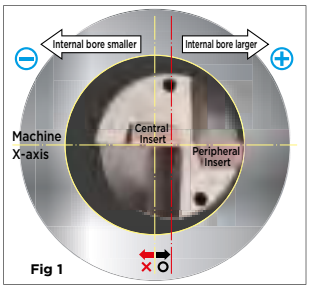


Fig 1

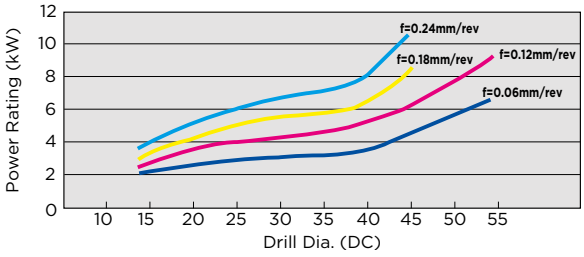

Fig 2

■ Drill Mounting
- Set the drill so that the peripheral insert is parallel to the X-axis of the machine. (Fig 1)
- Press the end of the flange of the drill tightly against the face of the holder before tightening the bolt.

■ Adjusting Work Diameter (offset)
- The work diameter is adjustable by moving the machine X-axis.
- Make the adjustment by moving in the positive direction of the X-axis (enlarging the bore diameter). Moving the X-axis in the negative direction (to reduce the bore diameter) is not recommended as the holder may interfere with the hole. (Fig 1)
- The maximum allowable adjustment (offset) differs depending on the diameter. Refer to Radial Offset (Max) in the body dimension tables on pages J162 to J168.

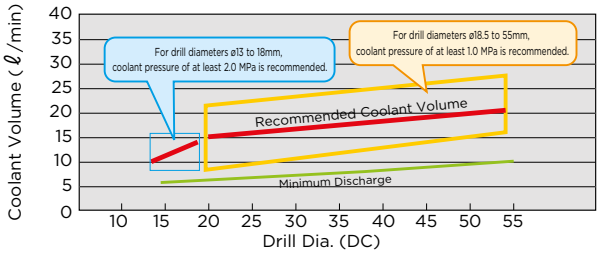
■ Other Notes
- When the drill is mounted on a lathe, the centre of the central insert is designed to be 0.15 to 0.2mm below the centre of the spindle.
- If the spindle deviates so far off centre that the centre of the central insert lies above the spindle centre, the central insert will break.
- Set the depth of cut for external turning or internal boring work to 1/5 or less of the drill diameter (max. 5mm or less). (Example: Set depth of cut to 4mm or less for diameter of ø20mm)
- Install a cover to prevent injury from possible chip fly-out (see disc-shaped chip in Fig 2) when through boring on a lathe.
  If your machine has no cover, attach a cover or similar part for your safety.
- Cannot drill stacked plates because the disc-shaped chips will not be evacuated and will damage the drill.
- Milling chucks are not recommended due to the risk of shank slipping.

■ Typical Power Ratings



<CAUTIONS>
- Power ratings are subject to change based on conditions such as work material and cutting speed, and should only be used for reference.
- Cutting Conditions (Reference)
  Work Material: Cf53 (230HB)
  Cutting Speed: vc = 150m/min

■ Typical Coolant Volume





<CAUTIONS>
- Coolant volume is a factor that affects drilling performance, particularly with respect to chip evacuation and lubricity.
- Coolant pressure should be set higher for small drills. (ø18.0mm or below)
- Coolant volume is usually adjusted by changing the coolant pressure provided on most CNC machine tools.
- This table provides guideline values only. More coolant may be required depending on the machine, coolant and work material.

■ Precautions for Attaching and Removing Inserts

- Before mounting the insert, remove all traces of foreign matter on the insert seat surface using air blow or other means.
- When using the wrench, align it to the axis of the screw and press while turning. (Fig 3)
  If the wrench is not aligned with the screw, the insert will be insufficiently clamped and the tip of the wrench and/or the Torx hole of the screw may become deformed.
- Do not allow clearance between the insert seat and drill when mounting the insert. (Fig 4, Part A)
  Figure 4 shows a properly mounted insert.

* It is normal for the outer sides of the central insert to have clearance because it is clamped at its centre and pushed to the rear.

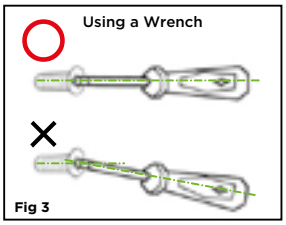


Fig 3

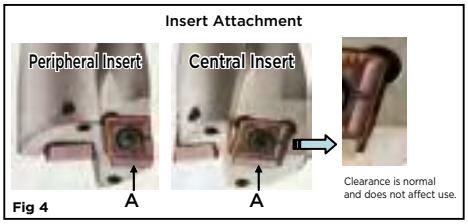


Fig 4

■ Troubleshooting

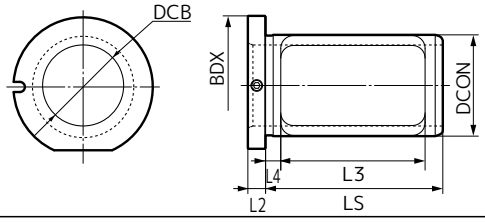
Problem	Symptom	Cause	Countermeasures
Too much variation in hole diameter	Drilled hole diameter is larger than desired	· Deflection of the holder due to high thrust force	· Decrease the feed rate to decrease the thrust force. · Make an adjustment on the X-axis.
	Drilled hole diameter is smaller than desired	· The cutting edge backs off and does not enter the workpiece	· Increase the feed rate. · Make an adjustment on the X-axis.
	Significant difference in hole diameter at entrance and bottom	· Packing of chips	· Increase the feed rate to improve chip evacuation. · Use an L type chipbreaker for chip control.
Poor quality machined hole surface	Poor machined surface from entrance to bottom of hole	· High cutting force · Low rigidity of workpiece	· Decrease the feed rate. · Review tooling to improve rigidity.
	Poor machined surface at bottom of hole	· Machined surfaces damaged by chips	· Increase the feed rate to improve chip evacuation. · Use an L type chipbreaker for chip control.
Insert is broken	Fracture on central insert (centre)	· Improper adjustment of centre height · Insert is not strong enough	· Check the centre height again. · If the drill is being used on a lathe, try rotating the drill 180°. · Use a strong edged chipbreaker (H type).
	Fracture on peripheral insert	· High cutting load on cutting edge	· Decrease the feed rate to decrease cutting load. · Use a strong edged chipbreaker (H type).

Eccentric Sleeve for WDX series

Indexable Insert type

Fig 1





Body (WAS type)

Parts

Dimensions (mm)

Cat. No.	Stock	Bore Dia. DCB	Shank Dia. DCON	Diameter BDX	Shank LS	Length L2	Length L3	Length L4	Diameter Adjustable Range	Fig	Screw	Wrench
WAS 2025-48	★	20	25	33	43	5	32	5	+0.3 to -0.2	1	BT0306	LH015
2532-60	★	25	32	42	60	7	46	6	+0.3 to -0.3	1	BT0406	LH020
3240-70	★	32	40	55	70	7	57	6	+0.3 to -0.3	1	BT0408	LH020
4050-85	★	40	50	60	70	7	54	6	+0.5 to -0.5	1	BT0408	LH020

Diameter Adjustment Range indicates the range in which the diameter can be adjusted.
The dedicated Eccentric Sleeve WAS type for the SumiDrill WDX series provides ± 0.3mm of adjustment when drilling holes.

Cautions for Use

1. The dial is for reference purposes. Always measure the actual work diameter and adjust accordingly.
2. Not usable with collet chuck type holders.
   Use a side-locking type holder.
3. Use this product under high-rigidity conditions.
   This product is not recommended for deep hole drilling such as 5D and low-rigidity conditions.

Directions (Adjusting the Work Diameter)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PDL series/PCT series



■ General Features

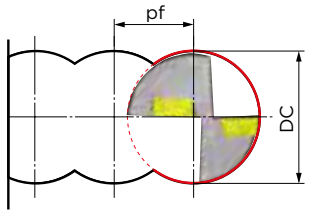
High efficiency and stable roughing can be achieved through Z-axis cutting feed, where tool rigidity is high, for machining deep profiles and pockets in applications where efficiency cannot be increased due to long tool overhang, such as in aerospace and die mold components.

■ Features

- The flat cutting edge design produces near-flat bottom profiles to reduce depth of cut variation for subsequent process.
- All sizes come with oil holes for internal coolant supply to improve chip evacuation performance.
- Durable body with special surface treatment offers improved tool life and reliability.
- Utilising SumiDrill WDX series inserts for handling a wide range of work materials, from steel to non-ferrous metals and exotic alloys.

- The PDL series has a central insert, enabling radial depth of cut beyond the tool's radius, such as pick feed machining and drilling. (pocketing etc.) (Pocketing, etc.)

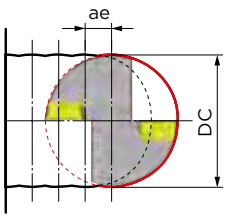


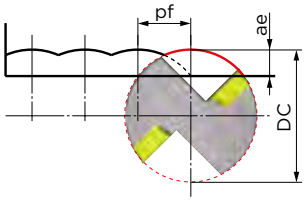


Keep the value of pf for PDL series tools to less than 70% of the tool diameter (DC).

- Although the PCT series has limited radial depth of cut, the tool has a high effective number of teeth enabling it to perform high feed cutting. (Medium finishing of corners, hole expansion, deep groove milling, etc.)



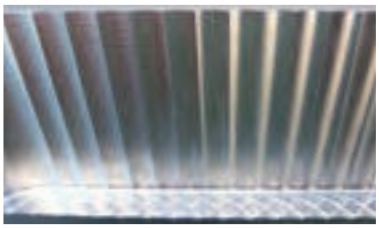




Keep the value of pf for PCT series tools to less than 50% of the tool diameter (DC).
For ae, refer to the dimension under "ae max" in the stock/ dimensions tables titled "Holders Max. Depth of Cut: 3D/5D".

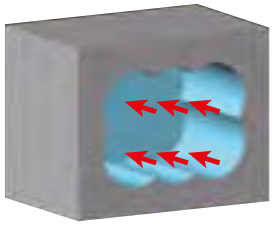






■ Application Examples

Pocketing PDL series Work Material: Titanium alloy

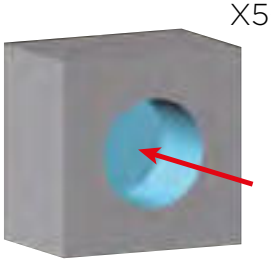




Tool : PDL 400D2S40 (ø40)
Insert: WDXT 125012-G
Grade: ACK300

Cutting Speed: vc = 40m/min
Feed Rate : f = 0.07mm/rev
(vf = 22.3mm/min)
Depth of Cut : ae (pf) = 25mm

Drilling PDL series Work Material: X5CrNiMo17-12-2





Tool : PDL 200D3S25 (ø20)
Insert: WDXT 063006-G
Grade: ACP300

Cutting Speed: vc = 180m/min
Feed Rate : f = 0.10mm/rev
(vf = 286mm/min)
Depth of Cut : ae(pf) = 20mm

Corner Fillet Removal PDL series Work Material: X5CrNiMo17-12-2

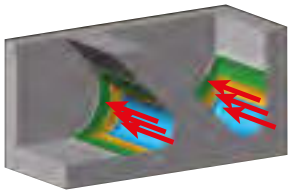




Tool : PDL 250D2S25 (ø25)
Insert: WDX T073506-G
Grade: ACP300

Cutting Speed: vc = 140m/min
Feed Rate : f = 0.10mm/rev
(vf = 178mm/min)
Depth of Cut : ae (pf) = 15mm

Corner Machining PCT series Work Material: Titanium alloy

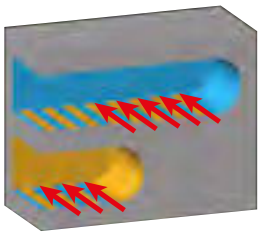




Tool: Insert:
PCT 320D3S32 (ø32) WDXT 094008-G
PCT 250D3S25 (ø25) WDXT 073506-G
PCT 200D3S20 (ø20) WDXT 063006-G
Grade: ACK300

Cutting Speed: vc = 50m/min
Feed Rate : fz = 0.04mm/t
(vf = 80 to 127mm/min)
Depth of Cut : ae (pf) = 3.2 to 6.5mm

Groove Milling PCT series Work Material: Titanium alloy

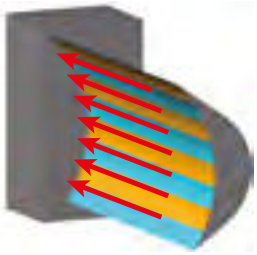




Tool : PCT 320D5S32 (ø32)
Insert: WDXT 094008-G
Grade: ACK300

Cutting Speed: vc = 40m/min
Feed Rate : fz = 0.035mm/t
(vf = 56mm/min)
Depth of Cut : ae (pf) = 5.0mm

Contouring PCT series Work Material: X12Cr13

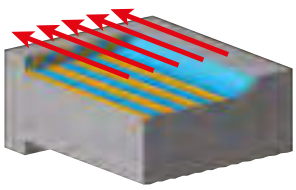




Tool : PCT 250D5S25 (ø25)
Insert: WDXT 073506-G
Grade: ACP300

Cutting Speed: vc = 150m/min
Feed Rate : fz = 0.05mm/t
(vf = 382mm/min)
Depth of Cut : ae = 3.0mm

Shoulder Plunging PCT series Work Material: X5CrNi18-10

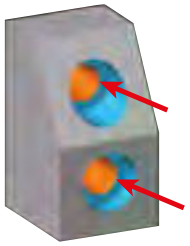




Tool : PCT 320D3S32 (ø32)
Insert: WDXT 094008-G
Grade: ACP300

Cutting Speed: vc = 180m/min
Feed Rate : fz = 0.075mm/t
(vf = 537mm/min)
Depth of Cut : ae = 7.0mm
pf = 5.0mm

Counterboring PCT series Work Material: 34CrMo4





Tool : PCT 200D5S20 (ø20)
Insert: WDXT 063006-G
Grade: ACP300

Cutting Speed: vc = 150m/min
Feed Rate : fz = 0.075mm/t
(vf = 716mm/min)
Depth of Cut : ae = 3.5mm

PDL series for 2D/3D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 2D | 3D | Indexable insert type

*For tolerances, refer to Chapter N - References.

Fig 1

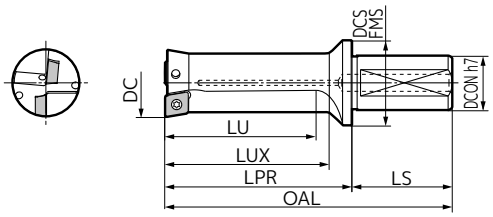
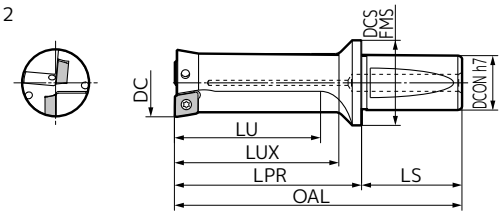


Fig 2



Holder 2D Length Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
16.0	★	PDL 160D2S20	32	35	50	94	44	28	20	WDXT052504	1
20.0	★	200D2S25	40	43	58	114	56	33	25	WDXT063006	1
25.0	★	250D2S25	50	53	71	127	56	37	25	WDXT073506	1
32.0	★	320D2S40	64	68	92	162	70	54	40	WDXT094008	2
40.0	★	400D2S40	80	85	115	185	70	54	40	WDXT125012	2

Holder 3D Length Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
16.0	★	PDL 160D3S20	48	51	66	110	44	28	20	WDXT052504	1
20.0	★	200D3S25	60	63	78	134	56	33	25	WDXT063006	1
25.0	★	250D3S25	75	78	96	152	56	37	25	WDXT073506	1
32.0	★	320D3S40	96	100	124	194	70	54	40	WDXT094008	2
40.0	★	400D3S40	120	125	155	225	70	54	40	WDXT125012	2

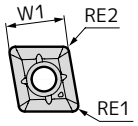
Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting	PK					N						
	Medium Cutting		P	MS	M								
	Roughing		P			K							
Cat. No.		ACP100	ACP300	ACS3000	ACM300	ACK300	DL1500	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder	Fig
WDXT 052504-L		★	★			★		5.0	2.5	0.4	0.4	PDL160D2S20 / PDL160D3S20	1
052504-G		★	★			★	★	5.0	2.5	0.4			2
052504-H		★	★			★		5.0	2.5	0.4			3
052504-M				★	▲			5.0	2.5	0.4	1.0		4
WDXT 063006-L		★	★			★		6.0	3.0	0.6	0.6	PDL200D2S25 / PDL200D3S25	1
063006-G		★	★			★	★	6.0	3.0	0.6			2
063006-H		★	★			★		6.0	3.0	0.6			3
063006-M				★	▲			6.0	3.0	0.6	1.4		4
WDXT 073506-L		★	★			★		7.5	3.5	0.6	0.6	PDL250D2S25 / PDL250D3S25	1
073506-G		★	★			★	★	7.5	3.5	0.6			2
073506-H		★	★			★		7.5	3.5	0.6			3
073506-M				★	▲			7.5	3.5	0.6	1.6		4
WDXT 094008-L		★	★			★		9.6	4.0	0.8	0.8	PDL320D2S40 / PDL320D3S40	1
094008-G		★	★			★	★	9.6	4.0	0.8			2
094008-H		★	★			★		9.6	4.0	0.8			3
094008-M				★	▲			9.6	4.0	0.8	2.4		4
WDXT 125012-L		★	★			★		12.4	5.0	1.2	1.2	PDL400D2S40 / PDL400D3S40	1
125012-G		★	★			★	★	12.4	5.0	1.2			2
125012-H		★	★			★		12.4	5.0	1.2			3
125012-M				★	▲			12.4	5.0	1.2	3.2		4

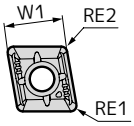
(Insert is the same as the WDX series)

Fig 1 — L type



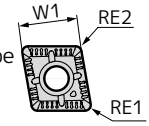
For Low Feed with Chip Control

Fig 2 — G type



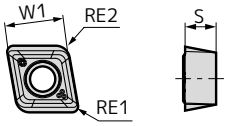
General-purpose

Fig 3 — H type



Strong-edged

Fig 4 — M type



Dedicated for Stainless Steel

Identification Code

PDL 250 D2 S25

- 250: Dia. DC (ø25.0)
- D2: Flute Length (L/D) (2D)
- S25: Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- 07: Width across Flats (7.5)
- 35: Thickness x 10 (3.5)
- 06: Corner Radius x 10 (0.6)
- -G: Chipbreaker type

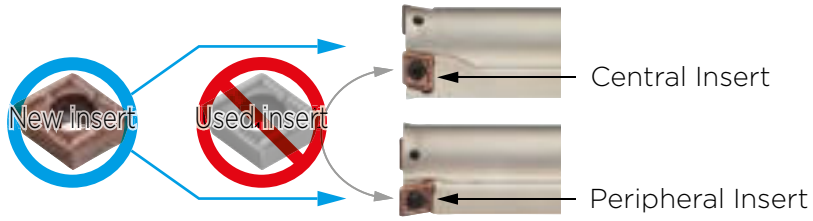
Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
PDL160D2S20 / PDL160D3S20	BFTX0204N	0.5	TRX06	—	SUMI-P
PDL200D2S25 / PDL200D3S25	BFTY02206	1.0	—	TRD07	
PDL250D2S25 / PDL250D3S25	BFTX02506N	1.5	—	TRD08	
PDL320D2S40 / PDL320D3S40	BFTX03584	3.5	—	TRD15	
PDL400D2S40 / PDL400D3S40	BFTX0511N	5.0	—	TRD20	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PDL series for 2D/3D (Internal Coolant Supply)

● Precautions for Mounting Inserts



PDL series: Inserts can be used on either the central or peripheral insert, but only 2 corners are used.
Used peripheral inserts cannot be used as central inserts.
Similarly, used central inserts cannot be used as peripheral inserts.

Recommended Cutting Conditions for 2D (PDL series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	f Feed Rate (mm/rev) <Min. - **Optimum** - Max.> ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
2D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.12
			C15	125	L	ACP300	130-**170**-220	0.04-**0.08**-0.12	0.04-**0.08**-0.12	0.04-**0.08**-0.13	0.05-**0.10**-0.15
			C45	190	G	ACP300	100-**150**-200	0.08-**0.13**-0.24	0.08-**0.13**-0.24	0.08-**0.14**-0.26	0.09-**0.16**-0.29
			C45 Hardened	250	G	ACP100	100-**170**-240	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.17
			C75	270	G	ACP100	120-**180**-240	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.07-**0.12**-0.19
			C75 Hardened	300	G	ACP100	85-**150**-210	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.15
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.08**-0.14	0.05-**0.08**-0.14	0.05-**0.08**-0.16	0.06-**0.09**-0.17
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.08-**0.12**-0.17	0.08-**0.12**-0.17	0.08-**0.12**-0.18	0.09-**0.12**-0.21
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.15	0.07-**0.11**-0.16
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	100-**140**-180	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	100-**140**-180	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
	K	Cast Iron			G	ACK300	120-**160**-200	0.09-**0.20**-0.32	0.10-**0.22**-0.36	0.11-**0.24**-0.39	0.12-**0.26**-0.44
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.09-**0.20**-0.32	0.10-**0.22**-0.36	0.11-**0.24**-0.39	0.12-**0.26**-0.44
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25- **50**- 70	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20
		Copper Alloy			G	DL1500	180-**230**-280	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

Recommended Cutting Conditions for 3D (PDL series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	f Feed Rate (mm/rev) <Min. - **Optimum** - Max.> ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
3D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.12
			C15	125	L	ACP300	130-**170**-220	0.04-**0.07**-0.10	0.04-**0.07**-0.10	0.04-**0.08**-0.11	0.05-**0.09**-0.12
			C45	190	G	ACP300	100-**150**-200	0.08-**0.12**-0.20	0.08-**0.12**-0.20	0.08-**0.13**-0.22	0.09-**0.14**-0.24
			C45 Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.09**-0.14
			C75	270	G	ACP100	120-**180**-240	0.06-**0.09**-0.14	0.06-**0.09**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.17
			C75 Hardened	300	G	ACP100	85-**150**-210	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.09**-0.14
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.12	0.05-**0.07**-0.12	0.05-**0.08**-0.13	0.06-**0.08**-0.15
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.08-**0.11**-0.14	0.08-**0.12**-0.15	0.08-**0.12**-0.16	0.09-**0.14**-0.18
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.07-**0.10**-0.12
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
	K	Cast Iron			G	ACK300	120-**160**-200	0.09-**0.18**-0.27	0.10-**0.20**-0.30	0.11-**0.22**-0.32	0.12-**0.24**-0.36
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.09-**0.18**-0.27	0.10-**0.20**-0.30	0.11-**0.22**-0.32	0.12-**0.24**-0.36
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25- **50**- 70	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20
		Copper Alloy			G	DL1500	180-**230**-280	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

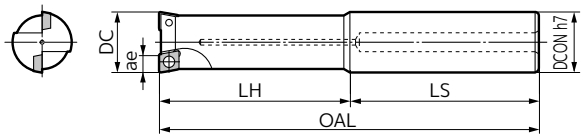
PCT series for 3D/5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 3D | 5D | Indexable insert type

*For tolerances, refer to Chapter N - References.

Fig 1



Holder 3D Length Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	ae max	Neck Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Teeth	Applicable Insert	Fig
16.0	★	PCT 160D3S16	4.0	53	123	70	16	2	WDXT052504	1
20.0	★	200D3S20	5.0	65	145	80	20	2	WDXT063006	1
25.0	★	250D3S25	6.5	80	160	80	25	2	WDXT073506	1
32.0	★	320D3S32	8.5	101	191	90	32	2	WDXT094008	1
40.0	★	400D3S42	11.0	125	225	100	42	3	WDXT125012	1

Holder 5D Length Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	ae max	Neck Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Teeth	Applicable Insert	Fig
16.0	★	PCT 160D5S16	4.0	85	155	70	16	2	WDXT052504	1
20.0	★	200D5S20	5.0	105	185	80	20	2	WDXT063006	1
25.0	★	250D5S25	6.5	130	210	80	25	2	WDXT073506	1
32.0	★	320D5S32	8.5	165	255	90	32	2	WDXT094008	1
40.0	★	400D5S42	11.0	205	305	100	42	3	WDXT125012	1

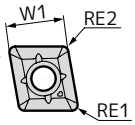
Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	PK				N
	Medium Cutting		P	MS	M	
	Roughing		P			K

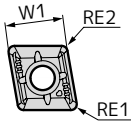
Cat. No.	ACP100	ACP300	ACS3000	ACM300	ACK300	DL1500	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder	Fig
WDXT 052504-L	★	★			★		5.0	2.5	0.4	0.4	PCT160D3S16 / PCT160D5S16	1
052504-G	★	★			★	★	5.0	2.5	0.4	0.4		2
052504-H	★	★			★		5.0	2.5	0.4	0.4		3
052504-M			★	▲			5.0	2.5	0.4	1.0		4
WDXT 063006-L	★	★			★		6.0	3.0	0.6	0.6	PCT200D3S20 / PCT200D5S20	1
063006-G	★	★			★	★	6.0	3.0	0.6	0.6		2
063006-H	★	★			★		6.0	3.0	0.6	0.6		3
063006-M			★	▲			6.0	3.0	0.6	1.4		4
WDXT 073506-L	★	★			★		7.5	3.5	0.6	0.6	PCT250D3S25 / PCT250D5S25	1
073506-G	★	★			★	★	7.5	3.5	0.6	0.6		2
073506-H	★	★			★		7.5	3.5	0.6	0.6		3
073506-M			★	▲			7.5	3.5	0.6	1.6		4
WDXT 094008-L	★	★			★		9.6	4.0	0.8	0.8	PCT320D3S32 / PCT320D5S32	1
094008-G	★	★			★	★	9.6	4.0	0.8	0.8		2
094008-H	★	★			★		9.6	4.0	0.8	0.8		3
094008-M			★	▲			9.6	4.0	0.8	2.4		4
WDXT 125012-L	★	★			★		12.4	5.0	1.2	1.2	PCT400D3S42 / PCT400D5S42	1
125012-G	★	★			★	★	12.4	5.0	1.2	1.2		2
125012-H	★	★			★		12.4	5.0	1.2	1.2		3
125012-M			★	▲			12.4	5.0	1.2	3.2		4

Fig 1 — L type



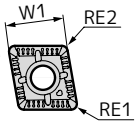
For Low Feed with Chip Control

Fig 2 — G type



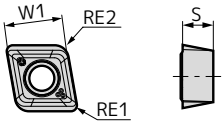
General-purpose

Fig 3 — H type



Strong-edged

Fig 4 — M type



Dedicated for Stainless Steel

PCT series: 2 corners can be used for the peripheral inserts only. When using the M type chipbreaker, the ae max is 20% shorter.
(Insert is the same as the WDX series)

Identification Code

PCT 250 D3 S25

- 250: Dia. DC (ø25.0)
- D3: Flute Length L/D (3D)
- S25: Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- 07: Width across Flats (7.5)
- 35: Thickness x 10 (3.5)
- 06: Corner Radius x 10 (0.6)
- -G: Chipbreaker type

Parts

Applicable Holder	Flat Insert Screw	N·m	Wrench	Wrench	Anti-seizure Cream
PCT160D3S16 / PCT160D5S16	BFTX0204N	0.5	TRX06	—	SUMI-P
PCT200D3S20 / PCT200D5S20	BFTY02206	1.0	—	TRD07	
PCT250D3S25 / PCT250D5S25	BFTX02506N	1.5	—	TRD08	
PCT320D3S32 / PCT320D5S32	BFTX03584	3.5	—	TRD15	
PCT400D3S42 / PCT400D5S42	BFTX0511N	5.0	—	TRD20	

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

PCT series for 3D/5D (Internal Coolant Supply)

Recommended Cutting Conditions for 3D (PCT series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	fz Feed Rate (mm/t) <Min. - **Optimum** - Max.> ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
3D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.08**-0.10
			C15	125	L	ACP300	130-**170**-220	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.05-**0.08**-0.10
			C45	190	G	ACP300	100-**150**-200	0.08-**0.11**-0.17	0.08-**0.11**-0.17	0.08-**0.12**-0.18	0.09-**0.14**-0.21
			C45 Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.11
			C75	270	G	ACP100	120-**180**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.09**-0.13	0.07-**0.11**-0.14
			C75 Hardened	300	G	ACP100	85-**150**-210	0.05-**0.07**-0.09	0.05-**0.07**-0.09	0.05-**0.08**-0.10	0.05-**0.08**-0.11
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.11	0.06-**0.08**-0.12
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.06-**0.10**-0.13	0.07-**0.11**-0.14	0.07-**0.11**-0.15	0.08-**0.12**-0.16
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	100-**140**-180	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	100-**140**-180	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
	K	Cast Iron			G	ACK300	120-**160**-200	0.09-**0.17**-0.23	0.10-**0.19**-0.26	0.11-**0.21**-0.28	0.12-**0.23**-0.31
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.09-**0.17**-0.23	0.10-**0.19**-0.26	0.11-**0.21**-0.28	0.12-**0.23**-0.31
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25- **50**- 70	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18
		Copper Alloy			G	DL1500	180-**230**-280	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate fz to 75% of the figures in the table above.

Recommended Cutting Conditions for 5D (PCT series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	fz Feed Rate (mm/t) <Min. - **Optimum** - Max.> ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
5D	P	Steel, Carbon Steel	S235JR	125	G	ACP300	120-**180**-240	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.07**-0.09
			C15	125	L	ACP300	130-**170**-220	0.04-**0.06**-0.08	0.04-**0.06**-0.08	0.04-**0.06**-0.08	0.05-**0.07**-0.09
			C45	190	G	ACP300	100-**150**-200	0.07-**0.10**-0.15	0.07-**0.10**-0.15	0.08-**0.11**-0.17	0.09-**0.12**-0.19
			C45 Hardened	250	G	ACP100	100-**170**-240	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.11
			C75	270	G	ACP100	120-**180**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.09**-0.13
			C75 Hardened	300	G	ACP100	85-**150**-210	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.10
		Low-alloy Steel	SCM, SNCM	180	L	ACP300	100-**140**-180	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.06**-0.10	0.05-**0.07**-0.11
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
		High-alloy Steel	SKD, SKT, SKH	200	G	ACP100	120-**180**-240	0.05-**0.08**-0.12	0.06-**0.09**-0.12	0.06-**0.09**-0.13	0.07-**0.10**-0.14
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09
	M	Stainless Steel	X6Cr13/Others (Martensitic/Ferritic)	200	M	ACS3000/ACM300	100-**140**-180	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
			X6Cr13/Others (Martensitic (hardened))	240	M	ACS3000/ACM300	90-**120**-150	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
			X5CrNi18-10, X5CrNiMo17-12-2 (Austenitic)	180	M	ACS3000/ACM300	100-**140**-180	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
	K	Cast Iron			G	ACK300	120-**160**-200	0.08-**0.15**-0.21	0.09-**0.17**-0.23	0.09-**0.18**-0.25	0.11-**0.20**-0.28
		Ductile Cast Iron			G	ACK300	90-**120**-150	0.08-**0.15**-0.21	0.09-**0.17**-0.23	0.09-**0.18**-0.25	0.11-**0.20**-0.28
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACS3000/ACP300	25- **50**- 70	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18
		Copper Alloy			G	DL1500	180-**230**-280	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate fz to 75% of the figures in the table above.

SSR series



■ Features

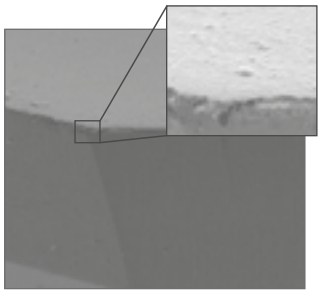
- **High efficiency and high-precision reaming achieved through excellent cutting edge quality and gradual right-hand helix flutes**
- **Dedicated coating for reamers enables machining with long, stable tool life**



● Stable Hole Diameter

· Optimised back taper reduces frictional resistance and hole diameter is stable due to machined finish

SSR series



Conventional Tool A

● Smooth Chip Evacuation

· A balanced design combining sharpness and cutting edge strength with gradual right-hand helix flutes



Work Material	: Cf53 Chips
Tool	: Diameter ø8mm
Cutting Conditions	: vc = 120m/min f = 1.2mm/rev ap = 0.1mm



Work Material	: Cf53 Chips
Tool	: Diameter ø8mm
Cutting Conditions	: vc = 20m/min f = 0.09mm/rev ap = 0.1mm

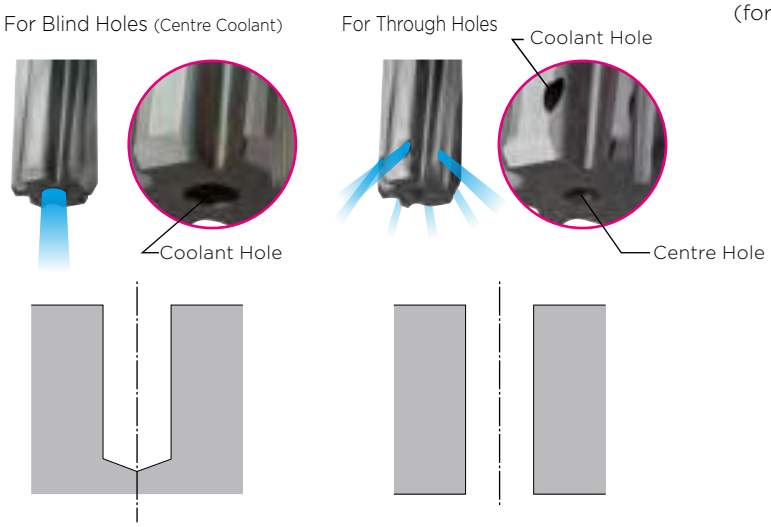
● High-precision Reaming

· Excellent cutting edge quality free of microchipping realizes good hole surface quality

● Long, Stable Tool Life: Dedicated Coating for Reamers

· High quality, high hardness and high strength coating layer for excellent wear resistance and thermal resistance

● Coolant Mechanism by Application



Unique coolant supply mechanism which does not hamper chip evacuation

(for through hole)



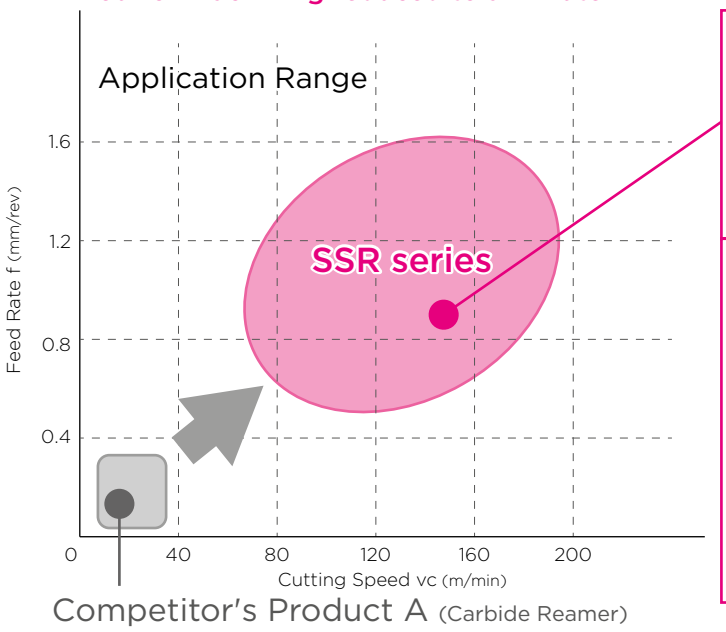
Coolant is supplied to the cutting edge from the flank side through the inner wall of the hole, achieving smooth chip evacuation without obstruction

■ Cutting Performance

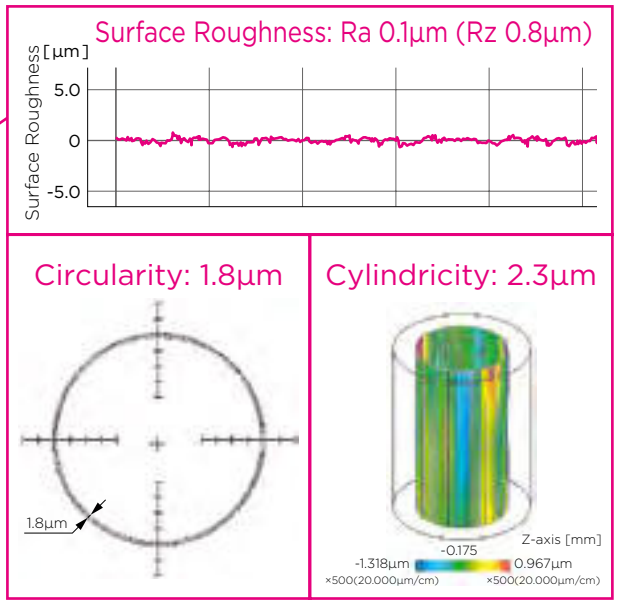
● Machining Efficiency Comparison

Realises 60 times or higher machining efficiency

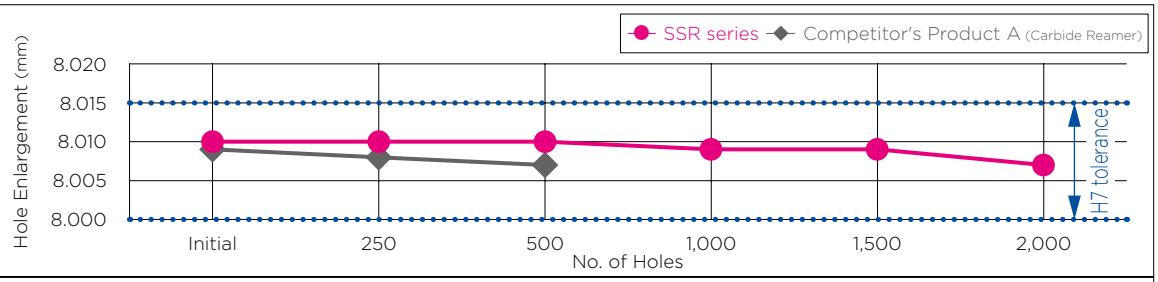
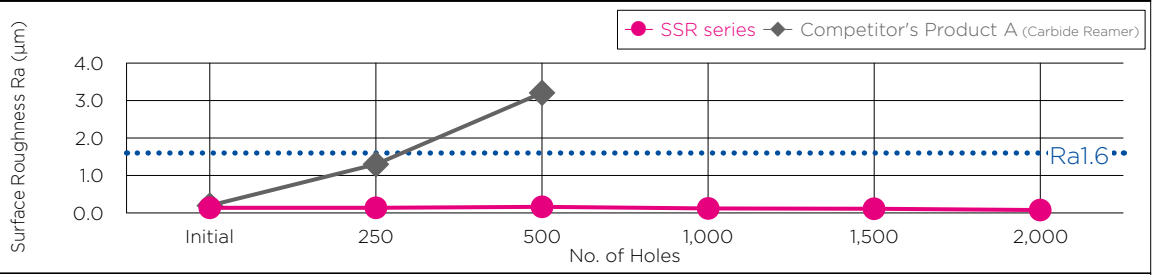
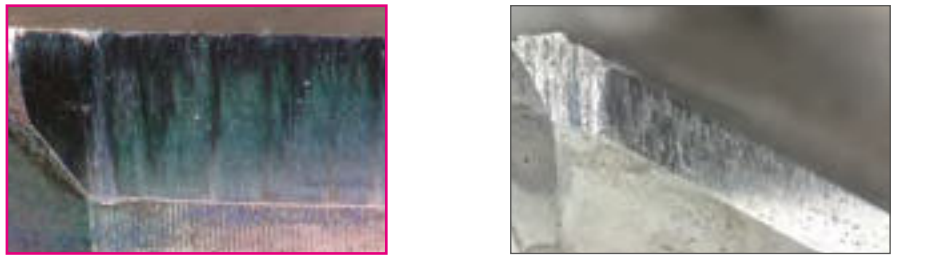
An hour of machining reduced to a minute



● Reaming Precision



● Tool Life Comparison

Hole Diameter Shift	
Surface Roughness Shift (Ra)	
Cutting Edge Failure	

SSR series

After Reaming 2,000 Holes

Able to continue

Competitor's Product A (Carbide Reamer)

After Reaming 500 Holes

Large Margin Wear

Machine : BT30 (Internal Coolant Supply) Work Material: Cf53 Tool: SSR08000H7S (ø8mm H7 tolerance holes) H = 16mm)
Cutting Conditions: SSR series vc = 150m/min f = 0.90mm/rev vf = 5,374mm/min ap = 0.1mm (Depth of Cut/Radius)
Competitor's Product A vc = 15m/min f = 0.15mm/rev vf = 89.6mm/min ap = 0.1mm (Depth of Cut/Radius)

SSR series For H7 Tolerance Hole (Through Hole)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

PVD Coat | Coolant Hole

*For tolerances, refer to Chapter N - References.

Fig 1

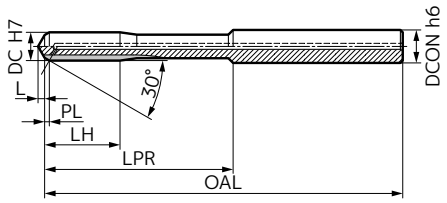
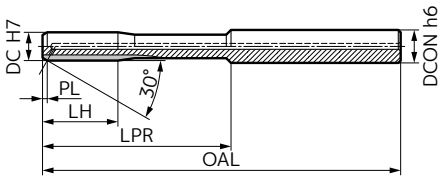


Fig 2



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Flutes	Fig
3.0	+0.008 +0.004	★	**SSR 03000H7T**	68	4	40	12	0.5	0.7	4	1
3.5		★	**SSR 03500H7T**	68	4	40	12	0.5	0.9	4	1
4.0		★	**04000H7T**	76	5	40	12	0.5	1.0	4	1
4.5	+0.010	★	**04500H7T**	76	5	40	12	0.5	1.2	4	1
5.0	+0.005	★	**05000H7T**	76	6	40	12	0.5	1.3	4	1
5.5		★	**05500H7T**	76	6	40	12	0.5	1.5	4	1
6.0		★	**06000H7T**	76	7	40	16	1.0	—	4	2
6.5		★	**SSR 06500H7T**	76	7	40	16	1.0	—	4	2
7.0		★	**07000H7T**	101	8	65	16	1.0	—	6	2
7.5		★	**07500H7T**	101	8	65	16	1.0	—	6	2
8.0	+0.012	★	**08000H7T**	101	9	65	19	1.0	—	6	2
8.5	+0.006	★	**08500H7T**	101	9	65	19	1.0	—	6	2
9.0		★	**09000H7T**	101	10	65	19	1.0	—	6	2
9.5		★	**09500H7T**	101	10	65	19	1.0	—	6	2
10.0		★	**10000H7T**	130	11	85	22	1.0	—	6	2
10.5		★	**SSR 10500H7T**	130	11	85	22	1.0	—	6	2
11.0	+0.015	★	**11000H7T**	130	12	85	22	1.0	—	6	2
11.5	+0.008	★	**11500H7T**	130	12	85	22	1.0	—	6	2
12.0		★	**12000H7T**	130	13	85	22	1.0	—	6	2

Grade: ACR40

Recommended Cutting Conditions J207

Identification Code

SSR **03500** **H7T**

- SSR — Series Code
- 03500 — Dia.
- H7T — Hole Tolerance for Through Holes

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

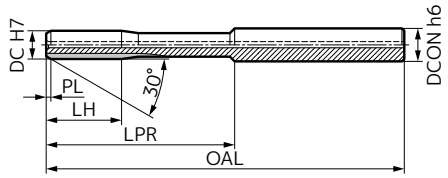
SSR series For H7 Tolerance Hole (Blind Hole)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

PVD Coat | Coolant Hole

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Flutes	Fig
3.0	+0.008 +0.004	★	SSR 03000H7S	68	4	40	12	0.5	4	1
3.5		★	SSR 03500H7S	68	4	40	12	0.5	4	1
4.0		★	04000H7S	76	5	40	12	0.5	4	1
4.5	+0.010	★	04500H7S	76	5	40	12	0.5	4	1
5.0	+0.005	★	05000H7S	76	6	40	12	0.5	4	1
5.5		★	05500H7S	76	6	40	12	0.5	4	1
6.0		★	06000H7S	76	7	40	16	1.0	4	1
6.5		★	SSR 06500H7S	76	7	40	16	1.0	4	1
7.0		★	07000H7S	101	8	65	16	1.0	6	1
7.5		★	07500H7S	101	8	65	16	1.0	6	1
8.0	+0.012	★	08000H7S	101	9	65	19	1.0	6	1
8.5	+0.006	★	08500H7S	101	9	65	19	1.0	6	1
9.0		★	09000H7S	101	10	65	19	1.0	6	1
9.5		★	09500H7S	101	10	65	19	1.0	6	1
10.0		★	10000H7S	130	11	85	22	1.0	6	1
10.5		★	SSR 10500H7S	130	11	85	22	1.0	6	1
11.0	+0.015	★	11000H7S	130	12	85	22	1.0	6	1
11.5	+0.008	★	11500H7S	130	12	85	22	1.0	6	1
12.0		★	12000H7S	130	13	85	22	1.0	6	1

Grade: ACR40

Recommended Cutting Conditions J207

Identification Code

SSR Series Code

03500 Dia.

H7S Hole Tolerance for Blind Holes

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

SSR series (Through Hole)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

PVD Coat | Coolant Hole

*For tolerances, refer to Chapter N - References.

Fig 1

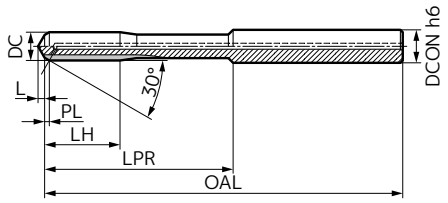
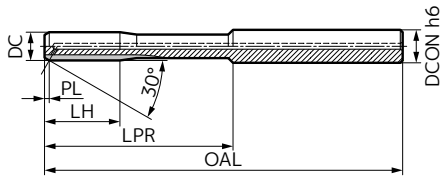


Fig 2



Diameter ø2.97 to 8.99mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Flutes	Fig
2.97	+0.005 0	★	SSR 02970JT	68	4	40	12	0.5	0.7	4	1
2.98		★	02980JT	68	4	40	12	0.5	0.7	4	1
2.99		★	02990JT	68	4	40	12	0.5	0.7	4	1
3.00	+0.005 0	★	SSR 03000JT	68	4	40	12	0.5	0.7	4	1
3.01		★	03010JT	68	4	40	12	0.5	0.8	4	1
3.02		★	03020JT	68	4	40	12	0.5	0.8	4	1
3.03		★	03030JT	68	4	40	12	0.5	0.8	4	1
3.97		★	03970JT	76	5	40	12	0.5	1.0	4	1
3.98		★	03980JT	76	5	40	12	0.5	1.0	4	1
3.99		★	03990JT	76	5	40	12	0.5	1.0	4	1
4.00	+0.005 0	★	SSR 04000JT	76	5	40	12	0.5	1.0	4	1
4.01		★	04010JT	76	5	40	12	0.5	1.0	4	1
4.02		★	04020JT	76	5	40	12	0.5	1.0	4	1
4.03		★	04030JT	76	5	40	12	0.5	1.0	4	1
4.97		★	04970JT	76	6	40	12	0.5	1.3	4	1
4.98		★	04980JT	76	6	40	12	0.5	1.3	4	1
4.99		★	04990JT	76	6	40	12	0.5	1.3	4	1
5.00	+0.005 0	★	SSR 05000JT	76	6	40	12	0.5	1.3	4	1
5.01		★	05010JT	76	6	40	12	0.5	1.3	4	1
5.02		★	05020JT	76	6	40	12	0.5	1.3	4	1
5.03		★	05030JT	76	6	40	12	0.5	1.3	4	1
5.97		★	05970JT	76	7	40	16	1.0	—	4	2
5.98		★	05980JT	76	7	40	16	1.0	—	4	2
5.99		★	05990JT	76	7	40	16	1.0	—	4	2
6.00	+0.005 0	★	SSR 06000JT	76	7	40	16	1.0	—	4	2
6.01		★	06010JT	76	7	40	16	1.0	—	4	2
6.02		★	06020JT	76	7	40	16	1.0	—	4	2
6.03		★	06030JT	76	7	40	16	1.0	—	4	2
6.97		★	06970JT	101	8	65	16	1.0	—	6	2
6.98		★	06980JT	101	8	65	16	1.0	—	6	2
6.99		★	06990JT	101	8	65	16	1.0	—	6	2
7.00	+0.005 0	★	SSR 07000JT	101	8	65	16	1.0	—	6	2
7.01		★	07010JT	101	8	65	16	1.0	—	6	2
7.02		★	07020JT	101	8	65	16	1.0	—	6	2
7.03		★	07030JT	101	8	65	16	1.0	—	6	2
7.97		★	07970JT	101	9	65	19	1.0	—	6	2
7.98		★	07980JT	101	9	65	19	1.0	—	6	2
7.99		★	07990JT	101	9	65	19	1.0	—	6	2
8.00	+0.005 0	★	SSR 08000JT	101	9	65	19	1.0	—	6	2
8.01		★	08010JT	101	9	65	19	1.0	—	6	2
8.02		★	08020JT	101	9	65	19	1.0	—	6	2
8.03		★	08030JT	101	9	65	19	1.0	—	6	2
8.97		★	08970JT	101	10	65	19	1.0	—	6	2
8.98		★	08980JT	101	10	65	19	1.0	—	6	2
8.99		★	08990JT	101	10	65	19	1.0	—	6	2

Grade: ACR40

Recommended Cutting Conditions J207

Diameter ø9.00 to 12.00mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Flutes	Fig
9.00	+0.005 0	★	SSR 09000JT	101	10	65	19	1.0	—	6	2
9.01		★	09010JT	101	10	65	19	1.0	—	6	2
9.02		★	09020JT	101	10	65	19	1.0	—	6	2
9.03		★	09030JT	101	10	65	19	1.0	—	6	2
9.97		★	09970JT	130	11	85	22	1.0	—	6	2
9.98		★	09980JT	130	11	85	22	1.0	—	6	2
9.99		★	09990JT	130	11	85	22	1.0	—	6	2
10.00	+0.005 0	★	SSR 10000JT	130	11	85	22	1.0	—	6	2
10.01		★	10010JT	130	11	85	22	1.0	—	6	2
10.02		★	10020JT	130	11	85	22	1.0	—	6	2
10.03		★	10030JT	130	11	85	22	1.0	—	6	2
10.97		★	10970JT	130	12	85	22	1.0	—	6	2
10.98		★	10980JT	130	12	85	22	1.0	—	6	2
10.99		★	10990JT	130	12	85	22	1.0	—	6	2
11.00	+0.005 0	★	SSR 11000JT	130	12	85	22	1.0	—	6	2
11.01		★	11010JT	130	12	85	22	1.0	—	6	2
11.02		★	11020JT	130	12	85	22	1.0	—	6	2
11.03		★	11030JT	130	12	85	22	1.0	—	6	2
11.97		★	11970JT	130	13	85	22	1.0	—	6	2
11.98		★	11980JT	130	13	85	22	1.0	—	6	2
11.99		★	11990JT	130	13	85	22	1.0	—	6	2
12.00		★	12000JT	130	13	85	22	1.0	—	6	2

Grade: ACR40

Recommended Cutting Conditions J207

Identification Code

SSR 03000 **JT**

- SSR — Series Code
- 03000 — Dia.
- JT — For Through Holes

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

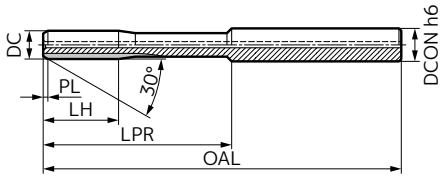
SSR series (Blind Hole)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

PVD Coat | Coolant Hole

*For tolerances, refer to Chapter N - References.

Fig 1



Diameter ø2.97 to 8.99mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Flutes	Fig
2.97	+0.005 0	★	SSR 02970JS	68	4	40	12	0.5	4	1
2.98		★	02980JS	68	4	40	12	0.5	4	1
2.99		★	02990JS	68	4	40	12	0.5	4	1
3.00	+0.005 0	★	SSR 03000JS	68	4	40	12	0.5	4	1
3.01		★	03010JS	68	4	40	12	0.5	4	1
3.02		★	03020JS	68	4	40	12	0.5	4	1
3.03		★	03030JS	68	4	40	12	0.5	4	1
3.97		★	03970JS	76	5	40	12	0.5	4	1
3.98		★	03980JS	76	5	40	12	0.5	4	1
3.99		★	03990JS	76	5	40	12	0.5	4	1
4.00	+0.005 0	★	SSR 04000JS	76	5	40	12	0.5	4	1
4.01		★	04010JS	76	5	40	12	0.5	4	1
4.02		★	04020JS	76	5	40	12	0.5	4	1
4.03		★	04030JS	76	5	40	12	0.5	4	1
4.97		★	04970JS	76	6	40	12	0.5	4	1
4.98		★	04980JS	76	6	40	12	0.5	4	1
4.99		★	04990JS	76	6	40	12	0.5	4	1
5.00	+0.005 0	★	SSR 05000JS	76	6	40	12	0.5	4	1
5.01		★	05010JS	76	6	40	12	0.5	4	1
5.02		★	05020JS	76	6	40	12	0.5	4	1
5.03		★	05030JS	76	6	40	12	0.5	4	1
5.97		★	05970JS	76	7	40	16	1.0	4	1
5.98		★	05980JS	76	7	40	16	1.0	4	1
5.99		★	05990JS	76	7	40	16	1.0	4	1
6.00	+0.005 0	★	SSR 06000JS	76	7	40	16	1.0	4	1
6.01		★	06010JS	76	7	40	16	1.0	4	1
6.02		★	06020JS	76	7	40	16	1.0	4	1
6.03		★	06030JS	76	7	40	16	1.0	4	1
6.97		★	06970JS	101	8	65	16	1.0	6	1
6.98		★	06980JS	101	8	65	16	1.0	6	1
6.99		★	06990JS	101	8	65	16	1.0	6	1
7.00	+0.005 0	★	SSR 07000JS	101	8	65	16	1.0	6	1
7.01		★	07010JS	101	8	65	16	1.0	6	1
7.02		★	07020JS	101	8	65	16	1.0	6	1
7.03		★	07030JS	101	8	65	16	1.0	6	1
7.97		★	07970JS	101	9	65	19	1.0	6	1
7.98		★	07980JS	101	9	65	19	1.0	6	1
7.99		★	07990JS	101	9	65	19	1.0	6	1
8.00	+0.005 0	★	SSR 08000JS	101	9	65	19	1.0	6	1
8.01		★	08010JS	101	9	65	19	1.0	6	1
8.02		★	08020JS	101	9	65	19	1.0	6	1
8.03		★	08030JS	101	9	65	19	1.0	6	1
8.97		★	08970JS	101	10	65	19	1.0	6	1
8.98		★	08980JS	101	10	65	19	1.0	6	1
8.99		★	08990JS	101	10	65	19	1.0	6	1

Grade: ACR40

Recommended Cutting Conditions J207

Diameter ø9.00 to 12.00mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Flutes	Fig
9.00	+0.005 0	★	SSR 09000JS	101	10	65	19	1.0	6	1
9.01		★	09010JS	101	10	65	19	1.0	6	1
9.02		★	09020JS	101	10	65	19	1.0	6	1
9.03		★	09030JS	101	10	65	19	1.0	6	1
9.97		★	09970JS	130	11	85	22	1.0	6	1
9.98		★	09980JS	130	11	85	22	1.0	6	1
9.99		★	09990JS	130	11	85	22	1.0	6	1
10.00	+0.005 0	★	SSR 10000JS	130	11	85	22	1.0	6	1
10.01		★	10010JS	130	11	85	22	1.0	6	1
10.02		★	10020JS	130	11	85	22	1.0	6	1
10.03		★	10030JS	130	11	85	22	1.0	6	1
10.97		★	10970JS	130	12	85	22	1.0	6	1
10.98		★	10980JS	130	12	85	22	1.0	6	1
10.99		★	10990JS	130	12	85	22	1.0	6	1
11.00	+0.005 0	★	SSR 11000JS	130	12	85	22	1.0	6	1
11.01		★	11010JS	130	12	85	22	1.0	6	1
11.02		★	11020JS	130	12	85	22	1.0	6	1
11.03		★	11030JS	130	12	85	22	1.0	6	1
11.97		★	11970JS	130	13	85	22	1.0	6	1
11.98		★	11980JS	130	13	85	22	1.0	6	1
11.99		★	11990JS	130	13	85	22	1.0	6	1
12.00		★	12000JS	130	13	85	22	1.0	6	1

Grade: ACR40

Recommended Cutting Conditions J207

Identification Code

SSR 03000 **JS**

- SSR: Series Code
- 03000: Dia.
- JS: For Blind Holes

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

■ Recommended Cutting Conditions

Work Material	Carbon Steel for Mechanical Structures Alloy Steel for Mechanical Structures General Structural Steel		Cast Iron		Ductile Cast Iron		Hardened Steel Up to 45HRC		Depth of Cut ap (mm/radius)
Cutting Speed	80 to 180m/min		60 to 140m/min		60 to 180m/min		20 to 60m/min		
Diameter DC (mm) / Number of Flutes	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	
ø3 / 4	8,400-19,100	0.5-0.8	6,300-14,800	0.5-0.8	6,300-19,100	0.5-0.8	2,100-6,300	0.12-0.3	0.05-0.075
ø4 / 4	6,300-14,300	0.5-1.0	4,700-11,100	0.5-1.0	4,700-14,300	0.5-1.0	1,500-4,700	0.16-0.3	
ø5 / 4	5,000-11,400	0.6-1.0	3,800-8,900	0.6-1.0	3,800-11,400	0.6-1.0	1,200-3,800	0.16-0.4	
ø6 / 4	4,200-9,500	0.6-1.0	3,100-7,400	0.6-1.0	3,100-9,500	0.6-1.0	1,000-3,100	0.2-0.4	
ø7 / 6	3,600-8,100	0.6-1.8	2,700-6,300	0.6-1.8	2,700-8,100	0.6-1.8	900-2,700	0.25-0.6	0.05-0.10
ø8 / 6	3,100-7,100	0.6-1.8	2,300-5,500	0.6-1.8	2,300-7,100	0.6-1.8	800-2,300	0.25-0.6	
ø9 / 6	2,800-6,300	0.6-1.8	2,100-4,900	0.6-1.8	2,100-6,300	0.6-1.8	700-2,100	0.3-0.6	
ø10 / 6	2,500-5,700	0.6-1.8	1,900-4,400	0.6-1.8	1,900-5,700	0.6-1.8	630-1,900	0.3-0.6	
ø11 / 6	2,300-5,200	0.6-2.0	1,700-4,000	0.6-2.0	1,700-5,200	0.6-2.0	570-1,700	0.3-0.8	0.10-0.15
ø12 / 6	2,100-4,700	0.6-2.0	1,500-3,700	0.6-2.0	1,500-4,700	0.6-2.0	530-1,500	0.3-0.8	

1. The recommended conditions above are for cases where a water soluble coolant is used.
2. Supply sufficient water soluble coolant to the blade.
3. When performing interrupted reaming, reduce the feed rate for the interrupted part by about 30%.
4. Use of external coolant supply is also possible, but chip evacuation may suffer.
5. For machining with oil-based coolant or oil-based MQL, use low speed setting.

■ Precautions for Use

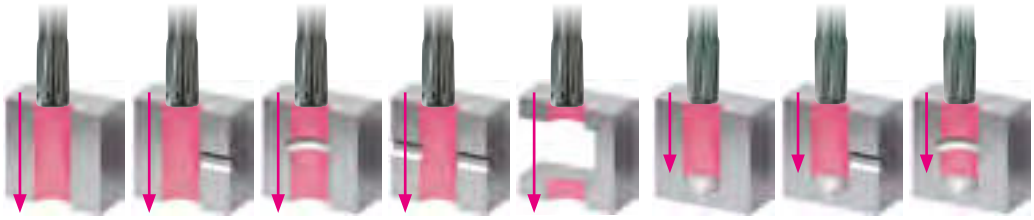
● Runout

Reaming with poor runout negatively affects hole accuracy and tool life.

Mount on a high-accuracy tool holder and collet, etc., in order to minimize cutting edge runout as far as possible. (10µm or less is required.)

Tool holders with hydraulic chuck, shrink-fit, or runout adjustment mechanism are recommended.

● Applicable Hole Shapes



Through Hole | Blind Hole

*There is no bottom cutting edge, so bottom finishing is not possible.

● Coolant

Internal coolant supply is recommended.

We recommend coolant pressure of 1.5MPa or higher for chip evacuation purposes.

Use of external coolant supply may reduce chip evacuation performance and damage machined surface quality.

● Blind Hole with Escape Hole

When reaming blind holes connected to through holes, use through hole type reamers. (Not usable for blind holes)

Also check that the process does not create problems for chip evacuation performance.



Not usable for blind holes

■ Troubleshooting

Failure	Countermeasures
Enlarged hole diameter	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or runout adjustment mechanism) · Decrease cutting speed. · Increase feed rate. · Reduce stock removal. · Check cutting edge for damage. · Change reamer diameter. · Increase coolant concentration.
Tapered hole	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or runout adjustment mechanism) · Decrease cutting speed. · Reduce feed rate. · Review pre-reaming process. (Prepared hole deviation) · Review workpiece clamping method. · Compare hole diameters when the workpiece is clamped and unclamped. · Correct chip evacuation. (Increase coolant supply pressure) · Adjust coolant concentration.
Chatter marks on reamed surface	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or runout adjustment mechanism) · Decrease cutting speed. · Increase feed rate. · Review workpiece clamping method. · Change cutting edge approach angle to a made-to-order design.
Poor finished surface roughness	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or runout adjustment mechanism) · Increase cutting speed. · Check cutting edge for damage. · Check whether cutting conditions are within the recommended range. · Increase coolant concentration.
Return marks	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or runout adjustment mechanism) · Check cutting edge for damage. · Reduce stock removal. · Decrease return rate after reaming.
Irregular cutting noise	· Check cutting edge for damage. · Increase the stock removal. · Decrease the coolant concentration. · Change cutting edge approach angle to a made-to-order design.
Smaller hole diameter	· Increase cutting speed. · Reduce feed rate. · Check cutting edge for damage. · Increase the stock removal. · Decrease the coolant concentration.

■ Application Examples

Steel C45 Automotive Component		Sumitomo	Competitor's Product
Horizontal Machining Centre	Diameter (mm)	7	7
	Number of Flutes	6	3
	vc (m/min)	110	50
	f (mm/rev)	0.55	0.36
	vf (mm/min)	2,752	819
	ap (mm)	0.05	0.15
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø7 $^{+0.020}_{0}$ (Drilled hole depth: 23mm) Surface Roughness: Ra 1.0µm	Results	3x or more machining efficiency, 4x tool life achieved	

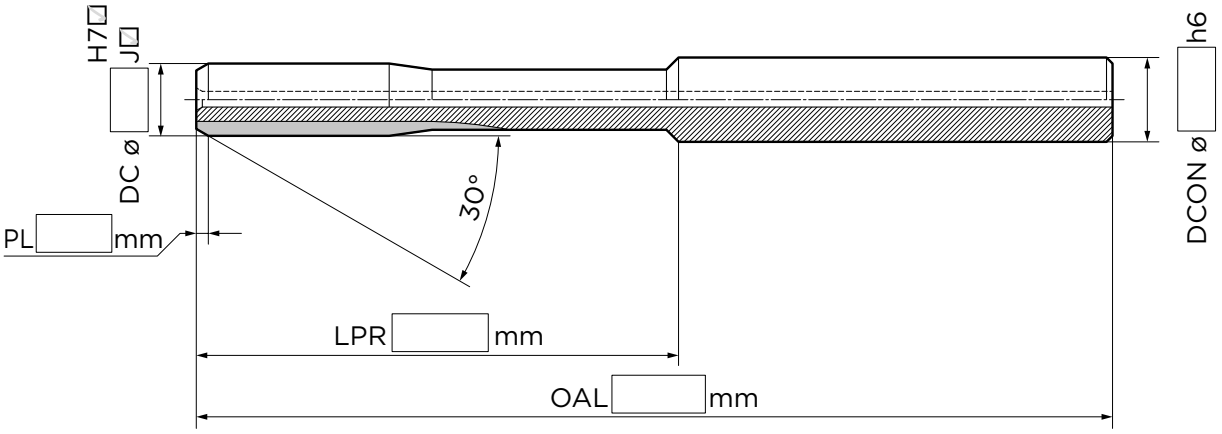
Cast Iron EN-GJV-420 Hydraulic Component		Sumitomo	Competitor's Product
Vertical Machining Centre	Diameter (mm)	11	11
	Number of Flutes	6	6
	vc (m/min)	110	15
	f (mm/rev)	0.66	0.12
	vf (mm/min)	2,101	52
	ap (mm)	0.1	0.1
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø11 $^{+0.018}_{0}$ (Drilled hole depth: 15mm) Surface Roughness: Ra 1.6µm	Results	40x or more machining efficiency, 2.3x tool life achieved Machining cycle time reduced from 17.3 seconds to 0.4 seconds	

Steel C45 Automotive Component		Sumitomo	Competitor's Product
NC Lathe	Diameter (mm)	5.5	5.5
	Number of Flutes	4	4
	vc (m/min)	90	90
	f (mm/rev)	1.0	1.0
	vf (mm/min)	5,211	5,211
	ap (mm)	0.1	0.1
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø5.5 $^{+0.030}_{0}$ (Drilled hole depth: 35mm) Surface Roughness: Rz 6.3µm	Results	Tool life doubled	

Steel 42 CrMo 4 (45HRC) Automotive Component		Sumitomo	Competitor's Product
NC Lathe	Diameter (mm)	8	8
	Number of Flutes	6	6
	vc (m/min)	40	20
	f (mm/rev)	0.14	0.09
	vf (mm/min)	223	72
	ap (mm)	0.15	0.15
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø8 $^{+0.030}_{0}$ (Drilled hole depth: 33mm) Surface Roughness: Ra 1.6µm	Results	3x or more machining efficiency, 2.9x tool life achieved	

*For diameters of ø12mm or larger, use the SumiReamer SR series.

SumiReamer SSR series Made-to-Order Request Sheet



■ Machine Information

Manufacturer :

Type : ☐ MC ☐ NC Lathe ☐ Multi-tasking Machine

Tool Holder : ☐ BT ☐ HSK ☐ Other

Coolant : ☐ Water-soluble ☐ Oil-based ☐ MQL

Coolant Supply : ☐ Internal Coolant Supply ☐ External Coolant Supply

■ Workpiece Information

Part Name :

Work Material :

Work Material Hardness :

Hole type : ☐ Through Hole ☑ Blind Hole

Interrupted Cutting : ☐ Yes ☑ No

Hole Depth :

■ Workpiece Shape

■ Required Precision

Hole Dia. tolerance :

Surface Roughness :

Circularity :

Cylindricity :

Other :

■ Current Tool

Number of Flutes :

Cutting Conditions : vc = m/min f = mm/rev ap = mm

Tool Life :

Tool Life Criteria :

After filling in the required dimensions and other information, contact our nearest sales office or distributor.

Feel free to contact us with other requests as well.

Company Name/Contact

■ Remarks

MEMO

SR series



SR Small Ø 7.600 - 13.100 mm /
SR Medium Ø 11.900 - 140.600 mm /
SR Large Ø 139.801 – 200.200 mm

■ Features

- Modular Replaceable Insert Reaming System with diameter from 7.600 mm to 200.200 mm
- Fast and simple insert change
- Fast insert change in µm-area without additional adjusting effort
- Largest standard product line with customer-specific diameter without any surcharge
- The combination of cutting materials, insert and shank system provides a high level of flexibility
- Significant cost reduction thanks to high-speed data
- Low cost per part du to increased productivity and minimum machine down-times

■ Explanation of SR Reamer System sizes

Type	System Size	Ø- Area	Description
SR SMALL	SRS 08	7.600 – 8.100	SR**S** G/L Ø
	SRS 10	8.101 – 9.600	
	SRS 11	9.601 – 11.100	
	SRS 13	11.101 – 13.100	
SR MEDIUM	SR 16	11.900 – 15.600	SR G/L Ø
	SR 19	15.601 – 18.600	
	SR 24	18.601 – 23.600	
	SR 29	23.601 – 28.600	
	SR 36	28.601 – 35.600	
	SR 44	35.601 – 43.600	
	SR 52	43.601 – 51.600	
	SR 61	51.601 – 60.600	
	SR 81	60.601 – 80.600	
	SR 101	80.601 – 100.600	
	SR 121	100.601 – 120.600	
	SR 141	120.601 – 140.600	
SR LARGE	SRE 150	139.801 – 149.800	SR**E** G/L Ø
	SRE 160	149.801 – 159.800	
	SRE 170	159.801 – 169.800	
	SRE 180	169.801 – 179.800	
	SRE 190	179.801 – 189.800	
	SRE 200	189.801 – 200.200	

(1) **SR = SumiReamer**
(2) **S = Small** (Ø 7.600 - 13.100)
(empty) = **Medium** (Ø11.900 - 140.600)
E = Large (Ø 139.801 – 200.200)
(3) **G = Straight fluted** (Flute form)
L = Left Helical Fluted (Flute form)
(4a) **12.2H7** = Diameter (mm) and tolerance in ISO standard
(4b) 8^{+20}_{-10} = Ø 8^{+20}_{-10} Diameter with free tolerance ($^{+20}_{-10}$ µm)
(4c) **12.205 Q+3-3 =**
Diameter as target size and Manufacturing tolerance of cutting insert
(5) **A06** = Standard cutting geometry (angle ≤ 45°)
B06 = Standard cutting geometry (angle ≤ 25°)
Many more geometries available -
Please contact Sumitomo.
(6) ***F05*** = Carbide (Cutting material)
F0500 = Carbide uncoated (Cutting material)
T12 = Cermet (Cutting material)
T1200A = Cermet uncoated (Cutting material)
(7) **12R1** = Coating: AlCrN thin coating
(many other coatings available)

■ ISO- Hole tolerances manufacturing tolerance

SR S G 12.2H7 A06 F05 12R1
(1) (2) (3) (4a) (5) (6) (7)

For orders with specifications of ISO- Hole tolerance (e.g. H7) the diameter is defined by Sumitomo standard.
Depending on tolerance range, the final diameter will be within 65% to 80% of the total tolerance.

■ Free Hole tolerance

SR S G 8+20-10 A06 F05 12R1
(1) (2) (3) (4b) (5) (6) (7)

For orders with specifications of free hole tolerance the diameter is defined by Sumitomo standard.
Depending on tolerance range, the final diameter will be within 65% to 80% of the total tolerance.

■ Target Size (Q-Insert)

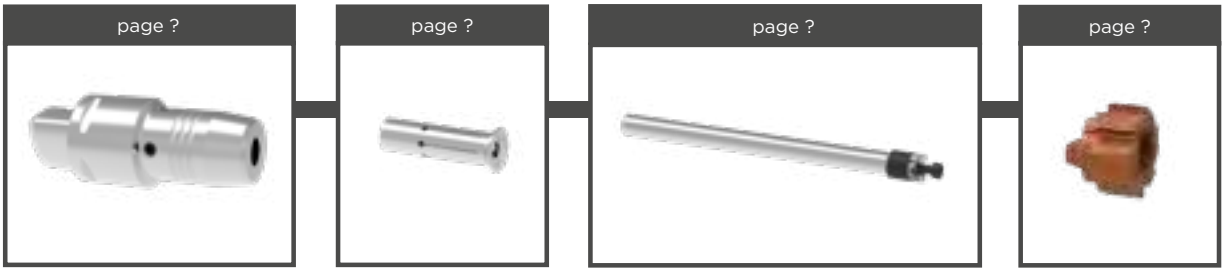
SR S G 12.205 Q+3-3 A06 F05 12R1
(1) (2) (3) (4c) (5) (6) (7)

A Q-insert designation is to be selected for any specific insert dimension. Opposed to standard inserts where all tolerances refer to the hole tolerance, Q-inserts indicate the required insert diameter (target size).
Q-inserts are recommended for special applications where standard tolerance ranges are not applicable.

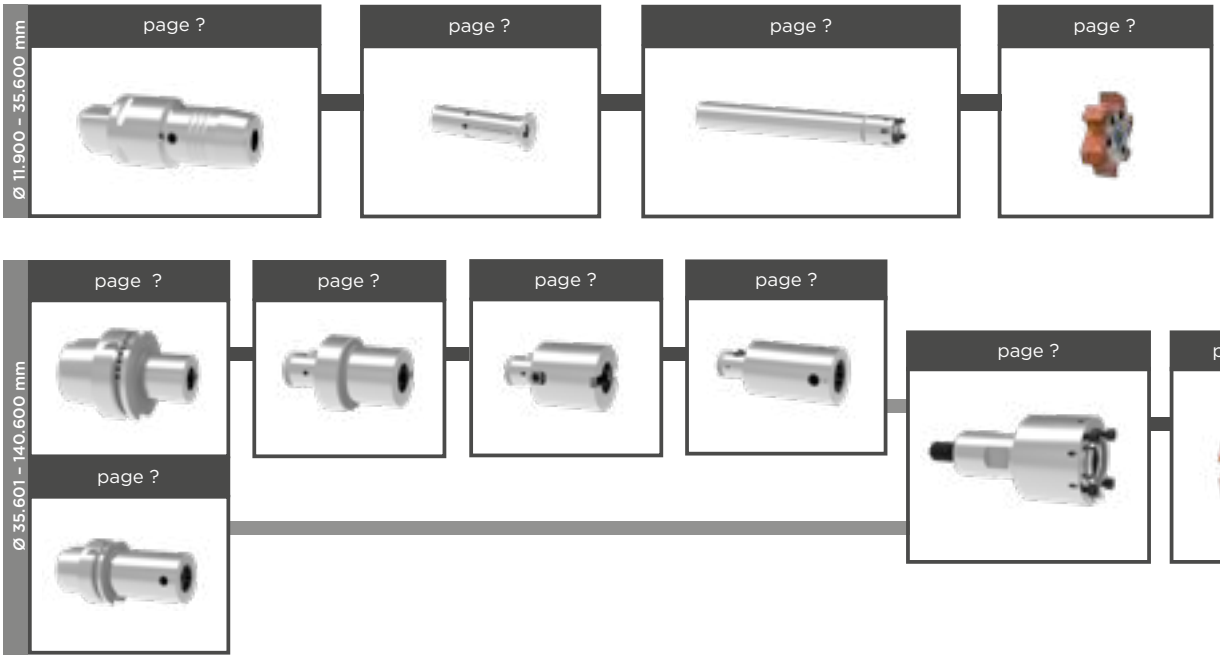
*There is a big variety of combinations available. Please contact your Sumitomo reference person.

SR series

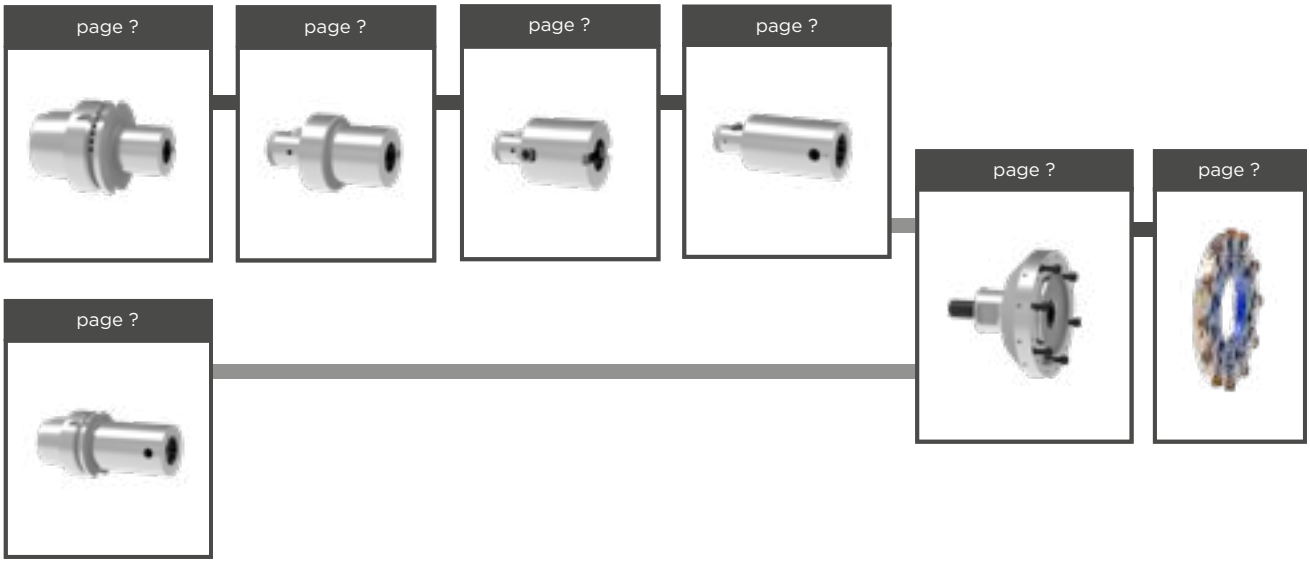
■ SR Small Ø 7.600 - 13.100 mm



■ SR Medium Ø 11.900 - 140.600 mm



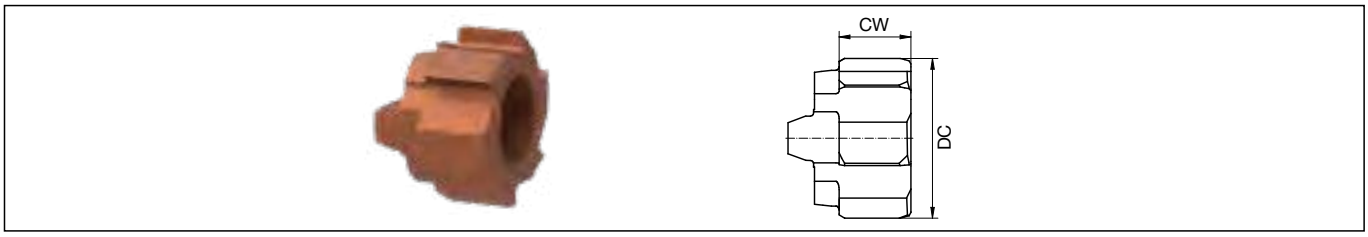
■ SR Large Ø 139.801 – 200.200 mm



SR Reamer Small

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Cutting Insert

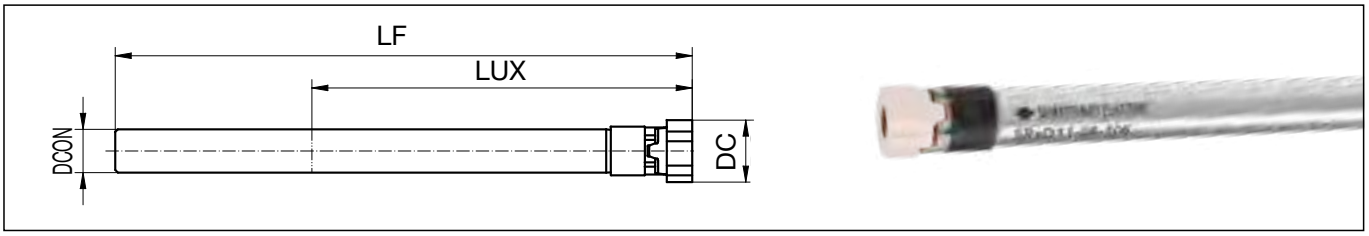


- **SRSG** Straight fluted: for through and blind hole
- **SRSL** left helical fluted: for through holes

■ SRSG / SRSL

System size	Description		Ø DC (mm)	CW (mm)	Number of teeth
	Straight fluted	Left helical fluted			
SRS 08	SRSG08	SRSL08	7.600 - 8.100	4.5	4
SRS 10	SRSG10	SRSL10	8.101 - 9.600	4.5	6
SRS 11	SRSG11	SRSL11	9.601 - 11.100	4.5	6
SRS 13	SRSG13	SRSL13	11.101 - 13.100	4.5	6

■ Holder



Steel Holder SRSD / SRSB

Dimensions (*mm*)

System size	Ø DC (mm)	Description				DCON	LF	LUX
		SRSD (Through Hole)		SRSB (Stop Hole)				
		Stock	Cat. No.	Stock	Cat. No.			
SRS 08	7.600 - 8.100	★	**SRSD08-06-086**	★	**SRSB08-06-086**	6	86	50
SRS 10	8.101 - 9.600	★	**SRSD10-06-096**	★	**SRSB10-06-096**	6	96	60
SRS 11	9.601 - 11.100	★	**SRSD11-08-106**	★	**SRSB11-08-106**	8	106	70
SRS 13	11.101 - 13.100	★	**SRSD13-08-120**	★	**SRSB13-08-120**	8	120	84

Carbide Holder SRSD / SRSB

Dimensions (*mm*)

System size	Ø DC (mm)	Description				DCON	LF	LUX
		SRSD (Through Hole)		SRSB (Stop Hole)				
		Stock	Cat. No.	Stock	Cat. No.			
SRS 08	7.600 - 8.100	★	**SRSD08-06-102HM**	★	**SRSB08-06-102HM**	6	102	66
SRS 10	8.101 - 9.600	★	**SRSD10-06-116HM**	★	**SRSB10-06-116HM**	6	116	80
SRS 11	9.601 - 11.100	★	**SRSD11-08-126HM**	★	**SRSB11-08-126HM**	8	126	90
SRS 13	11.101 - 13.100	★	**SRSD13-08-150HM**	★	**SRSB13-08-150HM**	8	150	114

*All Holders can be shortened to optimal length upon request (extra charge).

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Small

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Compensating Hydraulic Chuck (TENDOzero)



Fig 1

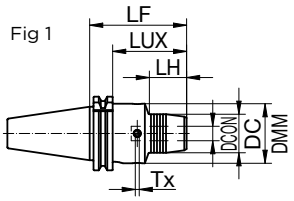


Fig 2

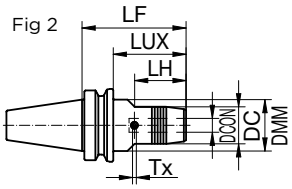


Fig 3

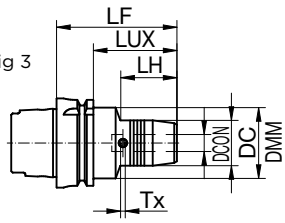
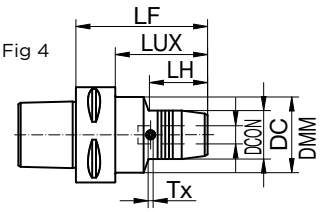


Fig 4



DIN 69871-AD/B

Dimensions (*mm*)

Cat. No.	Stock	Interface	DC	DCON	DMM	LF	LH	LUX	Weight (kg)	Fig
204266Z	★	SK40	42	20	50	81	34	62	1.4	1
204246Z	★	SK50	42	20	50	81	34	62	3.3	1

MAS-BT JIS 6339-AD/B

Dimensions (*mm*)

Cat. No.	Stock	Interface	DC	DCON	DMM	LF	LH	LUX	Weight (kg)	Fig
205636Z	★	BT30	42	20	45	90	48	63	1.5	2
204445Z	★	BT40	42	20	45	90	48	63	1.5	2
204457Z	★	BT50	42	20	45	90	34	52	4.0	2

DIN 69893-HSK-A

Dimensions (*mm*)

Cat. No.	Stock	Interface	DC	DCON	DMM	LF	LH	LUX	Weight (kg)	Fig
204056Z	★	HSK63	42	20	50	90	48	64	1.3	3
204066Z	★	HSK100	42	20	50	105	59	76	2.8	3

*Coolant tube not included.

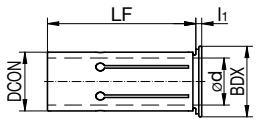
Polygon DIN 26623-1-PSC

Dimensions (*mm*)

Cat. No.	Stock	Interface	DC	DCON	DMM	LF	LH	LUX	Weight (kg)	Fig
201846Z	★	PSC50	42	20	50	90	52	-	1.0	4
201856Z	★	PSC63	42	20	63	97	55	-	1.6	4



Fig 1



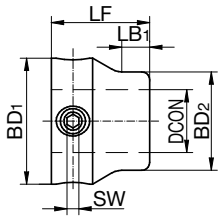
Reducers for Hydro-Compensation Chuck (TENDOzero)

Dimensions (*mm*)

Cat. No.	Stock	BDX	ød	DCON	LF	l_1	Fig
0207923	★	24.0	6	20	50.5	2	1
0207925	★	24.0	8	20	50.5	2	1



Fig 2



Compensation Sleeve

Dimensions (*mm*)

System size	Description	Stock	DCON	BD_1	BD_2	LF	LB_1	SW	Fig
SRS 08	**MHS08/10-06-20-016**	★	6	20	16	16	3	2.5	2
SRS 10	**MHS08/10-06-20-016**	★	6	20	16	16	3	2.5	2
SRS 11	**MHS11/13-08-22-018**	★	8	22	16	18	4	2.5	2
SRS 13	**MHS11/13-08-22-018**	★	8	22	16	18	4	2.5	2

Note: Not applicable for carbide holders.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Cutting Insert



Fig 1

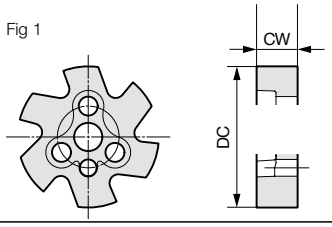
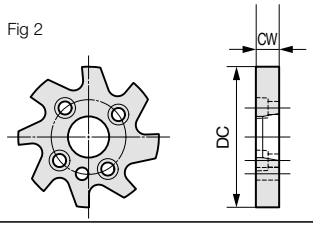


Fig 2



- **SRSG** Straight fluted: for through and blind hole
- **SRSL** left helical fluted: for through holes

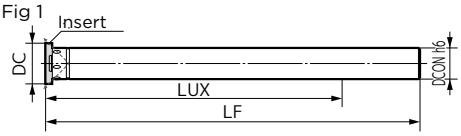
SRG / SRL

System size	Descriptions		Ø DC (mm)	CW (mm)	Number of teeth	Fig
	Straight fluted	Left helical fluted				
SR 16	SRG16	SRL16	11.900 – 15.600	4.3	6	1
SR 19	SRG19	SRL19	15.601 – 18.600	4.3	6	1
SR 24	SRG24	SRL24	18.601 – 23.600	4.3	6	1
SR 29	SRG29	SRL29	23.601 – 28.600	4.3	8	1
SR 36	SRG36	SRL36	28.601 – 35.600	4.3	8	1
SR 44	SRG44	SRL44	35.601 – 43.600	4.3	8	2
SR 52	SRG52	SRL52	43.601 – 51.600	4.3	10	2
SR 61	SRG61	SRL61	51.601 – 60.600	4.3	10	2
SR 81	SRG81	SRL81	60.601 – 80.600	4.3	12	2
SR 101	SRG101	SRL101	80.601 – 100.600	4.3	12	2
SR 121	SRG121	SRL121	100.601 – 120.600	5.3	12	2
SR 141	SRG141	SRL141	120.601 – 140.600	5.3	12	2



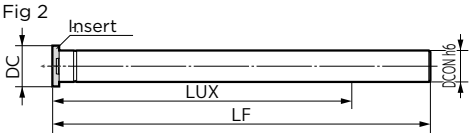
● SRD (Through Hole)

Fig 1



● SRB (Stop Hole)

Fig 2



Holder (ø11.900 to 35.600mm)

Dimensions (*mm*)

System size		Ø DC (mm)	Holder Cat. No.												DCON	LF	LUX
			SRD			SRB			Carbide Shank SRD			Carbide Shank SRB					
			Stock	Cat. No.	Fig	Stock	Cat. No.	Fig	Stock	Cat. No.	Fig	Stock	Cat. No.	Fig			
SR 16	Short	11.900 - 15.600	★	**SRD16-10-100**	1	★	**SRB16-10-100**	2		—			—		10	100	60
SR 19	Short	15.601 - 18.600	★	**SRD19-12-115**	1	★	**SRB19-12-115**	2		—			—		12	115	70
SR 24	Short	18.601 - 23.600	★	**SRD24-16-128**	1	★	**SRB24-16-128**	2		—			—		16	128	80
SR 29	Short	23.601 - 28.600	★	**SRD29-20-145**	1	★	**SRB29-20-145**	2		—			—		20	145	95
SR 36	Short	28.601 - 35.600	★	**SRD36-25-170**	1	★	**SRB36-25-170**	2		—			—		25	170	110
SR 16	Long	11.900 - 15.600	★	**SRD16-10-160**	1	★	**SRB16-10-160**	2	★	**SRD16-10-160HM**	1	★	**SRB16-10-160HM**	2	10	160	120
SR 19	Long	15.601 - 18.600	★	**SRD19-12-185**	1	★	**SRB19-12-185**	2	★	**SRD19-12-185HM**	1	★	**SRB19-12-185HM**	2	12	185	140
SR 24	Long	18.601 - 23.600	★	**SRD24-16-208**	1	★	**SRB24-16-208**	2	★	**SRD24-16-208HM**	1	★	**SRB24-16-208HM**	2	16	208	160
SR 29	Long	23.601 - 28.600	★	**SRD29-20-240**	1	★	**SRB29-20-240**	2	★	**SRD29-20-240HM**	1	★	**SRB29-20-240HM**	2	20	240	190
SR 36	Long	28.601 - 35.600	★	**SRD36-25-274**	1	★	**SRB36-25-274**	2	★	**SRD36-25-274HM**	1	★	**SRB36-25-274HM**	2	25	274	214

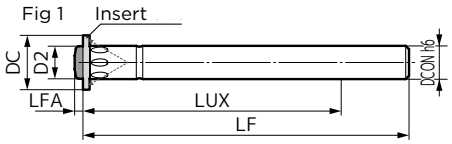
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

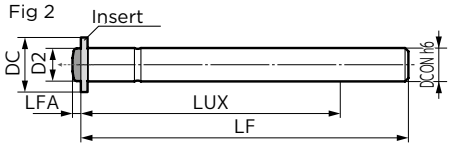
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy



● SRD-SD (Through Hole)



● SRB-SD (Stop Hole)



Steel Shank Holder SRD-SD/SRB-SD (Center Bolt Clamp)

Dimensions (*mm*)

System size		Ø DC (mm)	Holder Cat. No. SRD (Through Hole) Stock	SRD Cat. No.	SRD Fig	Holder Cat. No. SRB (Stop Hole) Stock	SRB Cat. No.	SRB Fig	DCON	LF	LUX	D2	LFA
SR 16	Short	11.900 - 15.600	★	**SRD16-10-100SD**	1	★	**SRB16-10-100SD**	2	10	100	60	9.8	2.5
SR 19	Short	15.601 - 18.600	★	**SRD19-12-115SD**	1	★	**SRB19-12-115SD**	2	12	115	70	11.8	3.0
SR 24	Short	18.601 - 23.600	★	**SRD24-16-128SD**	1	★	**SRB24-16-128SD**	2	16	128	80	15.8	4.0
SR 29	Short	23.601 - 28.600	★	**SRD29-20-145SD**	1	★	**SRB29-20-145SD**	2	20	145	95	15.8	4.0
SR 36	Short	28.601 - 35.600	★	**SRD36-25-170SD**	1	★	**SRB36-25-170SD**	2	25	170	110	24.5	4.0
SR 16	Long	11.900 - 15.600	★	**SRD16-10-160SD**	1	★	**SRB16-10-160SD**	2	10	160	120	9.8	2.5
SR 19	Long	15.601 - 18.600	★	**SRD19-12-185SD**	1	★	**SRB19-12-185SD**	2	12	185	140	11.8	3.0
SR 24	Long	18.601 - 23.600	★	**SRD24-16-208SD**	1	★	**SRB24-16-208SD**	2	16	208	160	15.8	4.0
SR 29	Long	23.601 - 28.600	★	**SRD29-20-240SD**	1	★	**SRB29-20-240SD**	2	20	240	190	15.8	4.0
SR 36	Long	28.601 - 35.600	★	**SRD36-25-274SD**	1	★	**SRB36-25-274SD**	2	25	274	214	24.5	4.0

Carbide Shank Holder SRD-SD/SRB-SD (Center Bolt Clamp)

Dimensions (*mm*)

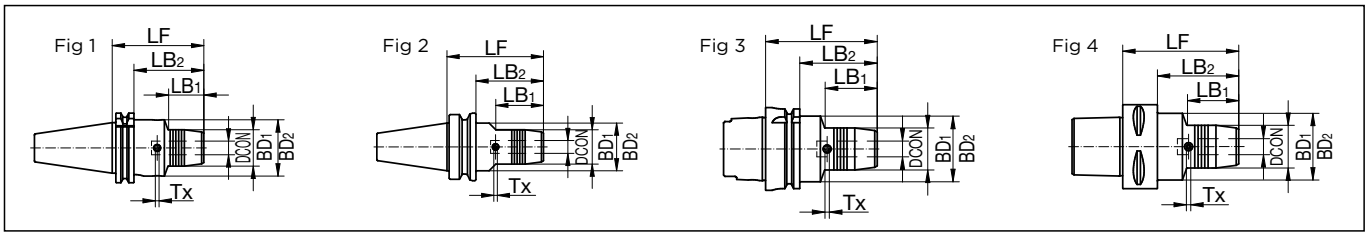
System size		Ø DC (mm)	Holder Cat. No. SRD (Through Hole) Stock	SRD Cat. No.	SRD Fig	Holder Cat. No. SRB (Stop Hole) Stock	SRB Cat. No.	SRB Fig	DCON	LF	LUX	D2	LFA
SR 16	Long	11.900 - 15.600	★	**SRD16-10-160HMSD**	1	★	**SRB16-10-160HMSD**	2	10	160	120	9.8	2.5
SR 19	Long	15.601 - 18.600	★	**SRD19-12-185HMSD**	1	★	**SRB19-12-185HMSD**	2	12	185	140	11.8	3.0
SR 24	Long	18.601 - 23.600	★	**SRD24-16-208HMSD**	1	★	**SRB24-16-208HMSD**	2	16	208	160	15.8	4.0
SR 29	Long	23.601 - 28.600	★	**SRD29-20-240HMSD**	1	★	**SRB29-20-240HMSD**	2	20	240	190	15.8	4,0
SR 36	Long	28.601 - 35.600	★	**SRD36-25-274HMSD**	1	★	**SRB36-25-274HMSD**	2	25	274	214	24.5	4.0

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ "TENDOzero" Compensating Hydraulic Chuck



DIN 69871-AD/B

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Weight (kg)	Fig
204266Z	★	SK40	20	42	50	81	34	62	1.4	1
204267Z	★	SK40	32	63	80	81	26	62	2.0	1
204246Z	★	SK50	20	42	50	81	34	62	3.3	1
204247Z	★	SK50	32	64	70	104	63	84	4.4	1

MAS-BT JIS 6339-AD/B

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Weight (kg)	Fig
205636Z	★	BT30	20	42	45	90	48	63	1.5	2
204445Z	★	BT40	20	42	45	90	48	63	1.5	2
204457Z	★	BT50	20	42	45	90	34	52	4.0	2
204458Z	★	BT50	32	64	70	120	63	82	5.3	2

DIN 69893-HSK-A

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Weight (kg)	Fig
204056Z	★	HSK63	20	42	50	90	48	64	1.3	3
204057Z	★	HSK63	25	57	63	120	59	94	2.2	3
204058Z	★	HSK63	32	64	75	125	63	99	2.7	3
204066Z	★	HSK100	20	42	50	105	59	76	2.8	3
204067Z	★	HSK100	25	57	63	110	62	81	2.8	3
204068Z	★	HSK100	32	64	75	110	62	81	3.8	3

DIN 26623-1-PSC

Dimensions (*mm*)

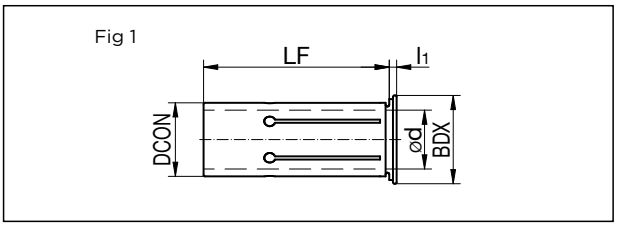
Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Weight (kg)	Fig
201846Z	★	PSC50	20	42	50	90	52	-	1.0	4
201856Z	★	PSC63	20	42	63	97	55	-	1.6	4
201858Z	★	PSC63	32	63	63	110	62	-	2.8	4

* Coolant tube is not included.

Reducers for compensating hydraulic chuck (TENDOzero)

Dimensions (*mm*)

Cat. No.	Stock	BDX	ød	DCON	LF	l_1	Fig
0207927	★	24.0	10	20	50.5	2	1
0207929	★	24.0	12	20	50.5	2	1
0207933	★	24.0	16	20	50.5	2	1
0207947	★	35.5	20	32	60.5	3	1
0207948	★	35.5	25	32	60.5	3	1

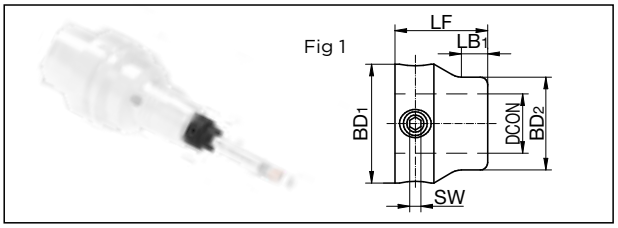


Compensation Sleeve

Dimensions (*mm*)

System size	Cat. No.	Stock	DCON	BD_1	BD_2	LF	LB_1	SW	Fig
SR 16	**MH16-10-26-020**	★	10	26	20	20	5	3	1
SR 19	**MH19-12-28-020**	★	12	28	22	20	5	3	1
SR 24	**MH24-16-32-025**	★	16	32	25	25	7	3	1
SR 29	**MH29-20-40-032**	★	20	40	32	32	10	4	1
SR 36	**MH36-25-45-035**	★	25	45	38	35	13	4	1

note: not applicable for carbide shank insert holders



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Adaptors (with Integrated Compensation Device)



Fig 1

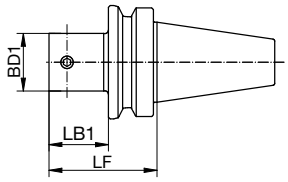
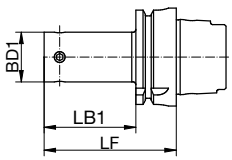


Fig 2



DIN 69871-AD/B

Dimensions (*mm*)

System size	Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SR 44	**SRAD10-40A-44-065**	★	SK40	32	65	46	1.1	1
SR 52	**SRAD10-40A-52-065**	★	SK40	39	65	46	1.2	1
SR 61	**SRAD10-40A-61-075**	★	SK40	46	75	56	1.4	1
SR 81	**SRAD10-40A-81-080**	★	SK40	56	80	61	1.6	1
SR 101 - SR 141	**SRAD10-40A-101-095**	★	SK40	76	95	76	2.2	1
SR 44	**SRAD10-50A-44-065**	★	SK50	32	65	46	2.9	1
SR 52	**SRAD10-50A-52-065**	★	SK50	39	65	46	3.0	1
SR 61	**SRAD10-50A-61-075**	★	SK50	46	75	56	3.2	1
SR 81	**SRAD10-50A-81-085**	★	SK50	56	85	66	3.6	1
SR 101 - SR 141	**SRAD10-50A-101-095**	★	SK50	76	95	76	4.6	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

System size	Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SR 44	**SRAT10-40A-44-060**	★	BT40	32	60	33	1.1	1
SR 52	**SRAT10-40A-52-065**	★	BT40	39	65	38	1.3	1
SR 61	**SRAT10-40A-61-070**	★	BT40	46	70	43	1.4	1
SR 81	**SRAT10-40A-81-080**	★	BT40	56	80	53	1.7	1
SR 101 - SR 141	**SRAT10-40A-101-095**	★	BT40	76	95	—	2.5	1
SR 44	**SRAT10-50A-44-065**	★	BT50	32	65	27	3.7	1
SR 52	**SRAT10-50A-52-065**	★	BT50	39	65	27	3.8	1
SR 61	**SRAT10-50A-61-075**	★	BT50	46	75	37	4.0	1
SR 81	**SRAT10-50A-81-085**	★	BT50	56	85	47	4.3	1
SR 101 - SR 141	**SRAT10-50A-101-095**	★	BT50	76	95	57	5.1	1

DIN 69893-HSK-A

Dimensions (*mm*)

System size	Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SR 44	**SRAH10-63A-44-085**	★	HSK63	32	85	59	1.0	2
SR 52	**SRAH10-63A-52-090**	★	HSK63	39	90	64	1.2	2
SR 61	**SRAH10-63A-61-100**	★	HSK63	46	100	74	1.5	2
SR 81	**SRAH10-63A-81-105**	★	HSK63	56	105	79	1.8	2
SR 101 - SR 141	**SRAH10-63A-101-120**	★	HSK63	76	120	94	2.4	2
SR 44	**SRAH10-100A-44-090**	★	HSK100	32	90	61	2.3	2
SR 52	**SRAH10-100A-52-095**	★	HSK100	39	95	66	2.6	2
SR 61	**SRAH10-100A-61-100**	★	HSK100	46	100	71	2.8	2
SR 81	**SRAH10-100A-81-120**	★	HSK100	56	120	91	3.5	2
SR 101 - SR 141	**SRAH10-100A-101-130**	★	HSK100	76	130	101	5.0	2

*Coolant tube is not included

★mark: Global stocked item
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Blank: Made-to-order item
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N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

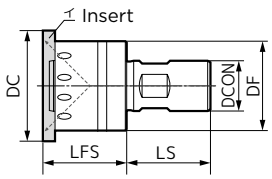
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Insert Holders



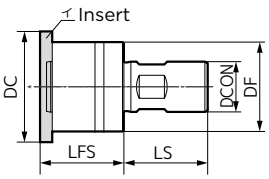
● SRKG (Through Hole)

Fig 1



● SRKB (Stop Hole)

Fig 2



ø35.601 - 140.600 mm

Dimensions (*mm*)

System size	Ø DC (mm)	Holder Cat. No.						DF	DCON	LFS	LS	Insert Screws
		Stock	SRKG	Fig	Stock	SRKB	Fig					
SR 44	35.601 - 43.600	★	**SRKG44-32-18-030**	1	★	**SRKB44-32-18-030**	2	32	18	30	30	C00-90-02 (4x)
SR 52	43.601 - 51.600	★	**SRKG52-39-20-035**	1	★	**SRKB52-39-20-035**	2	39	20	35	30	C00-90-02 (5x)
SR 61	51.601 - 60.600	★	**SRKG61-46-25-040**	1	★	**SRKB61-46-25-040**	2	46	25	40	35	C00-90-02 (5x)
SR 81	60.601 - 80.600	★	**SRKG81-56-32-050**	1	★	**SRKB81-56-32-050**	2	56	32	50	40	C00-90-04 (4x)
SR 101	80.601 - 100.600	★	**SRKG101-76-40-060**	1	★	**SRKB101-76-40-060**	2	76	40	60	50	C00-90-04 (8x)
SR 121	100.601 - 120.600	★	**SRKG121-76-40-060**	1	★	**SRKB121-76-40-060**	2	76	40	60	50	C00-90-04 (8x)
SR 141	120.601 - 140.600	★	**SRKG141-76-40-060**	1	★	**SRKB141-76-40-060**	2	76	40	60	50	C00-90-04 (8x)

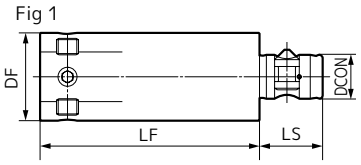
■ Shanks (with Integrated Compensation Device)

● SRA Shank



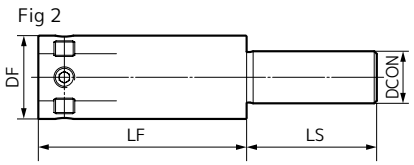
BM (Beta Module Shank)

Fig 1



ZS (Cylindrical Shank)

Fig 2



Dimensions (*mm*)

System size	Shank Type	Ø DC (mm)	Holder Cat. No.		DF	DCON	LF	LS	Fig
			Stock	SRA					
SR 44	BM	35.601 - 43.600	★	**SRA44-32-BM32-055**	32	BM-32	55	23.0	1
			★	**SRA44-32-BM32-080**	32	BM-32	80	23.0	1
SR 52		43.601 - 51.600	★	**SRA52-39-BM40-060**	39	BM-40	60	26.0	1
			★	**SRA52-39-BM40-100**	39	BM-40	100	26.0	1
SR 61		51.601 - 60.600	★	**SRA61-46-BM50-070**	46	BM-50	70	31.0	1
			★	**SRA61-46-BM50-120**	46	BM-50	120	31.0	1
SR 81		60.601 - 80.600	★	**SRA81-56-BM50-080**	56	BM-50	80	31.0	1
			★	**SRA81-56-BM50-140**	56	BM-50	140	31.0	1
SR 101		80.601 - 140.600	★	**SRA101-76-BM63-100**	76	BM-63	100	38.0	1
			★	**SRA101-76-BM63-160**	76	BM-63	160	38.0	1
SR 44	ZS	35.601 - 43.600	★	**SRA44-32-ZS20-055**	32	ZS-20	55	50.0	2
			★	**SRA44-32-ZS20-080**	32	ZS-20	80	50.0	2
SR 52		43.601 - 51.600	★	**SRA52-39-ZS25-060**	39	ZS-25	60	56.0	2
			★	**SRA52-39-ZS25-100**	39	ZS-25	100	56.0	2
SR 61		51.601 - 60.600	★	**SRA61-46-ZS32-070**	46	ZS-32	70	60.0	2
			★	**SRA61-46-ZS32-120**	46	ZS-32	120	60.0	2
SR 81		60.601 - 80.600	★	**SRA81-56-ZS40-080**	56	ZS-40	80	70.0	2
			★	**SRA81-56-ZS40-140**	56	ZS-40	140	70.0	2
SR 101 - 141		80.601 - 140.600	★	**SRA101-76-ZS40-100**	76	ZS-40	100	70.0	2
			★	**SRA101-76-ZS40-160**	76	ZS-40	160	70.0	2

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Beta-Module Reducers and Extensions



Fig 1

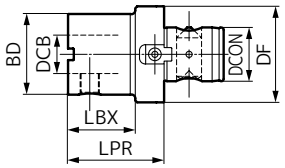
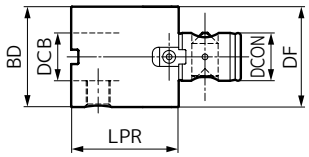


Fig 2



Reducers Beta-Module

Dimensions (*mm*)

Cat. No.	Stock	BD	DCB	DF	DCON	LPR	LBX	Weight (kg)	Fig
B12-40-32-045	★	32	BM-32	42	BM-40	45	30	0.3	1
B12-50-40-050	★	42	BM-40	50	BM-50	50	35	0.5	1
B12-63-32-050	★	32	BM-32	63	BM-63	50	30	0.9	1
B12-63-40-055	★	42	BM-40	63	BM-63	55	35	1.1	1
B12-63-50-060	★	50	BM-50	63	BM-63	60	40	1.1	1
B12-80-40-060	★	42	BM-40	80	BM-80	60	35	2.2	1
B12-80-63-060	★	63	BM-63	80	BM-80	60	35	2.4	1
B12-100-63-060	★	63	BM-63	100	BM-100	60	35	3.3	1
B12-100-80-075	★	80	BM-80	100	BM-100	75	50	3.5	1

Extensions Beta-Module

Dimensions (*mm*)

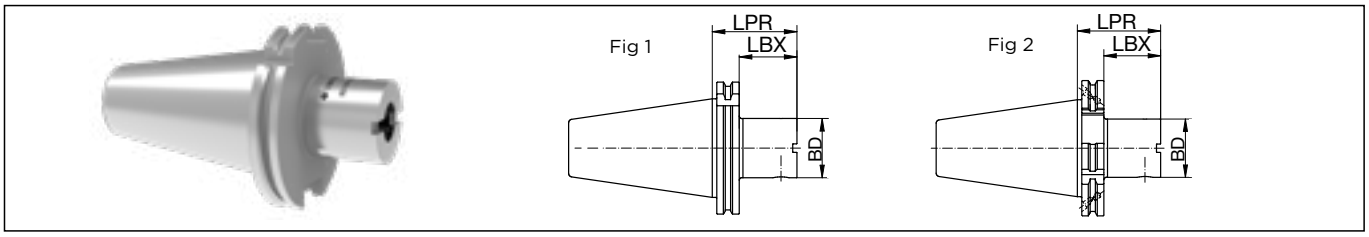
Cat. No.	Stock	BD	DCB	DF	DCON	LPR	LBX	Weight (kg)	Fig
B13-32-32-035	★	32	BM-32	32	BM-32	35	—	0.2	2
B13-32-32-070	★	32	BM-32	32	BM-32	70	—	0.4	2
B13-40-40-045	★	42	BM-40	42	BM-40	45	—	0.4	2
B13-40-40-070	★	42	BM-40	42	BM-40	70	—	0.7	2
B13-50-50-065	★	50	BM-50	50	BM-50	65	—	1.0	2
B13-50-50-100	★	50	BM-50	50	BM-50	100	—	1.5	2
B13-63-63-060	★	63	BM-63	63	BM-63	60	—	1.3	2
B13-63-63-125	★	63	BM-63	63	BM-63	125	—	2.9	2
B13-80-80-080	★	80	BM-80	80	BM-80	80	—	2.9	2
B13-80-80-160	★	80	BM-80	80	BM-80	160	—	6.0	2
B13-100-100-080	★	100	BM-100	100	BM-100	80	—	4.9	2
B13-100-100-180	★	100	BM-100	100	BM-100	180	—	10.9	2

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ System Holders Beta-Module



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	BD	DCON	LPR	LBX	Weight (kg)	Fig
BD10-40A-32-050	★	SK40	32	BM-32	50	31	0.9	1
BD10-40A-40-035	★	SK40	42	BM-40	35	16	0.9	1
BD10-40A-40-050	★	SK40	42	BM-40	50	31	1.1	1
BD10-40A-50-050	★	SK40	50	BM-50	50	31	1.2	1
BD10-40A-63-065	★	SK40	63	BM-63	65	46	1.5	1
BD10-50A-32-060	★	SK50	32	BM-32	60	41	2.9	1
BD10-50A-40-060	★	SK50	42	BM-40	60	41	3.0	1
BD10-50A-50-060	★	SK50	50	BM-50	60	41	3.2	1
BD10-50A-63-060	★	SK50	63	BM-63	60	41	3.3	1
BD10-50A-80-070	★	SK50	80	BM-80	70	51	4.0	1
BD10-50A-100-115	★	SK50	100	BM-100	115	96	6.9	1

DIN 69871-B

Dimensions (*mm*)

Cat. No.	Stock	Size	BD	DCON	LPR	LBX	Weight (kg)	Fig
BD10-40B-40-035	★	SK40	42	BM-40	35	16	0.9	2
BD10-40B-63-065	★	SK40	63	BM-63	65	46	1.5	2
BD10-50B-32-060	★	SK50	32	BM-32	60	41	2.9	2
BD10-50B-40-060	★	SK50	42	BM-40	60	41	3.0	2
BD10-50B-50-060	★	SK50	50	BM-50	60	41	3.2	2
BD10-50B-63-060	★	SK50	63	BM-63	60	41	3.3	2
BD10-50B-100-115	★	SK50	100	BM-100	115	96	6.9	2

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Medium

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ System Holders Beta-Module



Fig 1

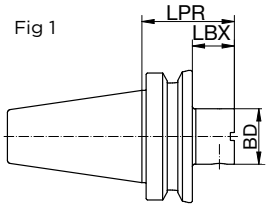
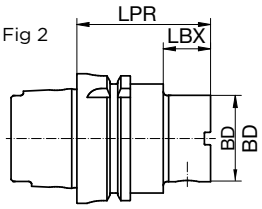


Fig 2



MAS-BT JIS 6339-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	BD	DCON	LPR	LBX	Weight (kg)	Fig
BT10-40A-32-060	★	BT40	32	BM-32	60	33	0.9	1
BT10-40A-40-028	★	BT40	42	BM-40	28	1	0.9	1
BT10-40A-40-060	★	BT40	42	BM-40	60	33	1.2	1
BT10-40A-50-060	★	BT40	50	BM-50	60	33	1.3	1
BT10-40A-63-055	★	BT40	63	BM-63	55	28	1.4	1
BT10-50A-32-070	★	BT50	32	BM-32	70	32	3.7	1
BT10-50A-40-070	★	BT50	42	BM-40	70	32	3.9	1
BT10-50A-50-070	★	BT50	50	BM-50	70	32	4.1	1
BT10-50A-63-080	★	BT50	63	BM-63	80	42	4.3	1
BT10-50A-80-100	★	BT50	80	BM-80	100	62	5.5	1
BT10-50A-100-110	★	BT50	100	BM-100	110	72	7.0	1

DIN 69893-HSK-A

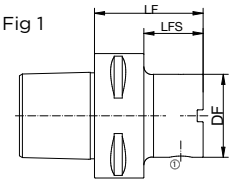
Dimensions (*mm*)

Cat. No.	Stock	Size	BD	DCON	LPR	LBX	Weight (kg)	Fig
BH10-63A-32-060	★	HSK63	32	BM-32	60	34	0.9	2
BH10-63A-40-065	★	HSK63	42	BM-40	65	23	1.2	2
BH10-63A-50-070	★	HSK63	50	BM-50	70	44	1.3	2
BH10-63A-63-080	★	HSK63	63	BM-63	80	38	1.4	2
BH10-100A-32-060	★	HSK100	32	BM-32	60	31	3.7	2
BH10-100A-40-080	★	HSK100	42	BM-40	80	35	3.9	2
BH10-100A-50-080	★	HSK100	50	BM-50	80	35	4.1	2
BH10-100A-63-080	★	HSK100	63	BM-63	80	35	4.3	2
BH10-100A-80-090	★	HSK100	80	BM-80	90	45	5.5	2
BH10-100A-100-100	★	HSK100	100	BM-100	100	55	7.0	2

* Coolant tube is not included



Fig 1



ISO 26623-1-PSC

Dimensions (*mm*)

Size	Beta	Stock	Size	DF	LFS	LF	DCON	Weight (kg)	Fig
PSC63	32	★	**BC10-63-32-050**	32	35	50	BM-32	1.0	1
PSC63	42	★	**BC10-63-40-055**	42	30	55	BM-40	1.2	1
PSC63	50	★	**BC10-63-50-060**	50	35	60	BM-50	1.2	1
PSC63	63	★	**BC10-63-63-065**	63	40	65	BM-63	1.5	1
PSC80	32	★	**BC10-80-32-050**	32	20	50	BM-32	1.8	1
PSC80	40	★	**BC10-80-40-055**	42	25	55	BM-40	1.9	1
PSC80	50	★	**BC10-80-50-060**	50	30	60	BM-50	2.0	1
PSC80	63	★	**BC10-80-63-065**	63	35	65	BM-63	2.3	1

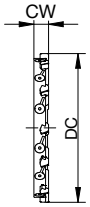
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

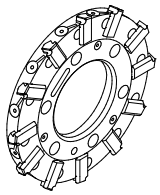
SR Reamer Large

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Cutting Insert





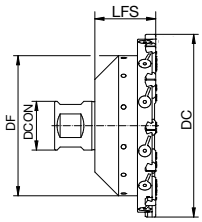


SRSG / SRSL

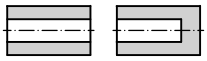
System size	Description		Ø DC (mm)	CW (mm)	Number of teeth
	Straight flluted	Left helical fluted			
SRE 150	SREG150	SREL150	139.801 - 149.800	15	12
SRE 160	SREG160	SREL160	149.801 - 159.800		
SRE 170	SREG170	SREL170	159.801 - 169.800		
SRE 180	SREG180	SREL180	169.801 - 179.800		
SRE 190	SREG190	SREL190	179.801 - 189.800		
SRE 200	SREG200	SREL200	189.801 - 200.200		



Fig. 1



Insert Holder



Dimensions (*mm*)

System size	Ø DC (mm)	Stock	Cat. No.	DF	DCON	LFS	Weight (kg)	Fig
SRE 150 - 160	139.801 - 159.800	★	**SRKG150-115-40-050**	115	40	50	2.6	1
SRE 170 - 180	159.801 - 179.800	★	**SRKG170-135-40-050**	135	40	50	3.4	1
SRE 190 - 200	179.801 - 200.200	★	**SRKG190-155-40-050**	155	40	50	4.5	1

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Large

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy



Fig. 1

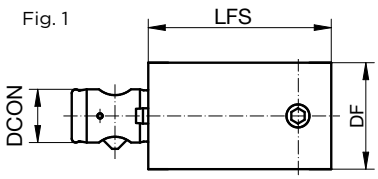
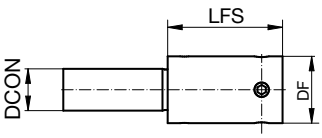


Fig. 2



Shanks (With Integrated Compensation Device)

Dimensions (*mm*)

System size	Ø DC (mm)	Stcok	Cat. No.	DF	DCON	LFS	Weight (kg)	Fig
SRE 150 - 200	139.801 - 200.200	★	**SRA101-76-BM63-100**	76	BM-63	100	2.5	1
		★	**SRA101-76-BM63-160**	76	BM-63	160	3.9	1
		★	**SRA101-76-ZS40-100**	76	ZS-40	100	2.8	2
		★	**SRA101-76-ZS40-160**	76	ZS-40	160	4.2	2

BM = Beta Module
ZS = Cylindrical Shank

■ Adaptors (With Integrated Compensation Device)



Fig. 1

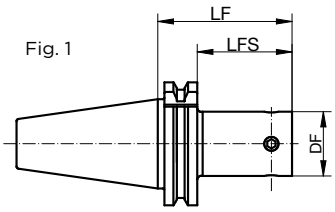
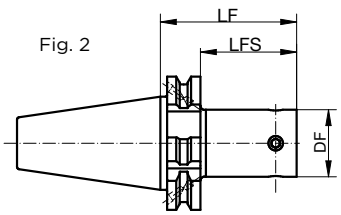


Fig. 2



DIN 69871-AD

Dimensions (*mm*)

System size	Size	Stcok	Cat. No.	DF	LFS	LF	Weight (kg)	Fig
SRE 150 - 200	SK40	★	**SRAD10-40A-101-095**	76	76	95	2.2	1
SRE 150 - 200	SK50	★	**SRAD10-50A-101-095**	76	76	95	4.6	1

DIN 69871-B

Dimensions (*mm*)

System size	Size	Stcok	Cat. No.	DF	LFS	LF	Weight (kg)	Fig
SRE 150 - 200	SK40	★	**SRAD10-40B-101-095**	76	76	95	2.2	2
SRE 150 - 200	SK50	★	**SRAD10-50B-101-095**	76	76	95	4.6	2

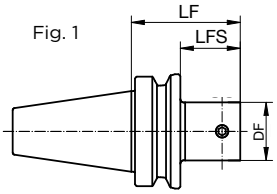
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

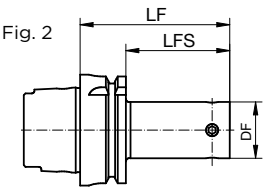
SR Reamer Large

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Adaptors (With Integrated Compensation Device)







MAS-BT JIS 6339-AD

Dimensions (*mm*)

System size	Size	Stock	Cat. No.	DF	LFS	LF	Weight (kg)	Fig
SRE 150 - 200	BT40	★	**SRAT10-40A-101-095**	76	—	95	2.5	1
SRE 150 - 200	BT50	★	**SRAT10-50A-101-095**	76	57	95	5.1	1

DIN 69893-HSK-A

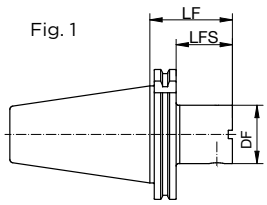
Dimensions (*mm*)

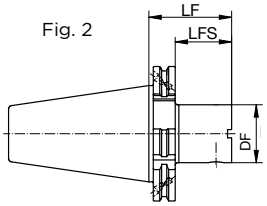
System Size	Size	Stock	Cat. No.	DF	LFS	LF	Weight (kg)	Fig
SRE 150 - 200	HSK63	★	**SRAH10-63A-101-120**	76	94	120	2.4	2
SRE 150 - 200	HSK100	★	**SRAH10-100A-101-130**	76	101	130	5	2

* Coolant tube is not included

■ Beta-Module







DIN 69871-AD

Dimensions (*mm*)

Size	Beta	Stock	Cat. No.	DF	LFS	LF	DCON	Weight (kg)	Fig
SK50	63	★	**BD10-50A-63-060**	63	41	60	BM-63	3.3	1
	80	★	**BD10-50A-80-070**	80	51	70	BM-80	4.0	1
	100	★	**BD10-50A-100-115**	100	96	115	BM-100	6.9	1

DIN 69871-B

Dimensions (*mm*)

Size	Beta	Stock	Cat. No.	DF	LFS	LF	DCON	Weight (kg)	Fig
SK50	63	★	**BD10-50B-63-060**	63	41	60	BM-63	3.3	2
	100	★	**BD10-50B-100-115**	100	96	115	BM-100	6.9	2

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SR Reamer Large

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy



Fig. 1

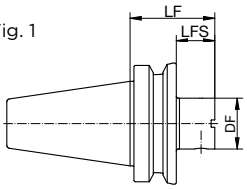
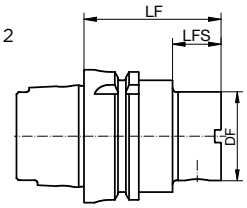


Fig. 2



MAS-BT JIS 6339-AD

Dimensions (*mm*)

Size	Beta	Stock	Cat. No.	DF	LFS	LF	DCON	Weight (kg)	Fig
BT50	63	★	**BT10-50A-63-080**	63	42	80	BM-63	4.3	1
	80	★	**BT10-50A-80-100**	80	62	100	BM-80	5.5	1
	100	★	**BT10-50A-100-110**	100	72	110	BM-100	7.0	1

DIN 69893-HSK-A

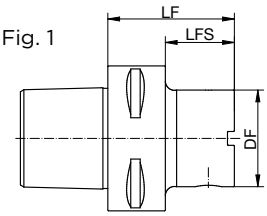
Dimensions (*mm*)

Size	Beta	Stock	Cat. No.	DF	LFS	LF	DCON	Weight (kg)	Fig
HSK100	63	★	**BH10-100A-63-080**	63	35	80	BM-63	4.3	2
	80	★	**BH10-100A-80-090**	80	45	90	BM-80	5.5	2
	100	★	**BH10-100A-100-100**	100	55	100	BM-100	7.0	2

* Coolant tube is not included



Fig. 1



ISO 26623-1-PSC

Dimensions (*mm*)

Size	Beta	Stock	Cat. No.	DF	LFS	LF	DCON	Weight (kg)	Fig
PSC63	63	★	**BC10-63-63-065**	63	40	65	BM-63	1.5	1
PSC63	63	★	**BC10-80-63-065**	63	35	65	BM-63	2.3	1

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

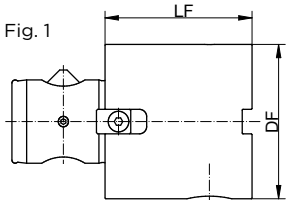
SR Reamer Large

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat Resistant Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

■ Extensions and Reductions



Fig. 1



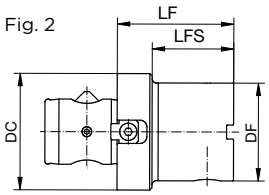
Extensions Beta-Module

Dimensions (*mm*)

Beta	Stock	Cat. No.	DF	LF	Hole Dia.	DCON	Weight (kg)	Fig
63	★	**B13-63-63-060**	63	60	BM-63	BM-63	1.3	1
	★	**B13-63-63-125**	63	125	BM-63	BM-63	2.9	1
80	★	**B13-80-80-080**	80	80	BM-80	BM-80	2.9	1
	★	**B13-80-80-160**	80	160	BM-80	BM-80	6.0	1
100	★	**B13-100-100-080**	100	80	BM-100	BM-100	4.9	1
	★	**B13-100-100-180**	100	180	BM-100	BM-100	10.9	1



Fig. 2



Reducers Beta-Module

Dimensions (*mm*)

Beta 1	Beta 2	Stock	Cat. No.	DF	DC	LFS	LF	Hole Dia.	DCON	Weight (kg)	Fig
80	63	★	**B12-80-63-060**	63	80	35	60	BM-80	BM-63	2.4	2
100	63	★	**B12-100-63-060**	63	100	35	60	BM-100	BM-63	3.3	2
100	80	★	**B12-100-80-075**	80	100	50	75	BM-100	BM-80	3.5	2

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

Recommended Cutting Conditions

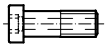
ISO	Material description	Type	Cutting speed Vc (m/min)	Feed fz (mm/t)	measurement Ap (mm)			
					SR Small	SR Medium		SR Large
					Ø 7.6 - 13.1	**Ø 11.9 - 35.6**	**Ø 35.6 - 140.6**	**Ø 139.8 - 200.2**
P	free cutting steels, case-hardening steels, low-alloy construction steels C < 0.25%	T1200A	140 - 220	0.15 - 0.25	0.05 - 0.10	0.07 - 0.12	0.07 - 0.15	0.08 - 0.20
		F0512R1	120 - 200	0.15 - 0.25	0.05 - 0.10	0.07 - 0.12	0.07 - 0.15	0.08 - 0.20
	heat-treatable steels, construction steels C > 0.25%	T1200A	140 - 200	0.15 - 0.25	0.05 - 0.10	0.07 - 0.12	0.07 - 0.15	0.08 - 0.20
		F0512R1	120 - 180	0.15 - 0.25	0.05 - 0.10	0.07 - 0.12	0.07 - 0.15	0.08 - 0.20
	spring and bearing steels, hardenable steels C > 0.67%	F0512R1	70 - 120	0.14 - 0.22	0.05 - 0.08	0.07 - 0.12	0.07 - 0.12	0.07 - 0.12
	High alloyed steels	F0512R1	15 - 35	0.07 - 0.12	0.05 - 0.08	0.07 - 0.12	0.07 - 0.12	0.07 - 0.12
M	Ferritic-, Martensitic- and Austenitic stainless steels	F0512R1	50 - 80	0.12 - 0.20	0.05 - 0.10	0.07 - 0.12	0.07 - 0.12	0.07 - 0.12
	alloyed austensitic stainless steel	F0512R1	30 - 60	0.08 - 0.15	0.05 - 0.08	0.05 - 0.10	0.07 - 0.12	0.07 - 0.12
	High-alloy austenitic, Duplex and super Duplex stainless steel	F0512R1	15 - 30	0.06 - 0.12	0.05 - 0.08	0.05 - 0.10	0.07 - 0.12	0.07 - 0.12
K	Grey cast irons	F0514R2	80 - 140	0.14 - 0.25	0.10 - 0.16	0.10 - 0.20	0.10 - 0.20	0.12 - 0.25
	Ductil and malleable cast irons	F0514R2	100 - 160	0.14 - 0.25	0.07 - 0.12	0.08 - 0.15	0.10 - 0.20	0.10 - 0.20
	Heat-treated ductile cast iron (ADI) Vermicular cast iron	F0514R2	50 - 90	0.12 - 0.22	0.07 - 0.12	0.08 - 0.15	0.10 - 0.20	0.10 - 0.20
N	Aluminum alloys, Si < 7%	F0510C	180 - 300	0.15 - 0.30	0.05 - 0.12	0.05 - 0.12	0.08 - 0.15	0.08 - 0.15
	Aluminum alloys, Si > 7%	F0521C	150 - 280	0.15 - 0.30	0.05 - 0.12	0.05 - 0.12	0.05 - 0.15	0.05 - 0.15
	Copper alloys, good machinability	F0521C	140 - 200	0.15 - 0.25	0.05 - 0.12	0.05 - 0.12	0.05 - 0.15	0.05 - 0.15
	Copper alloys, more difficult machinability	F0521C	50 - 100	0.12 - 0.22	0.05 - 0.12	0.05 - 0.12	0.05 - 0.15	0.05 - 0.15
S	Iron based superalloys	F0512R1	20 - 40	0.06 - 0.12	0.05 - 0.10	0.05 - 0.10	0.05 - 0.12	0.05 - 0.12
	Cobalt/Nickel based superalloys	F0512R1	15 - 30	0.05 - 0.10	0.05 - 0.08	0.05 - 0.10	0.05 - 0.10	0.05 - 0.10
	Titanium, low alloyed	F0512R1	25 - 50	0.06 - 0.12	0.05 - 0.10	0.05 - 0.10	0.05 - 0.12	0.05 - 0.12
	Titanium, high alloyed	F0512R1	15 - 30	0.05 - 0.10	0.05 - 0.08	0.05 - 0.10	0.05 - 0.10	0.05 - 0.10
H	Hardened Steels HRC 45 - 52	F0507R1	15 - 30	0.06 - 0.12	0.05 - 0.08	0.05 - 0.10	0.05 - 0.10	0.05 - 0.10
	Hardened Steels HRC 53 - 57	F0507R1	10 - 20	0.04 - 0.08	0.04 - 0.07	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10
	Hardened Steels HRC 58 - 62	F0507R1	8 - 15	0.04 - 0.08	0.04 - 0.07	0.04 - 0.07	0.05 - 0.10	0.05 - 0.10

We exclude any liability for the accuracy and completeness of the cutting data listed.

SR Reamer Spare Parts Small-Medium/Accessoires/Spare Parts Medium/Large

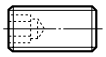
■ Spare parts SR Reamer Small-Medium

Spare screw for SRSD/SRSB Holder

System size	SRSD/SRD	SRSB/SRB
		
SRS 08	C00-90-51	C00-90-51
SRS 10	C00-90-52	C00-90-52
SRS 11	C00-90-53	C00-90-53B
SRS 13	C00-90-54	C00-90-54B
SR 16	C00-90-00	C00-90-00
SR 19	C00-90-00	C00-90-00
SR 24	C00-90-01	C00-90-01
SR 29	C00-90-01	C00-90-01
SR 36	C00-90-01	C00-90-01

*SRSD/SRSB: Small, SRD/SRB: Medium

Spare parts Compensation Sleeve

System size	Adjusting screw	O-Ring	Wrench
			
SRS 08	C00-96-32	D00-05-00	G00-02-03
SRS 10	C00-96-32	D00-05-00	G00-02-03
SRS 11	C00-96-32	D00-05-01	G00-02-03
SRS 13	C00-96-32	D00-05-01	G00-02-03
SR 16	C00-96-29	D00-05-03	G00-02-04
SR 19	C00-96-29	D00-05-04	G00-02-04
SR 24	C00-96-29	D00-05-02	G00-02-04
SR 29	C00-96-31	D00-05-05	G00-02-05
SR 36	C00-96-31	D00-05-06	G00-02-05

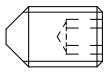
Run-Out adjusting head

System size	Article Nr.
SRS 08	SRSC08-06-02
SRS 10	SRSC10-06-02
SRS 11	SRSC11-06-03
SRS 13	SRSC13-06-03
SR 16	SRC016
SR 19	SRC019
SR 24	SRC024
SR 29	SRC029
SR 36	SRC036

Spare screw for SRD-SD/SRB-SD Holder

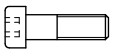
System size	SRD-SD	SRB-SD
		
SR 16	C00-90-22	C00-90-22
SR 19	C00-90-23	C00-90-23B
SR 24	C00-90-24	C00-90-24B
SR 29	C00-90-24	C00-90-24B
SR 36	C00-90-25	C00-90-25B

Spare parts hydro-Compensation Chuck

Adjusting screw for hydraulic-compensation chuck TENDOzero.	
	9954676

■ Accessoires/Spare parts - SumiReamer Medium/Large

Spare parts for SRKG/SRKB cutting holders

System size	Screw	Wrench	Center Screw		Wrench
			SRKG	SRGB	
					
SR 44	C00-90-02	G00-20-02	C00-26-23	C00-26-23B	G00-02-07
SR 52	C00-90-02	G00-20-02	C00-26-38	C00-26-38B	G00-02-07
SR 61	C00-90-02	G00-20-02	C00-24-26	C00-24-26B	G00-02-08
SR 81	C00-90-04	G00-20-03	C00-26-37	C00-26-37B	G00-02-09
SR 101	C00-90-04	G00-20-03	C00-24-31	C00-24-31B	G00-02-16
SR 121	C00-90-04	G00-20-03	C00-24-31	C00-24-31B	G00-02-16
SR 141	C00-90-04	G00-20-03	C00-24-31	C00-24-31B	G00-02-16
SRE 150-200	C00-22-07	-	-	-	G00-02-05
	-	-	C00-24-34	-	G00-02-16

Spare parts for SRAD/SRAT/ SRAH admission

System size	Screw	Wrench
		
SR 44	C00-90-08	G00-02-05
SR 52	C00-90-10	G00-02-06
SR 61	C00-90-10	G00-02-06
SR 81	C00-90-12	G00-02-07
SR 101	C00-90-16	G00-02-08
SR 121	C00-90-16	G00-02-08
SR 141	C00-90-16	G00-02-08
SRE 150-200	C00-90-16	G00-02-08

SR Reamer Accessoires/Spare Parts Medium/Large

Coolant tube for SRAK Holder

System size	Size	
SR 44	HSK-A63 HSK-A100	H006301 H0010001
SR 52		
SR 61		
SR 81		
SR 101		
SR 121		
SR 141		
SRE 150-200		

Spare parts for SRA lenghtening shafts

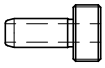
System size	Screw	Wrench	Pin	Positioning pin
				
SR 44	C009008	G000205	Z003221	Z003223
SR 52	C009010	G000206	Z004021	Z004023
SR 61	C009010	G000206	Z005021	Z005023
SR 81	C009012	G000207	Z005021	Z005023
SR 101	C009016	G000208	Z006321	Z006323
SR 121	C009016	G000208	Z006321	Z006323
SR 141	C009016	G000208	Z006321	Z006323
SRE 150-200	C009016	G000208	Z006321	Z006323

■ Accessoires/Spare parts

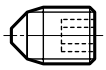
Spare parts for B12/B13 Reduction/Lengthening Beta-Modul

Beta	Screw	Pin	Positioning pin	Groove stone	Screw
					
25	Z002524	Z002521	Z002523	-	-
32	Z003224	Z003221	Z003223	-	-
40	Z004024	Z004021	Z004023	Z004025	C002258
50	Z005024	Z005021	Z005023	Z005023	C002260
63	Z006324	Z006321	Z006323	Z006323	C002205
80	Z008024	Z008021	Z008023	Z008023	C002207
100	Z0010024	Z0010021	Z0010023	Z0010023	C002271

Coolant tube for HSK-Admissions

Beta	Size	
-	HSK-A50 HSK-A63 HSK-A100	H00-50-01 H00-63-01 H00-100-01
32		
40		
50		
63		
80		
100		

Spare parts for BD10/ BT10/BH10 Systemadmission Beta-Module

Beta	
-	-
32	Z00-32-24
40	Z00-40-24
50	Z00-50-24
63	Z00-63-24
80	Z00-80-24
100	Z00-100-24

Torx-Torque wrench

System size	Article No.	Torx Size	N·m
SRS 08	G00-40-15	T6	0.6
SRS 10	G00-40-14	T7	0.9
SRS 11	G00-40-16	T9	1.4
SR 13	G00-40-17	T10	2
SR 16	G00-40-11	T6	0.9
SR 19	G00-40-11	T6	0.9
SR 24	G00-40-12	T8	1.5
SR 29	G00-40-12	T8	1.5
SR 36	G00-40-12	T8	1.5
SR 44	G00-40-12	T8	1.5
SR 52	G00-40-12	T8	1.5
SR 61	G00-40-12	T8	1.5
SR 81	G00-40-13	T15	3.5
SR 101	G00-40-13	T15	3.5
SR 121	G00-40-13	T15	3.5
SR 141	G00-40-13	T15	3.5



SR Reamer Application examples

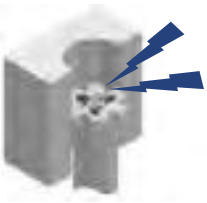
■ Application Examples

Workpiece	 Truck engine-Piston holes	 Connecting rod-small eye	 Aircraft landing gear	 Gearbox
Work Material	**0.6025 / EN-GJL-250**	**1.0615 / C70, forged**	**3.4365 / EN-AW-7075**	**0.6025 / EN-GJL-250**
Reamer	SR Medium	SR Medium	SR Medium	SR Large
Insert	SR 44, HM coated	SR 29, Cermet uncoated	SR 16 – SR 61, HM coated	SRE 160, HM coated
Work Diameter (mm)	ø45 x 73	ø25 x 20	ø12 – ø60	ø150 x 45
Hole Dia. Tolerance	H7	H7	H7	H7
Surface Roughness (µm)	Rz6.3	Ra10.0	Ra6.3	Ra3.2
Circularity (µm)	10	—	—	—
vc (m/min)	140	180	250	140
fz (mm/t)	0.20	0.15	0.26	0.20
z	10	8	—	12
vf (mm/min)	1980	2750	—	713
ap (mm)	—	—	0.10	—
Tool Life, etc.	1.500 Holes	10.000 Holes	Maximum process Reliability	2.500 Holes

SR Reamer Troubleshooting/ Precautions for SD (Center Bolt Clamp Type)

■ Troubleshooting

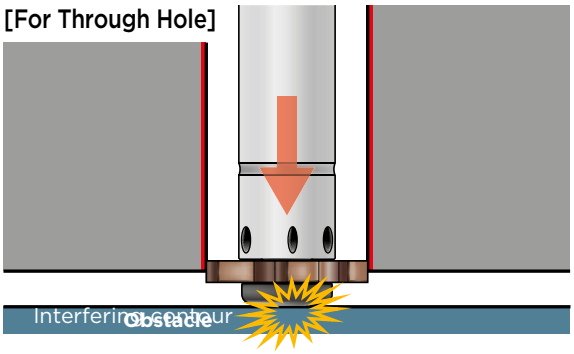
Failure	Countermeasures
Enlarged Diameter 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Decrease the cutting speed. · Increase the feed rate. · Increase the coolant concentration. · Reduce the stock removal. · Check the cutting edge for damage (whether there are built-up edges). · Check the reamer diameter.
Tapered Hole 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Decrease the cutting speed. · Decrease the feed rate. · Adjust the coolant concentration. · Review the pre-machining process. · Review the clamping method of the workpiece. · Compare the hole diameters when the workpiece is clamped and when it is unclamped. · Check and correct the direction of chip evacuation.
Chatter marks on machined surface 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Change the approach angle of the insert cutting edge. · Review the clamping method of the workpiece. · Decrease the cutting speed. · Increase the feed rate.
Poor Surface Roughness 	· Check the cutting edge for damage. · Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Check whether the cutting conditions are within the recommended range. · Change to internal coolant supply. · Increase the coolant concentration.

Failure	Countermeasures
Return Mark 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Check the cutting edge for damage (whether there are built-up edges). · Reduce the stock removal. · Change to an insert with a sharper cutting edge shape. · Decrease the return (lifting) feed.
Irregular Cutting Noise 	· Decrease the coolant concentration. · Increase the stock removal. · Check the cutting edge for damage. · Change the approach angle of the insert cutting edge.
Small hole diameter 	· Replace the insert. · Decrease the coolant concentration. · Increase the stock removal. · Increase the cutting speed. · Decrease the feed rate.

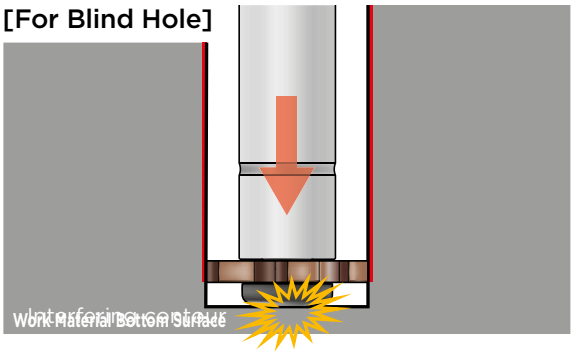
■ Precautions for SD (Center Bolt Clamp Type)

This product can be used for both through-hole and stop-hole boring. However, the head of the center bolt protrudes from the end of the body, so ensure clearance by referring to the protrusion of the center bolt (LFA) shown in the dimension table.

[For Through Hole]



[For Blind Hole]



SR Reamer

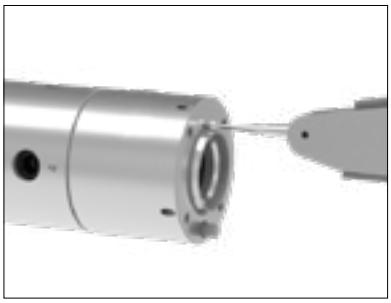
■ SR Reamer Usage Instructions (Adjusting Runout)

The runout at the cutting edge of a reamer should be zero to obtain optimum boring precision. To correct runout in the holder or the machine's spindle, use of holders with a runout adjustment mechanism, hydro chucks or shrink chucks are recommended. Various methods can be used to measure runout on a SumiReamer SR Reamer. With good runout repeatability, it is recommended that inserts be replaced without removing the shank holder from the spindle.



1. On the marked run-out area on the insert holder

RX medium tool holders are manufactured very accurately. This handling method is easy and offers reasonable measuring results.



2. Through Insert Holder Short Taper

With the reamer disassembled, measure directly on the insert holders short taper. This handling method offers high accuracy measuring results.

■ Adjustment of the concentricity

1. Secure central clamping screw according to value “A” in the chart below (if not available, use value “B”).
2. Load the tool into the machine spindle.
3. Set the indicator (with 1 µm / 0.0001 inch resolution) on the marked run-out area 1 on the shank.
4. Measure run-out of the two adjustment screw 2 axes. Compensate half value of the total run-out error by using the adjustment screws. Check run-out on all four axle points and repeat the adjustment if necessary. Tighten all screws that do not fit tightly, considering the run-out < 0.005 mm in diameter.
5. Tighten the central clamping screw according to table value “B”.
6. Check the run-out again and re-adjust if necessary.



System size	A [Nm]	B [Nm]
SR 44	-	35
SR 52	-	35
SR 61	-	55
SR 81	60	85
SR 101	70	120
SR 121	70	120
SR 141	70	120



Bearbeitungsstudie – Reiben / Ausdrehen
Machining Study – Reaming / Boring

SUMITOMO CARBIDE - CBN - DIAMOND

Absender / Sender

Nummer / Number

Firma / Endkunde / End user Company

Vertretung / Distributor

Adresse / Address

Aussendienst / Sales Contact

Maschine / Machine

Hersteller und Typ / Manufacturer and Model

Horizontal / Horizontal ❑

Vertikal / Vertical ❑

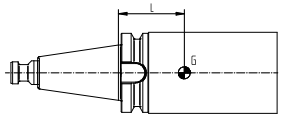
Werkzeug rotierend / Tool rotating yes ❑ no ❑

Spindelaufnahme / Spindle adaptor

Grösse / Size

Ausführung / Type

DIN 69893 – HSK	❑	20 ❑	25 ❑	A ❑	**Max. Werkzeuggewicht** / Max. Tool Weight	..... kg
DIN 69871 – SK	❑	30 ❑	32 ❑	B ❑	**Max. Werkzeuglänge** / Max. Tool Length	..... mm
JIS 6339 – MAS-BT	❑	40 ❑	50 ❑	C ❑	**Max. Kippmoment** / Max. Overturning Moment	..... Nm
Zylinderschaft DIN 1835 / Cylinder shank DIN 1835	❑	63 ❑	80 ❑	D ❑		
DIN 69880 – VDI	❑	100 ❑	..... ❑	E ❑		
.....	❑					



Kühlung / Lubricant

Öl / Oil ❑ **MMS** [1] / MQL [1] ❑ **Emulsion** / Emulsion ❑

Mischungsverhältnis / Ratio of Mixture %

Innere Kühlmittelzufuhr / Internal Coolant Supply yes ❑ no ❑

Kühlmitteldruck / Coolant Pressure bar

Werkstück / Workpiece

Bezeichnung / Component Name

Werkstoffnummer / Material Number

Behandlungszustand (Härte) / Material Condition (Hardness)

Bearbeitungsanforderungen / Machining Requirements

Ø Bohrung / Ø Bore

Bohrungslänge / Bore Length mm

Ø Vorbearbeitung / Ø Pre-Machining mm

Toleranz / Tolerance

Störkonturen / Interference Length mm

Vorbearbeitungsart / Method of Pre-Machining

Form- und Lagetoleranzen / Geometrical Tolerances ○ ◎ ⌭ ⌖

Sacklochbohrung / Blind Hole yes ❑ no ❑

Oberflächengüte / Surface Quality µm R_a ❑ R_z ❑ R_t ❑

Schnittunterbrechung / Cutting Interruption yes ❑ no ❑

Datum / Date

Bemerkungen / Notes

Jährliche Produktion: / Annual Production: .....

Dringlichkeit: / Urgency: .....

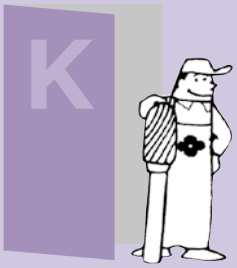
[1] **Mindermengen-Schmierung** / Minimum Quantity Lubrication

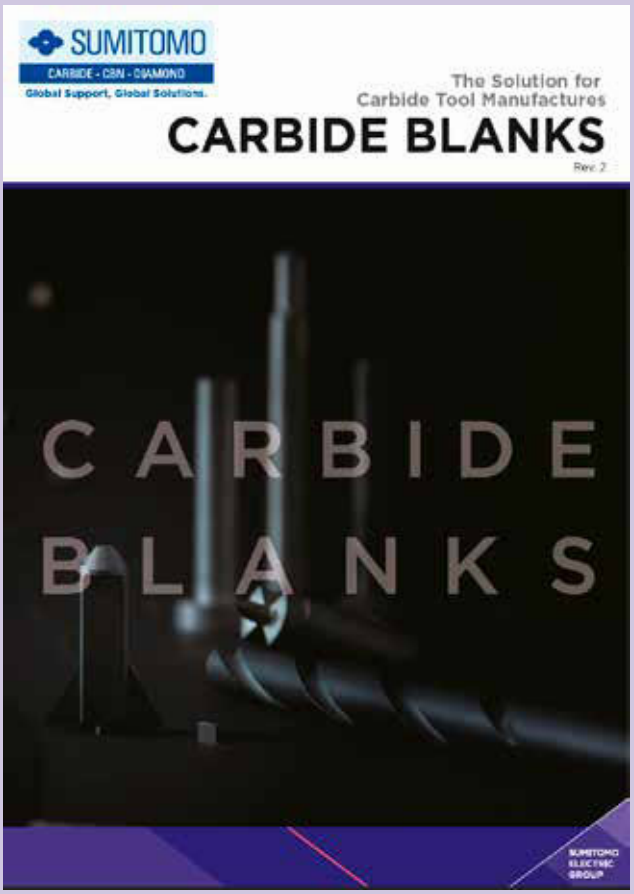
Beilage: Werkstückzeichnung / Attachement: Part Drawing

MEMO

Carbide Materials Brazed Tools

K





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Simply scan the QR code or visit:
https://www.sumitool.com/en/products/carbide-materials/

SUMIBORON L

L1 to L170



Guidance for SUMIBORON Grades	SUMIBORON series	L2
	Coated SUMIBORON series	L3
	Grade Guidance - Hardened Steel Machining	L4
	Grade Guidance - Cast Iron Machining	L7
	Grade Guidance - Sintered Component Machining	L9
	Grade Guidance - Roll/Hard Facing Alloys/Hardened Stainless Steel Machining	L10
	Grade Guidance - Titanium Alloy/Heat-Resistant Alloy Machining	L11
	Coated SUMIBORON series for Hardened Steel Machining	
	BNC2105/BNC2115/BNC2125/New BNC2135	L12
	BNC2010/BNC2020	L17
	SUMIBORON BN1000/BN2000	L18
	SUMIBORON BN7125/BN7115	L20
	Coated SUMIBORON/BNC8115/SUMIBORON BNS8125	L22
	Coated SUMIBORON BNC500	L24
	SUMIBORON for heat-resistant alloys IT105	L25
	SUMIBORON BINDERLESS NCB100	L26
Inserts	SUMIBORON Insert Identification Code	L28
	SUMIBORON BREAK MASTER FV type / LV type / SV type	L30
	SUMIBORON One-Use Wiper Inserts WG type / WH type	L31
	SUMIBORON Insert Edge Specifications	L32
	Stock Table for SUMIBORON Indexable Inserts	L34
	Aerospace grades	L124
Holders	SEC-Tool Holders for Solid SUMIBORON	L125
	Inserts & Special Holders for High-efficiency Machining	L130
	For Hardened Steel High Feed Turning (HFT-O/HFT-D)	L134
	Small Diameter Boring Bars BSME series / Expansion SEXC series	L148
	SUMIBORON Small Hole Boring Bars BNBX series	L152
	SUMIBORON Small Hole Boring Bars BNZ series	L153
	SUMIBORON Small Hole Boring Bars BNB series	L154
	SUMIBORON Small Diameter Round Insert Holders TRGT series	L155
	SUMIBORON Round Insert Holders PR series	L156
	SUMIBORON Tool Holders for Roll Turning BNRN series	L157
	SUMIBORON Grooving Tools GWB series	L158
	SUMIBORON Grooving Tools GWB/PSC series	L159
	SUMIBORON Grooving Tools BNGG series	L160
Cutters/ Endmills	SUMIBORON BN Finish Mill EASY FMU type / FMU-E type	L162
	SUMIBORON BN Finish Mill FM(F) type	L164
	SUMIBORON RM type	L165
	Mold Finish Master BNBR type / BNBP type / BNBC type	L166

Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SUMIBORON



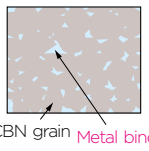
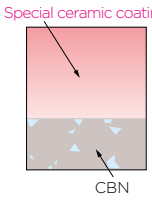
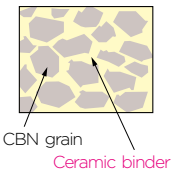
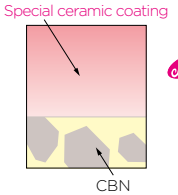
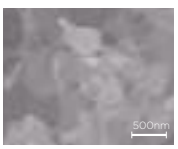
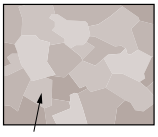
■ General Features

Sintered CBN tool "SUMIBORON", which has CBN (cubic boron nitride) - a hard material second only to diamond - as its main component, is sintered with a metal or special ceramic binder under ultra-high pressure and temperature.
SUMIBORON has high hardness, excellent thermal resistance and excellent properties including being unreactive to ferrous metals, enabling exotic alloys, hardened steel or hard cast iron to be machined. Excellent efficiency and longer tool life can also be achieved from high-speed finishing of cast iron.
"SUMIBORON" was first successfully developed in Japan by our company in 1977. Our product lineup also includes "Coated SUMIBORON" with a special ceramic coating and "SUMIBORON BINDERLESS" made by directly bonding CBN particles without a binder.

■ Features

The sintered CBN tool SUMIBORON is mainly used for the machining of ferrous metals due to its low chemical reactivity with iron. There are 4 different classifications of SUMIBORON as follows:

■ Classifications/Applications

	Classifications	Structure	Diagram	Grade	Work Material
(A)	With a high CBN content, where each grain is fused together, this group can be used for the machining of high-hardness materials like cast iron, heat-resistant alloys and sintered alloys.			BN7125 BN7000 BN7115 BN7500 BNS8125	K (GG) Sintered Alloy S Sintered Alloy Sintered Alloy K (GG/GGG) S
				BNC8115	K (GG/GGG) S H
(B)	CBN grains are held together by a special ceramic binder with a strong binding force provides excellent wear resistance and toughness in the machining of hardened steel and cast iron.			BN1000 BN2000 BN350 BNX10 BNX20 BN500	H K (GG/GGG)
(C)	SUMIBORON with special ceramic coating. The CBN and coating exhibit the hardness, toughness, thermal resistance and oxidation resistance that tool material requires for excellent cutting performance.			BNC2105 BNC2115 BNC2125 New BNC2135 BNC2010 BNC2020 BNC300 BNC200 BNC500	H K (GGG)
(D)	Containing no binder but a structure of directly bonded nano- to sub-micron CBN particles which provides excellent hardness and thermal conductivity, making them highly efficient with long tool life when machining exotic alloys such as titanium alloys and cobalt-chrome alloys.			NCB100	K (GG) S Cemented Carbide Hard Brittle Materials

K Cast Iron S Exotic Alloy H Hardened Steel Sintered Alloy Sintered Alloy Cemented Carbide Cemented Carbide Hard Brittle Materials Hard Brittle Materials

Coated SUMIBORON series

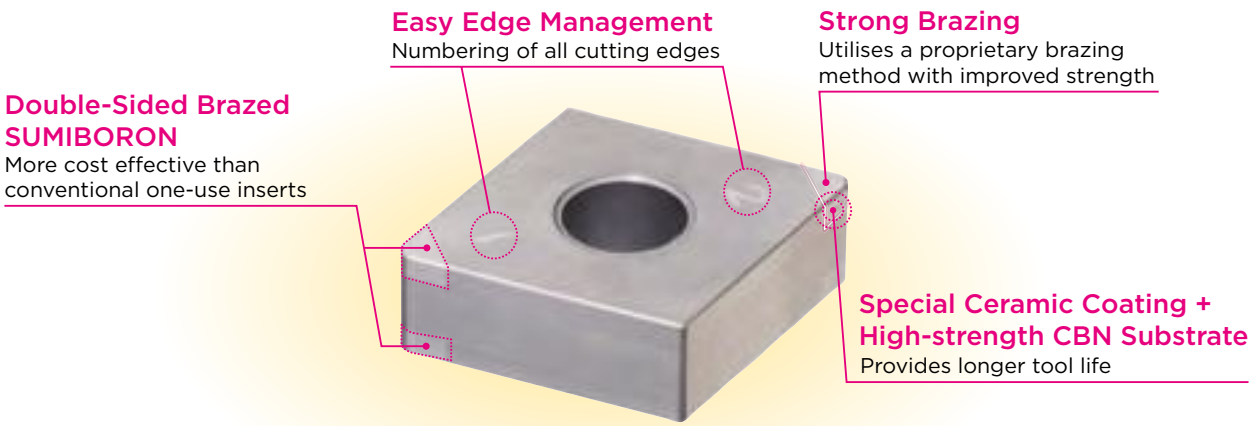


Achieves higher speed, higher efficiency and higher precision
Coated SUMIBORON series

■ General Features

With a highly thermal-resistant and tough CBN substrate coupled with a special ceramic coating, this series caters to a wide variety of applications, with improved precision and longer tool life compared to conventional CBN.
Our extensive range, including more cost-effective, double-sided, multi-cornered one-use inserts, offers a selection of economical and easy-to-use tools.

■ Features



■ Cutting Edge Management



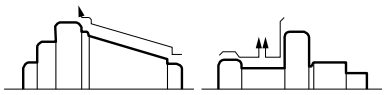
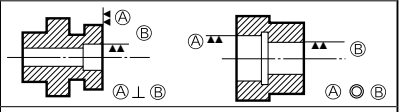
The edge numbers are still visible after machining, which makes the management of used cutting edges easy.

Grade Guidance H Hardened Steel

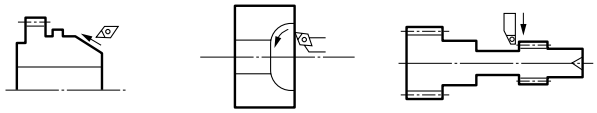
Hardened Steel Machining

● Advantages of machining hardened steel with SUMIBORON

Below is an analysis of the use of CBN tools compared to grinding. In addition to much lower investment in terms of machine cost and overhead cost due to the fact that a CNC lathe is cheaper than a grinding machine. In terms of surface finish quality, inserts can machine different profiles with the workpiece finishing equivalent to grinding. The chips from the turning process can also be collected and recycled to mitigate the environmental impact of sludge treatment for grinding. The workpieces shown at the bottom right of the table are shapes which will particularly benefit from cutting as opposed to grinding.

	Advantages	Remarks
Cost	Facility investment is low	· Cheaper machines · Reduced processes · Improved machining efficiency with less machining required
	Complex finishing in a single set-up	
Quality	Improved precision	
Environment	Environmentally-friendly	Sludge management → Chip control (Recyclable)

Machining Versatility with CBN



Taper Machining | Internal (Profile) Boring | Grooving/Profiling

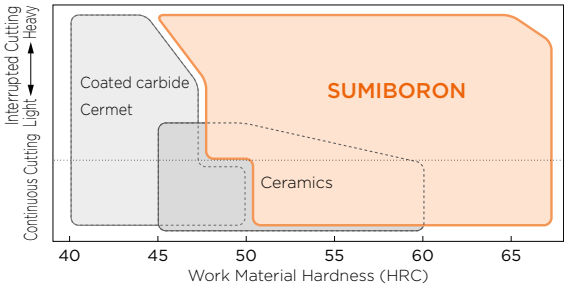
Recommended Grades

	Grade	Binder	Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
Coated	BNC2105	TiCN	45 to 50	3	30 to 32	1.1 to 1.2	TiAlBN Super Multi-Layered Coating	3	Grade with excellent wear resistant coating and a CBN substrate ideal for high-speed finishing applications.
	BNC2115	TiN	60 to 65	3	31 to 33	1.3 to 1.4	TiAlSiN Super Multi-layered Coating	3	Utilizing a coating with exceptional notch wear resistance and a tough CBN substrate to achieve stable and excellent surface finish.
	BNC2125	TiN	65 to 70	4	33 to 35	1.5 to 1.6	TiAlBN Super Multi-layered Coating	3	Combination of a tough CBN substrate and a coating that has a balance of wear resistance and toughness, to achieve even more stable machining.
	New BNC2135	TiN	60 to 65	1	33 to 35	1.6 to 1.7	TiAlN/ AlCrN	1	Utilises a fine, smooth coating with high-strength CBN to achieve long tool life in high-load interrupted machining.
	BNC2010	TiCN	50 to 55	2	30 to 32	1.1 to 1.2	TiCN Multi-layered Coating	2	Improved wear resistance from coating and substrate, achieves excellent and consistent surface roughness.
	BNC2020	TiN	70 to 75	5	34 to 36	1.4 to 1.5	TiAlN Multi-layered Coating	2	Utilising a tough substrate along with a highly wear-resistant and adhesive coating layer, to achieve long tool life in general-purpose to high-efficiency machining.
	BNC300	TiN	60 to 65	1	33 to 35	1.5 to 1.6	TiAlN	1	Suitable for finishing work materials with a mixture of interrupted and continuous machining sections.
	BNC200	TiN	65 to 70	4	33 to 35	1.4 to 1.5	TiAlN	3	A tough CBN substrate and a coating with high wear resistance provide a long tool life.
	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure, using PVD coating with excellent wear resistance to enable roughing operations.
Uncoated	BN1000	TiCN	40 to 45	1	27 to 31	0.9 to 1.0	-	-	Achieves ultimate wear and fracture resistance. Suitable for high-speed machining.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	-	-	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.
	BNX20	TiN	55 to 60	3	31 to 33	1.0 to 1.1	-	-	Achieves excellent crater wear resistance. Suitable for high-efficiency machining where cutting temperatures are high.
	BN350	TiN	60 to 65	1	33 to 35	1.5 to 1.6	-	-	Achieves ultimate cutting edge strength. Suitable for heavy interrupted machining.
	BNX10	TiCN	40 to 45	3	27 to 31	0.9 to 1.0	-	-	Excellent wear resistance. Suited for high-speed continuous machining.

TRS measured with test piece equivalent to the insert's CBN layer.

Recommended Range

● Work Material Hardness and Recommended Range for SUMIBORON



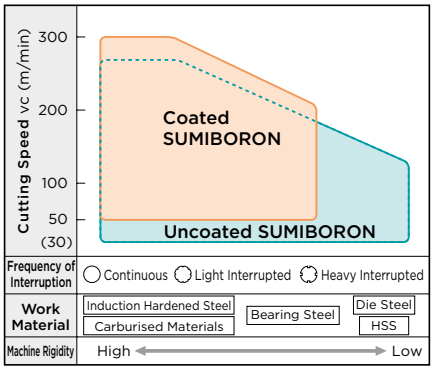
Grade Guidance H

Applications

Coated SUMIBORON: 1st recommendation for hardened steel machining, excellent performance in high-speed, high-efficiency machining.

Uncoated SUMIBORON: Ideal for machining small parts and hardened steel where cutting speed is limited.

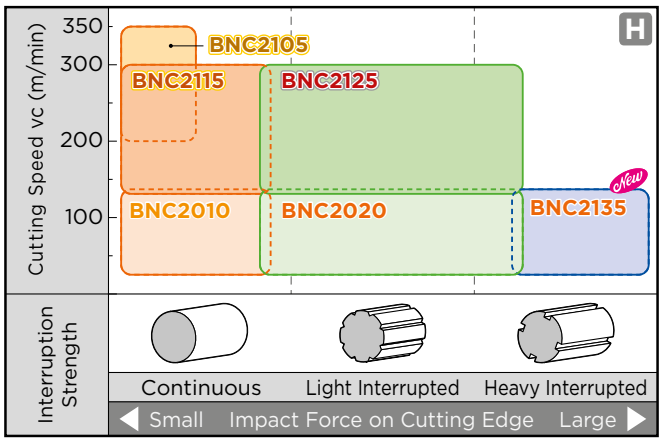
Series	Applications
Coated SUMIBORON	· First recommendation for hardened steel machining · Machining requiring high speed and high accuracy · Machining requiring high efficiency, such as carburised layer removal
Uncoated SUMIBORON	· Machining where cutting speed cannot be increased, such as small product machining · Machining of workpieces containing hard particles such as mold components · Machining with low tool rigidity



Application Range

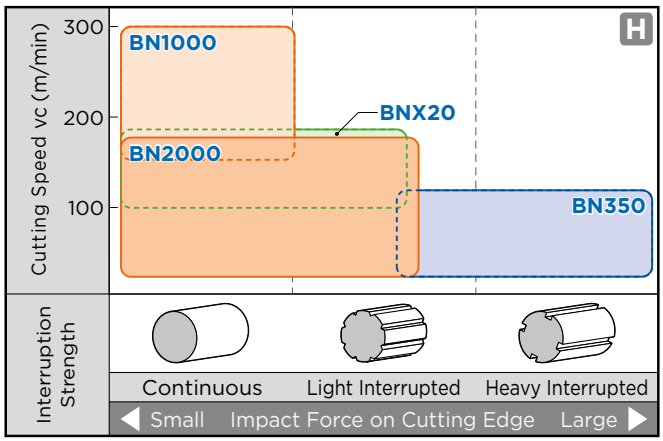
● Induction Hardened Steel (C45/C55, etc.), Carburised Steel

Coated SUMIBORON



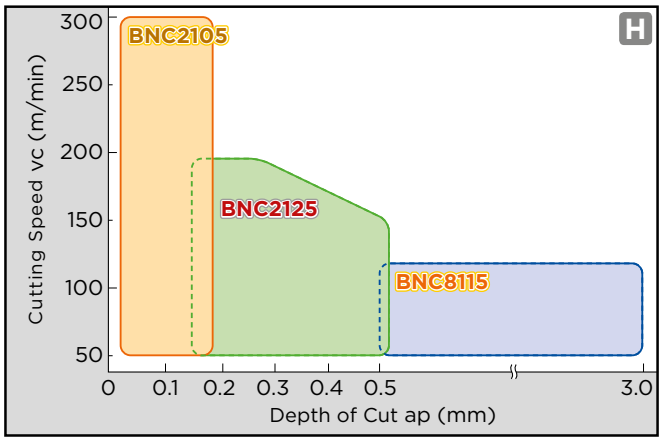
● Induction Hardened Steel (C45/C55, etc.), Carburised Steel

Uncoated SUMIBORON



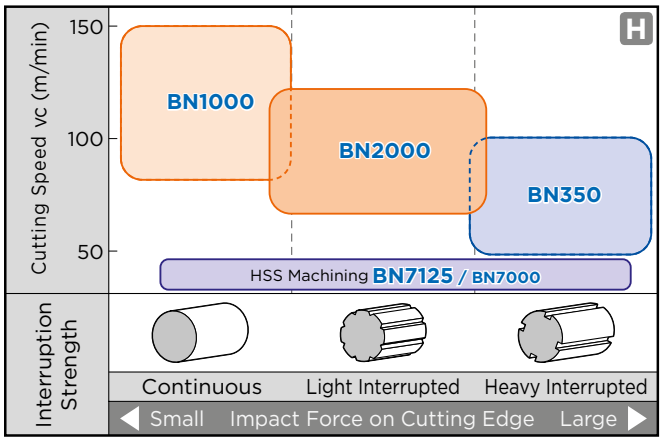
● Bearing Steel (100Cr6, etc.)

Coated SUMIBORON



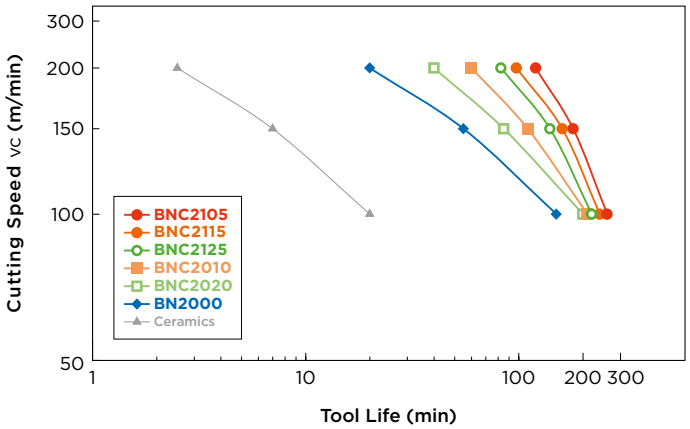
● Die Steel (X155CrMoV12-1/X40CrMoV5-1, etc.), HSS

Uncoated SUMIBORON



Grade Guidance H

Cutting Performance (Continuous Cutting)

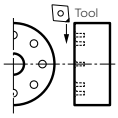


Tool Life Criterion: VBmax = 0.1mm

Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408
Cutting Conditions	: f = 0.1mm/rev, ap = 0.2mm Wet

Cutting Performance (Interrupted Cutting)

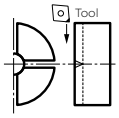
[Light Interrupted: Face with Drilled Holes]



Tool Grade	Tool Life Ratio 100 200
BNC2125	
BNC2135	
BN350	

Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: CNGA 120408
Cutting Conditions	: vc = 120m/min, f = 0.15mm/rev, ap = 0.15, Dry

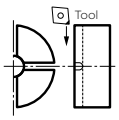
[Light Interrupted - V-Grooved Face]



Tool Grade	Tool Life Ratio 100 200
BNC2125	
BNC2135	
BN350	

Work Material	: X155CrMoV12-1 (58 to 62 HRC)
Tool Cat. No.	: CNGA 120408
Cutting Conditions	: vc = 60m/min, f = 0.07mm/rev, ap = 0.3, Dry

[Heavy Interrupted - U-Grooved Face]



Tool Grade	Tool Life Ratio 100 200
BNC2125	
BNC2135	
BN350	

Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: CNGA 120408
Cutting Conditions	: vc = 120m/min, f = 0.1mm/rev, ap = 0.2, Dry

Grade Guidance K Cast Iron

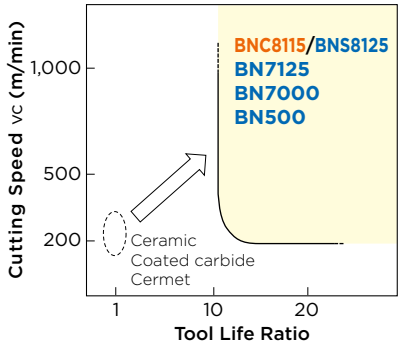
Cast Iron Machining

● Advantages of machining cast iron with SUMIBORON

Compared with conventional tools, a longer tool life for high speed machining is realized, machining efficiency is improved and better wear resistance, a sharper edge, excellent surface roughness and dimensional tolerance are achieved. SUMIBORON is ideal for finishing of grey cast iron and special cast iron through GGG (ductile cast iron) and heat-treated high-grade cast iron such as ADI.

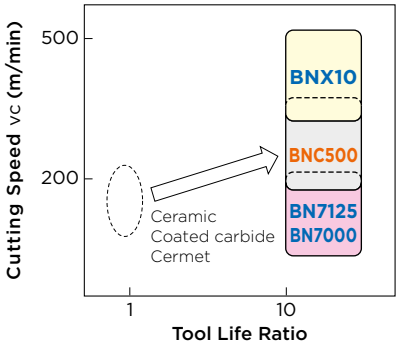
High-speed Machining

● Grey Cast Iron

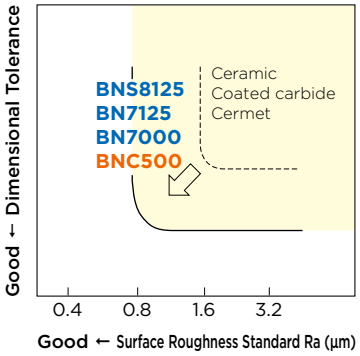


High-speed Machining

● Ductile Cast Iron



High-precision Machining



Recommended Grades

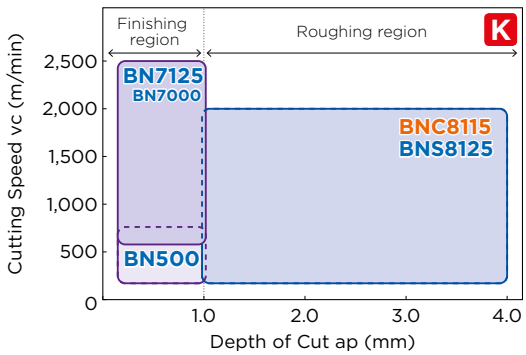
	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
Uncoated	BNS8125	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	—	—	Grade with 100% solid CBN structure that exhibits excellent wear and fracture resistance.
Uncoated	BN7125	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	General-purpose grade with excellent wear resistance, fracture resistance, and thermal shock resistance, suitable for machining of cast iron and exotic alloys.
Uncoated	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade with improved wear and fracture resistance in machining cast iron and exotic alloys.
Uncoated	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron machining. Provides superior wear and fracture resistance.
Coated	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure using PVD coating with excellent wear resistance to enable roughing operations.
Coated	BNC500 (For Ductile Cast Iron)	TiC	60 to 65	4	32 to 34	1.1 to 1.2	TiAlN	3	Suitable for machining of hard-to-cut cast iron, thanks to the highly wear-resistant substrate and coating.

TRS measured with test piece equivalent to the insert's CBN layer.

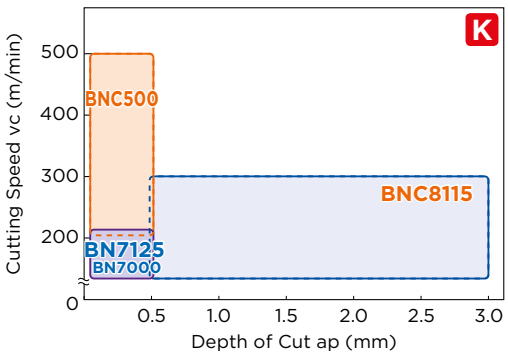
Refer to pages L9 to L11 for machining of sintered components, rolls, hard facing alloys, hardened stainless steel, titanium alloys, and heat-resistant alloys.

Application Range

● Grey Cast Iron



● Ductile Cast Iron



● Special Cast Iron

Work Material	Hardness (HB)	Work Material Structure	Examples	Cutting Speed vc (m/min) 100 200 300 350 400 500
Ni-resistant Cast Iron	150 to 200	Austenite	Piston ring	BNC500
High-Cr Cast Iron	250 to 350	Austenite	Pump component	BNS8125
FCV (CGI)	400 to 580	Pearlite	Engine blocks Cylinder heads Brake discs	BNC500

Grade Guidance K Cast Iron

Recommended Cutting Conditions

● Turning

Work Material		Recommended Grades	Recommended Cutting Conditions		
Material	Standard (Hardness)		Cutting Speed vc (m/min) 100 – 1,000 – 2,000	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Grey Cast Iron	GG-20 to GG-30 (HB ≤ 230)	BN7125 / BN7000	500 – 2,000	0.1 to 0.5	≤ 1.0
		BNC8115 / BNS8125	200 – 2,000	0.1 to 1.0	≤ 4.0
		BN500	200 – 700	0.1 to 0.5	≤ 1.0
Alloy Cast Iron	(HB ≥ 200)	BN7125 / BN7000	200 – 800	0.1 to 0.4	≤ 0.5
		BNS8125	200 – 1,000	0.1 to 0.8	≤ 2.0
Ductile Cast Iron	GGG-40.3 to GGG-60* (*is similar to FCD550)	BNC8115	80 – 300	0.1 to 0.5	≤ 3.0
		BN7125 / BN7000	80 – 200	0.1 to 0.4	≤ 0.6
		BNC500	150 – 500	0.1 to 0.4	≤ 0.5
	GGG-60 to GGG-70	BNC500	200 – 400	0.1 to 0.4	≤ 0.5
Vermicular Cast Iron FCV(CGI)	—	BNC500	200 – 500	0.1 to 0.4	≤ 0.4

Cutting oil: Wet cut (BNC8115/BNS8125 can also be used dry)

● Milling

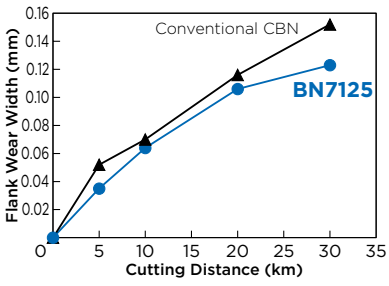
Work Material		Recommended Grades	Recommended Cutting Conditions		
Material	Standard (Hardness)		Cutting Speed vc (m/min) 100 – 1,000 – 2,000	Feed Rate fz (mm/t)	Depth of Cut ap (mm)
Grey Cast Iron	GG-20 to GG-30 (HB ≤ 200)	BN7125 / BN7000	800 – 2,000	0.10 to 0.30	≤ 0.5
		BNS8125	800 – 1,500	0.05 to 0.20	≤ 3.0

Cutting oil: Dry cut

Cutting Performance

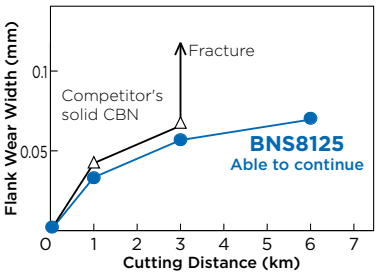
Grey Cast Iron Turning — Recommended Grades: BN7125/BN7000/BNC8115/BNS8125/BN500

● High Speed Continuous Cutting



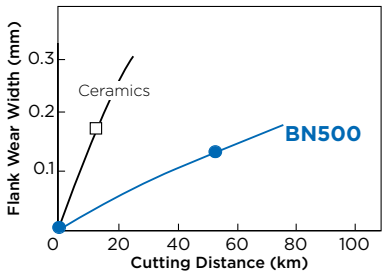
Work Material : GG-30 (Pearlite)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 800m/min, f = 0.15mm/rev
ap = 0.2mm Wet

● Interrupted Cutting



Work Material : GG-30 (Pearlite)
Tool Cat. No. : SNGN 090308
Cutting Conditions : vc = 600m/min, f = 0.3mm/rev
ap = 0.5mm Dry

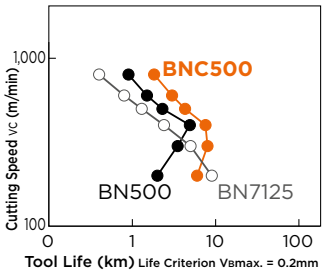
● Continuous Cutting



Work Material : GG-30 (Pearlite)
Tool Cat. No. : SNGN 120412
Cutting Conditions : vc = 500m/min, f = 0.3mm/rev
ap = 0.15mm Wet

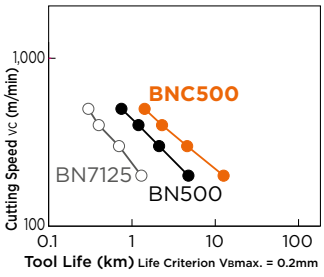
Ductile Cast Iron Turning — Recommended Grades: BNC500

● GGG-40.3



Work Material : GGG-40.3 (Continuous Cutting)
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet

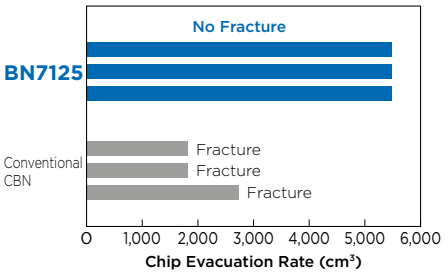
● GGG-70



Work Material : GGG-70 (Continuous Cutting)
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet

Grey Cast Iron Milling — Recommended Grades: BNC8115/BNS8125 BN7125/BN7000

● Cast Iron



Work Material : GG-25 (Pearlite)
Tool Cat. No. : FMU4080R SNEW1203ADTR
Cutting Conditions : vc = 1,500m/min, fz = 0.13mm/t, ap = 0.3mm, Residual Wet

Grade Guidance

Sintered Alloy

Sintered Component Machining

● **Advantages of machining sintered components with SUMIBORON**

SUMIBORON, with its excellent wear resistance and cutting edge integrity, suffers less cutting edge wear than cemented carbide or cermet, thereby suppressing burrs and chipping on the workpiece to achieve good machining precision and surface finish.

Sintered Components

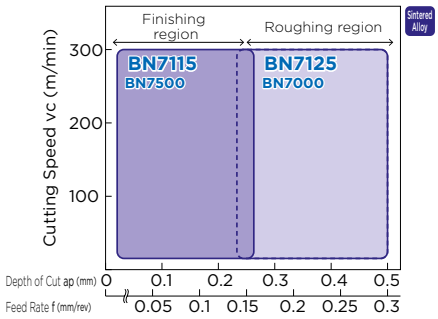
Recommended Grades

Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
BN7115	Co Compound	90 to 95	1	41 to 44	2.2 to 2.3	—	—	Grade with the best cutting edge sharpness and fracture resistance, suitable for finishing of sintered alloy.
BN7500	Co Compound	90 to 95	1	41 to 44	2.0 to 2.1	—	—	Grade maintaining good cutting edge sharpness, suitable for finishing of sintered alloy.
BN7125	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	Grade with the highest fracture resistance and wear resistance, suitable for roughing of sintered alloy.
BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting improved wear and fracture resistance in roughing of sintered alloy.

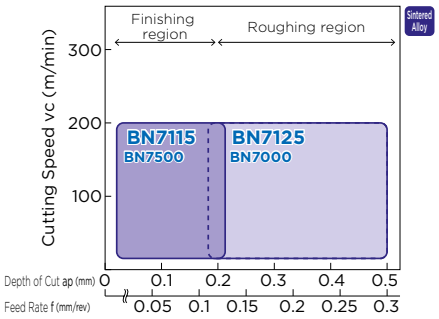
TRS measured with test piece equivalent to the insert's CBN layer.

Application Range

● **General Sintered Alloy (50 to 90HRB)**

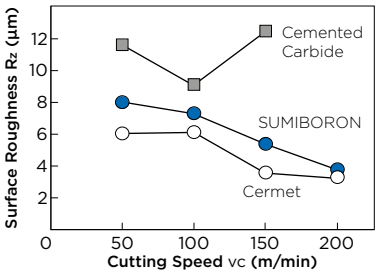


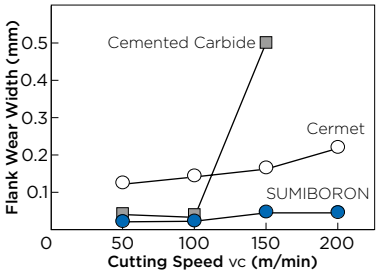
● **High-density/Sintered Alloy (30 to 65 HRC)**

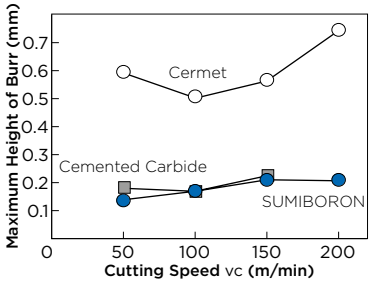


Cutting Performance

● **Grade Performance Comparison**







Work Material	: Sintered Alloy F-08C2 equivalent
Machining Details	: ø80-ø100 heavy interrupted facing with grooves and drilled holes (after 40 passes)
Tool Cat. No.	: TNGA 160404
Cutting Conditions	: f = 0.1mm/rev, ap = 0.1mm Wet

For general sintered alloy, cemented carbide and cermet grades can perform up to vc = 100m/min. However, around vc = 120m/min, wear becomes rapid and surface roughness deteriorates with increased burrs. On the other hand, SUMIBORON exhibits stability and superior wear resistance, burr prevention and surface roughness, especially at high speeds.

Valve Seat Ring (VSR)

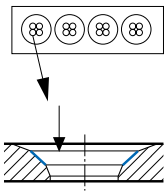
*VSR has both (Intake: IN) and (Exhaust: EX) with the exhaust generally being hardened.

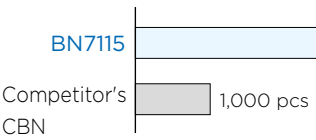
Recommended Cutting Conditions

Grade	Work Material Hardness (HV)	Recommended Cutting Conditions Cutting Speed vc (m/min) 20 40 60 80 100 120 140	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
BN7115	< 300		0.03 to 0.2	0.05 to 0.5
BN350	≥ 300		0.03 to 0.2	0.05 to 0.5

Application Examples

With superior fracture resistance, BN7115 can achieve three times conventional tool life





Work Material	: Sintered Alloy
Tool Cat. No.	: TPGW 110308 LF NU3
Cutting Conditions	: vc = 120m/min, f = 0.08mm/rev Wet

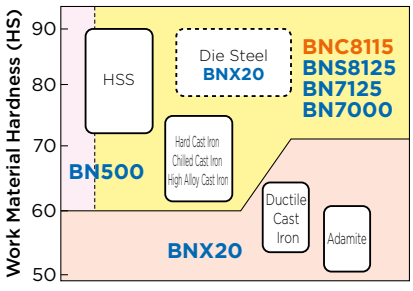
Grade Guidance H K S

Roll Machining

● Advantages of machining rolls with SUMIBORON

SUMIBORON enables the machining of high-hardness rolls that were previously difficult to machine with conventional tools, drastically improving machining efficiency.

Recommended Grades



Recommended Cutting Conditions

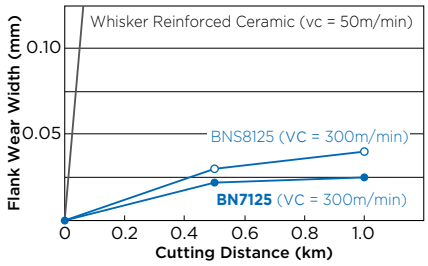
Work Material		Recommended Cutting Conditions		
Category	Hardness (HS)	Cutting Speed vc (m/min) 20 40 60 80 100 120 140	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Adamite	≥ 40		0.1 to 0.5	0.2 to 3.0
Chilled Cast Iron	≥ 60		0.1 to 0.5	0.2 to 3.0
High-alloy Cast Iron	≥ 60		0.1 to 0.5	0.2 to 3.0
HSS	≥ 70		0.1 to 0.4	0.1 to 3.0

Hard Facing Alloy Machining

● Advantages of machining hard facing alloy with SUMIBORON

SUMIBORON enables the machining of high-hardness facing alloys that were previously difficult to machine with conventional tools, drastically improving machining efficiency.
The first recommended grade is BN7125, followed by BNS8125.

Cutting Performance



Work Material : Colmonoy No.6 (NiCr-Based Self-Fluxing Alloy)
Tool Cat. No. : SNGN 090308
Cutting Conditions : f = 0.1mm/rev, ap = 0.2mm Dry

Recommended Cutting Conditions

Work Material		Recommended Cutting Conditions		
Category	Material	Cutting Speed vc (m/min) 50 100 200 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ni-Based Self-Fluxing Alloy	Colmonoy No.6		0.05 to 0.2	0.1 to 3.0
Co-Based Self-Fluxing Alloy	Stellite		0.05 to 0.2	0.1 to 1.0

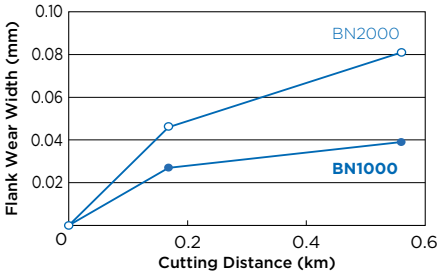
● BN7125 has a long tool life and minimal wear with high speed cutting

Hardened Stainless Steel Machining

● Advantages of machining hardened stainless steel with SUMIBORON

SUMIBORON enables the machining of hardened stainless steel, previously difficult to machine with conventional tools, drastically improving machining efficiency.
The first recommended grade is BN1000. When strength is required, we recommend BN2000.

Cutting Performance



Work Material : X105CrMo17 (59 to 61HRC, continuous)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap = 0.1mm Wet

Recommended Cutting Conditions

Work Material	Recommended Cutting Conditions		
Category	Cutting Speed vc (m/min) 50 100 200 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Hardened Stainless Steel		0.03 to 0.2	0.03 to 0.3

Grade Guidance S Exotic Alloy

Titanium Alloy Machining

● **Advantages of machining titanium alloy with SUMIBORON**

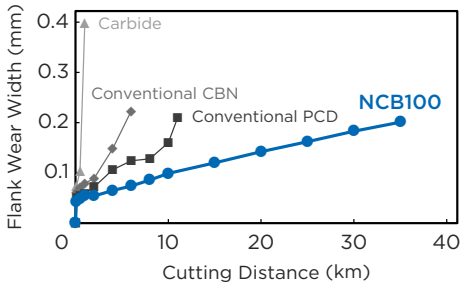
SUMIBORON enables high speed machining of titanium alloys that were previously difficult to machine with conventional tools, drastically improving machining efficiency.

Recommended Grades

Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
NCB100	—	100	Up to 0.5	51 to 54	1.8 to 1.9	—	—	Ideal for high-efficiency finishing of titanium alloy.

TRS measured with test piece equivalent to the insert's CBN layer.

Cutting Performance



Work Material : Titanium Alloy (Ti-6Al-4V)
Tool Cat. No. : CNGA 120408
Cutting Conditions : VC = 150m/min, f = 0.15mm/rev, ap = 0.5mm
Wet (High Pressure Coolant)

Recommended Cutting Conditions

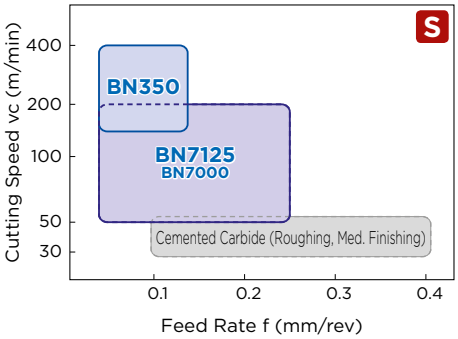
Work Material		Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
Composition	Hardness (HRC)		Cutting Speed vc (m/min) 50 100 150 200 250 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ti-6Al-4V	30 - 35	NCB100		0.05-**0.15**-0.20	0.10-**0.30**-0.50
Ti-5Al-5V-5Mo-3Cr	32 - 38	NCB100		0.05-**0.10**-0.20	0.10-**0.30**-0.50
Ti-10V-2Fe-3Al	32 - 38	NCB100		0.05-**0.10**-0.20	0.10-**0.30**-0.50

Heat-resistant Alloy Machining

● **Advantages of machining heat-resistant alloy with SUMIBORON**

SUMIBORON provides long tool life in the finishing of heat-resistant alloys.

Recommended Grades



SUMIBORON is best suited for finishing of heat-resistant alloy

Recommended Cutting Conditions

Work Material		Recommended Cutting Conditions		
Category	Material	Cutting Speed vc (m/min) 50 100 150 200	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ni-based Heat-resistant Alloy	Inconel 718		0.05 to 0.2	0.1 to 1.0
Co-Based Heat-Resistant Alloy	Stellite		0.05 to 0.2	0.1 to 1.0

BNC2105/BNC2115/BNC2125/BNC2135 H Hardened Steel



The Pinnacle of High Accuracy/ High-efficiency Cutting

■ Features

Coated SUMIBORON, our first recommendation for hardened steel machining, improves productivity in all types of hardened steel machining applications.
The BNC2100 series offers high performance in high-speed, high-feed machining.

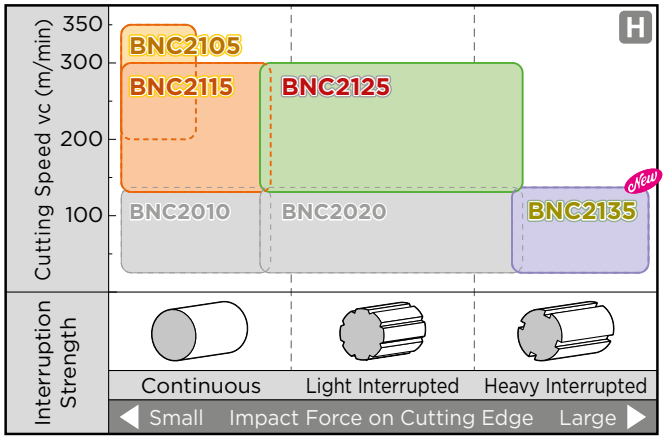
VIDEO OF CUTTING BNC2105 | VIDEO OF CUTTING BNC2115 / BNC2125 | VIDEO OF CUTTING BNC2135

■ Lineup

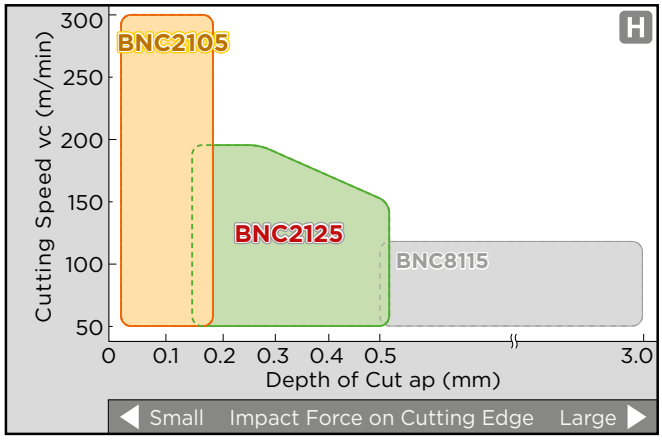
- **BNC2105** · **Realises outstanding wear resistance in high-speed machining of hardened steel**
  Excellent wear resistant coating and CBN substrate, achieve stable and long tool life in high-speed machining.
- **BNC2115** · **The ultimate in high-precision machining of hardened steel**
  Utilising a thick coating with exceptional notch wear resistance and a tough CBN substrate to achieve stable and excellent surface finish.
- **BNC2125** · **First recommendation for hardened steel machining**
  Combination of a tough CBN substrate and a thick coating that has a balance of wear resistance and toughness, to achieve stable machining in a wide range of applications.
- **BNC2135** New · **Achieves long and stable tool life in heavy interrupted cutting of hardened steel**
  Utilising a highly fracture-resistant coating and a high-strength substrate to achieve long and stable tool life in interrupted machining.

■ Application Range

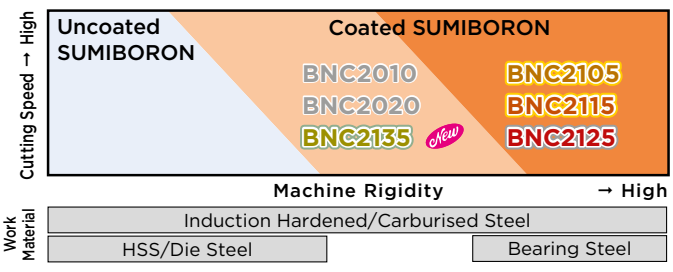
● Induction Hardened Steel (C45/C55, etc.), Carburised Steel



● Bearing Steel (100Cr6, etc.)



■ Differentiation



■ Recommended Cutting Conditions

Grade	Cutting Speed vc (m/min) Min.-**Optimum**-Max.	Feed Rate f (mm/rev) Min.-**Optimum**-Max.	Depth of Cut ap (mm) Min.-**Optimum**-Max.
BNC2105	150 - **200** - 350	0.03 - **0.10** - 0.15	0.03 - **0.15** - 0.20
BNC2115	110 - **180** - 300	0.03 - **0.10** - 0.20	0.03 - **0.20** - 0.35
BNC2125	110 - **160** - 300	0.05 - **0.20** - 0.40	0.05 - **0.30** - 0.50
BNC2135	50 - **100** - 150	0.03 - **0.10** - 0.20	0.03 - **0.20** - 0.30

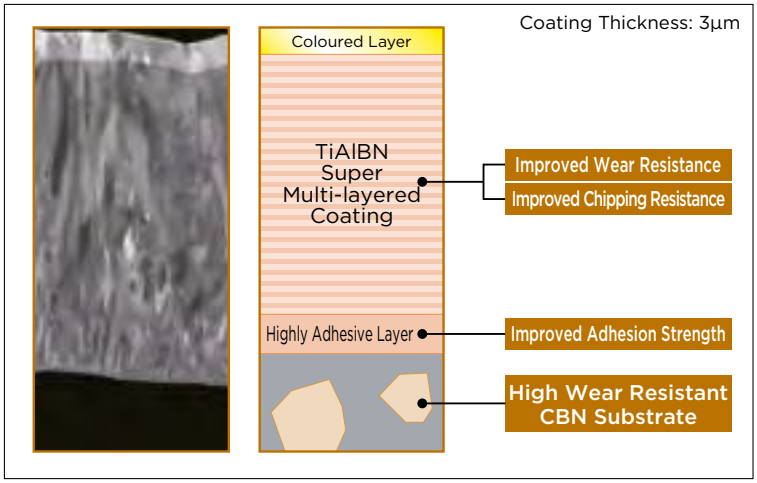
BNC2105/BNC2115/BNC2125/BNC2135

BNC2105



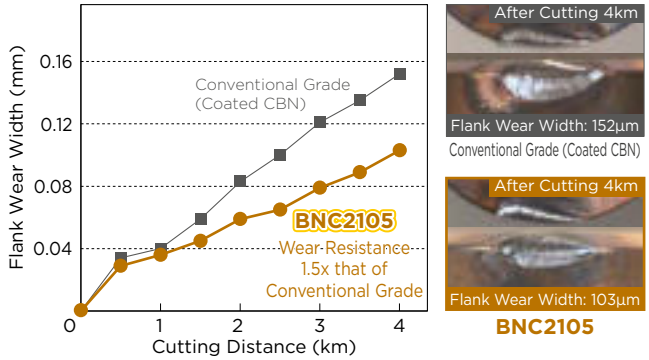
- Thick layer of super multi-layered ultra-fine TiAlBN coating with high strength and high hardness coupled with a highly thermal- and wear-resistant substrate to maintain excellent finished surface precision

■ CBN Substrate and Coating Structure



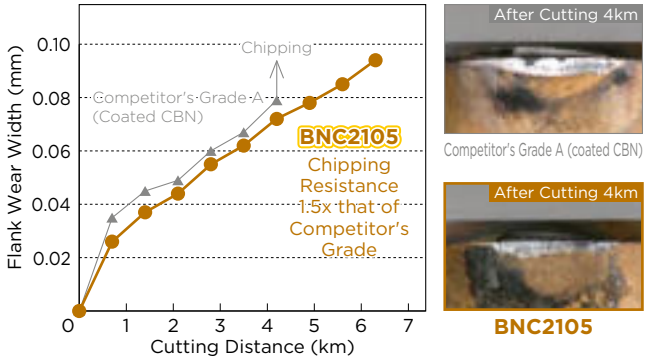
■ Cutting Performance

● BNC2105 Continuous Cutting (Wear Resistance)



Work Material	: 100Cr6 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408 NC4
Cutting Conditions	: vc = 200m/min f = 0.1mm/rev ap = 0.1mm Wet

● BNC2105 Continuous Cutting (Wear Resistance)

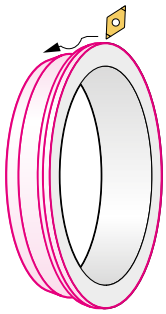


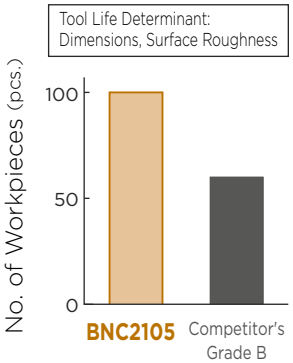
Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408 NC4
Cutting Conditions	: vc = 250m/min f = 0.06mm/rev ap = 0.1mm Wet

■ Application Examples

100Cr6 Bearing Steel Bearing Inner Ring (60HRC) BNC2105 H

BNC2105 maintains excellent wear resistance and surface roughness for a long time compared to competitor's coated CBN



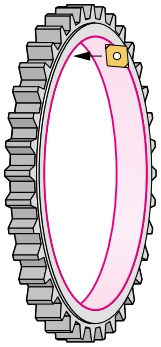


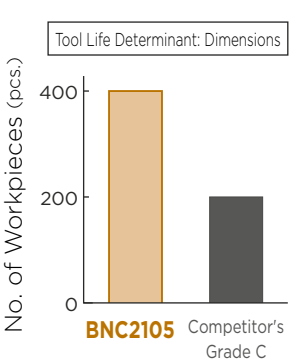
Tool: DNGA 150408 NC4 (BNC2105)

Cutting Conditions	BNC2105	: vc = 200m/min f = 0.045mm/rev ap = 0.1mm Wet
	Competitor's Grade B	: vc = 150m/min f = 0.010mm/rev ap = 0.1mm Wet

21MnCr5 Hardened Steel Ring Gear (60HRC) BNC2105 H

BNC2105 maintains excellent wear resistance for a long time compared to competitor's coated CBN





Tool: CNGA 120412 NC4 (BNC2105)
Cutting Conditions: vc = 200m/min f = 0.10mm/rev ap = 0.10mm Wet

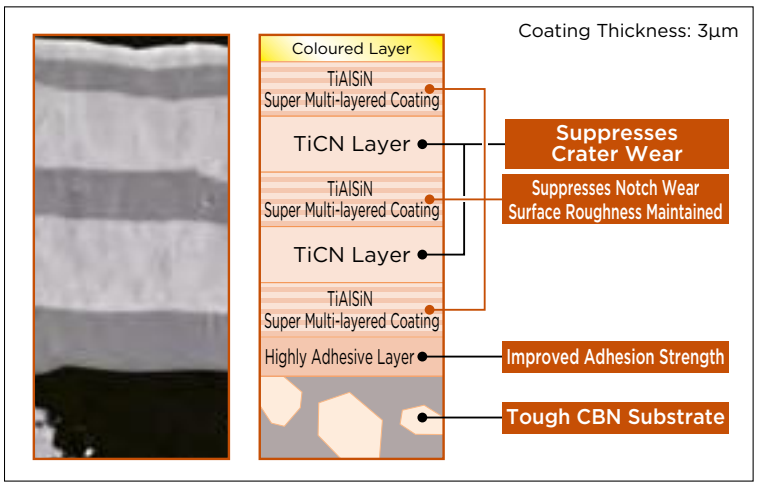
BNC2105/BNC2115/BNC2125/BNC2135 H Hardened Steel

BNC2115



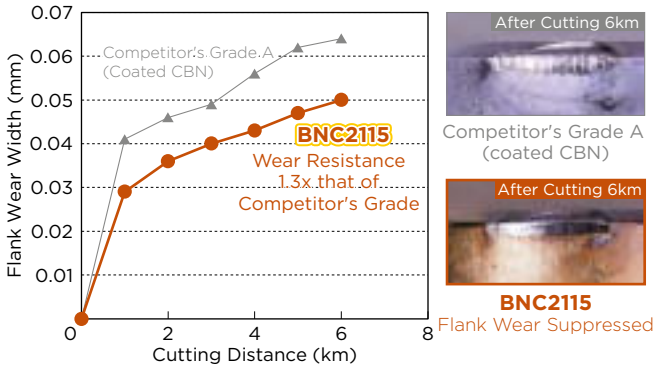
- Thick layer of high-strength super multi-layered TiAlSiN coating with highly heat-resistant TiCN coating on a tough substrate to achieve excellent surface finish quality

■ CBN Substrate and Coating Structure



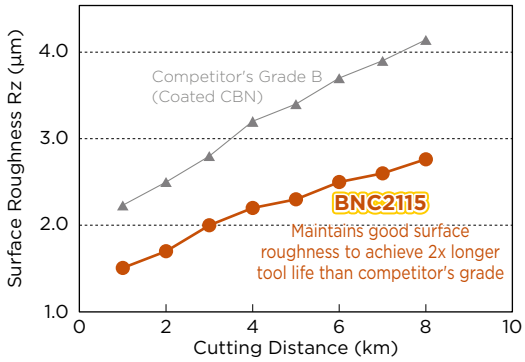
■ Cutting Performance

● BNC2115 Continuous Cutting (Wear Resistance)



Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408 NC4
Cutting Conditions	: vc = 200m/min f = 0.1mm/rev ap = 0.15mm Wet

● BNC2115 Continuous Cutting (Machined Surface Roughness)

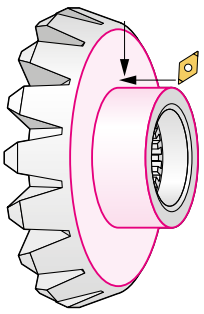


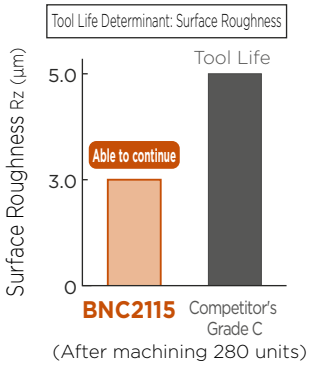
Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408 NC4
Cutting Conditions	: vc = 200m/min f = 0.1mm/rev ap = 0.15mm Wet

■ Application Examples

15CrMo5 Hardened Steel Gear (60HRC) BNC2115 H

Compared to competitor's coated CBN, BNC2115 reduces flank wear width by 30%, able to continue with good surface roughness

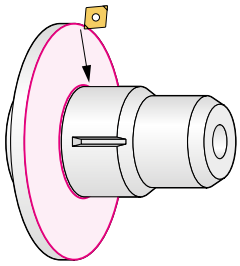


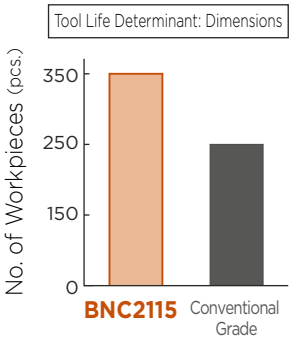


Tool: DNGA 150404 NC4 (BNC2115)
Cutting Conditions: vc = 160m/min f = 0.10mm/rev ap = 0.25mm Wet

21MnCr5 Hardened Steel CVT Component (58HRC) BNC2115 H

Compared to conventional coated CBN, BNC2115 has improved fracture life due to excellent crater wear resistance

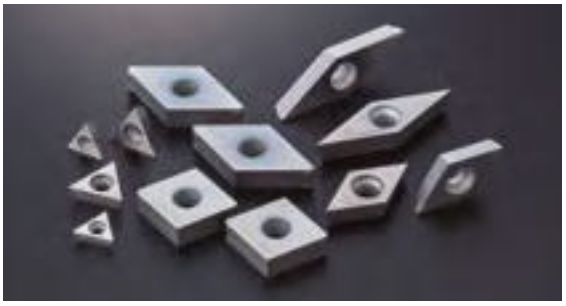




Tool: CNGA 120412 NC4 (BNC2115)
Cutting Conditions: vc = 170m/min f = 0.35mm/rev ap = 0.3mm Wet

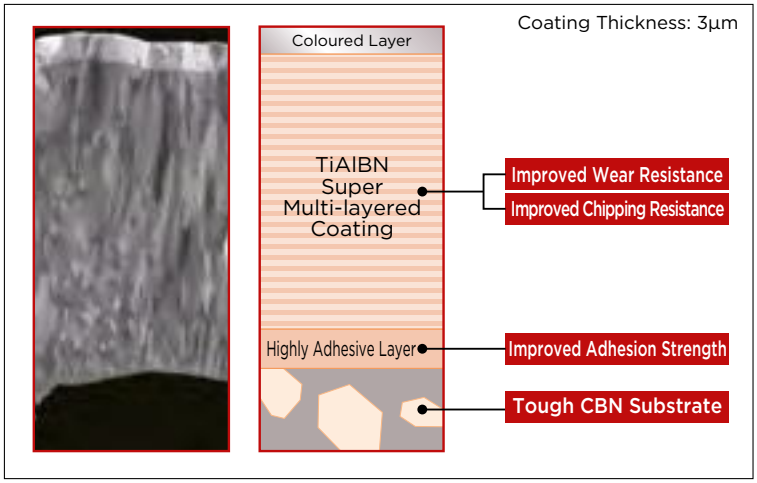
BNC2105/BNC2115/BNC2125/BNC2135

BNC2125



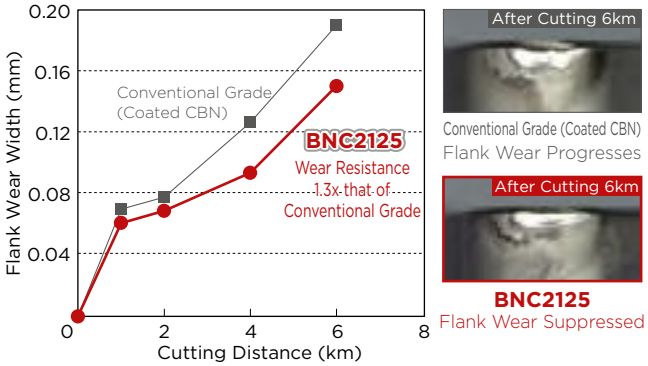
- Thick layer of super multi-layered ultra-fine TiAlBN coating with high strength and high hardness coupled with a tough substrate achieves high performance in a wide range of applications

■ CBN Substrate and Coating Structure



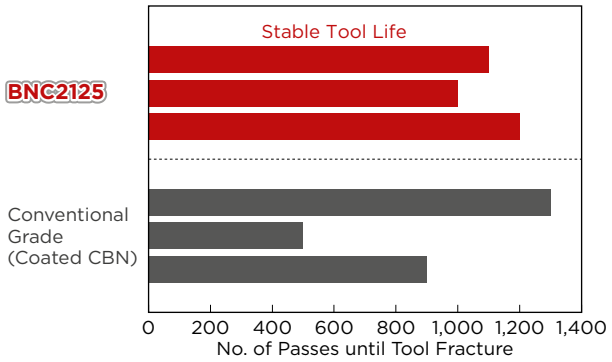
■ Cutting Performance

● BNC2125 Continuous Cutting (Wear Resistance)



Work Material	: 100Cr6 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408 NC4
Cutting Conditions	: vc = 150m/min f = 0.1mm/rev ap = 0.2mm Wet

● BNC2125 High-load Cutting (Fracture Resistance)

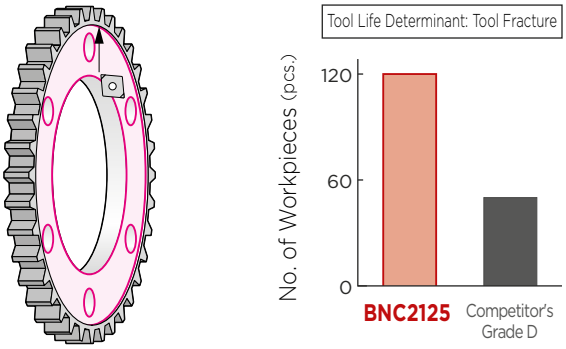


Work Material	: 100Cr6 (58 to 62 HRC)
Tool Cat. No.	: DNGA 150408 NC4
Cutting Conditions	: vc = 150m/min f = 0.15mm/rev ap = 0.5mm 63m/time Wet

■ Application Examples

21MnCr5 Hardened Steel Ring Gear (60HRC) BNC2125 H

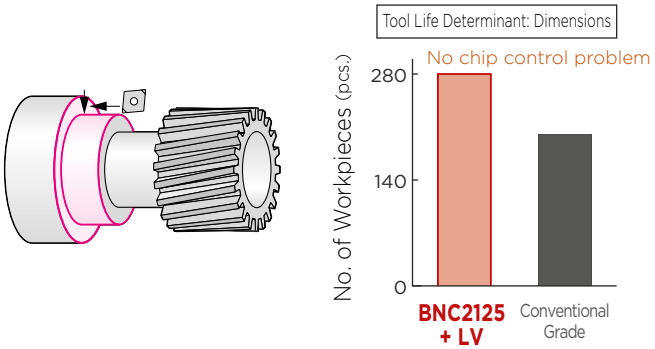
BNC2125 suppresses fractures due to crater wear and realises at least double the tool life



Tool: CNGA 120412 NC4 (BNC2125)
Cutting Conditions: vc = 150m/min f = 0.2mm/rev ap = 0.3mm
Dry

C15 Hardened Steel Sun Gear (60HRC) BNC2125 H

BNC2125 BREAK MASTER LV type offers long tool life and resolves chip control problems



Tool: CNGG 120408 NLV NC4 (BNC2125)
Cutting Conditions: vc = 190m/min f = 0.13mm/rev ap = 0.30mm
Wet

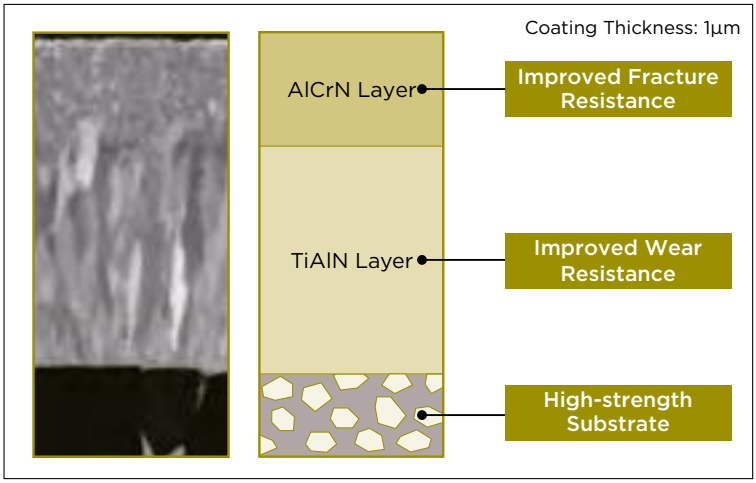
BNC2105/BNC2115/BNC2125/BNC2135 H Hardened Steel

BNC2135 New



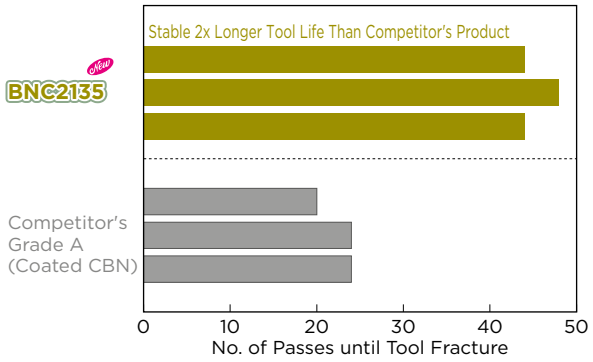
· Utilising new coating technology to create fine, high-strength AlCrN and TiAlN layers on a high-strength substrate to achieve high fracture resistance

■ CBN Substrate and Coating Structure



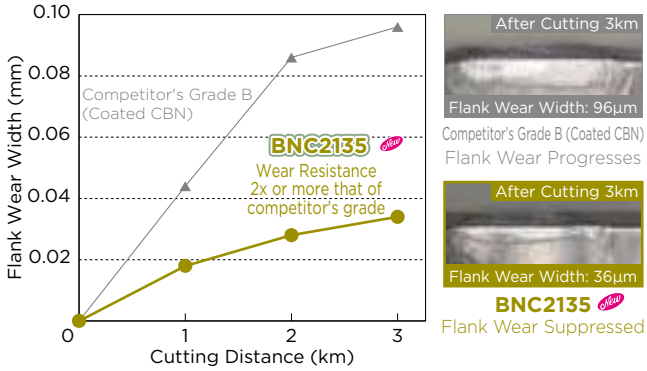
■ Cutting Performance

● BNC2135 Heavy Interrupted Cutting (Fracture Resistance)



Work Material	: 15CrMo5 Heavy Interrupted Grooved Facing (58 to 62 HRC)
Tool Cat. No.	: CNGA 120408 NC4
Cutting Conditions	: vc = 120m/min f = 0.1mm/rev ap = 0.2mm Wet

● BNC2135 Continuous Cutting (Wear Resistance)

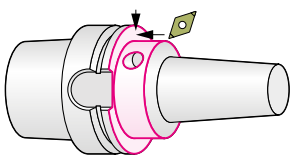


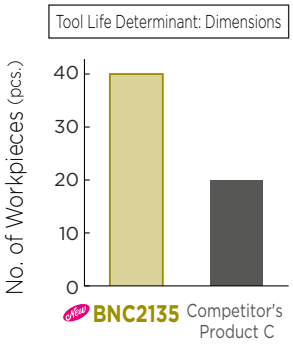
Work Material	: 15CrMo5 (58 to 62 HRC)
Tool Cat. No.	: CNGA 120408 NC4
Cutting Conditions	: vc = 120m/min f = 0.1mm/rev ap = 0.2mm Wet

■ Application Examples

21MnCr5 Hardened Steel Hydro Chuck (58HRC) BNC2135 H

BNC2135 has better fracture resistance than competitor's coated CBN, achieving longer tool life

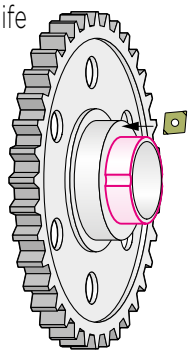


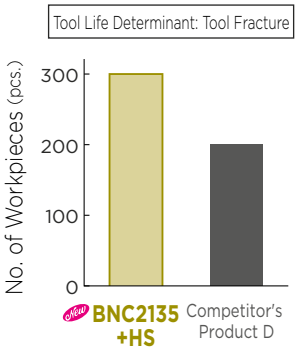


Tool: DNGA 150404 NC4 (BNC2135)
Cutting Conditions: vc = 100m/min f = 0.1mm/rev ap = 0.05mm Wet

21MnCr5 Hardened Steel Gear (60HRC) BNC2135 H

BNC2135 with strong HS type cutting edge treatment suppresses fractures in heavy interrupted cutting, improving tool life





Tool: CNGA 120404 HS NC4 (BNC2135)
Cutting Conditions: vc = 100m/min f = 0.2mm/rev ap = 0.1mm Dry

BNC2010/BNC2020 H



Excellent machining stability

■ Features

The BNC2000 series achieves stable tool life in low-rigidity machining such as small-diameter parts machining and carburised layer removal

VIDEO OF CUTTING

BNC2010 / BNC2020

■ Lineup

● **BNC2010** · **High-precision grade for low- to medium-speed machining**

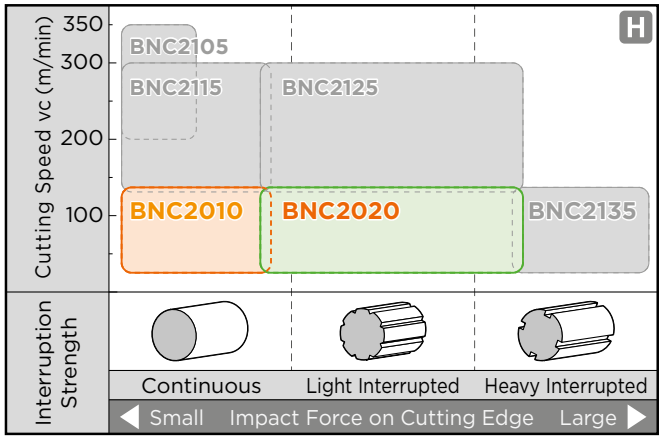
Excellent wear resistant CBN substrate and coating layer, for high-precision machining that requires surface roughness and surface finish accuracy

● **BNC2020** · **General-purpose grade for low- to medium-speed machining**

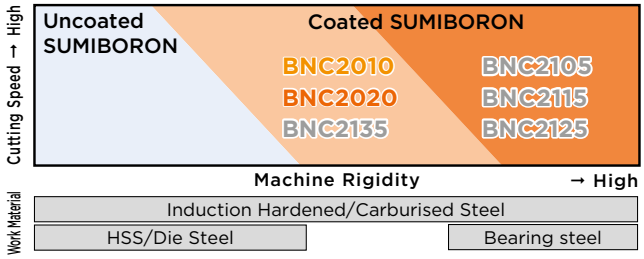
Utilizing an especially high wear resistant coating and a tough CBN substrate. Excellent machining stability in low-rigidity environments and high-load cutting. Also recommended for carburised layer removal

■ Application Range

● Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



■ Differentiation



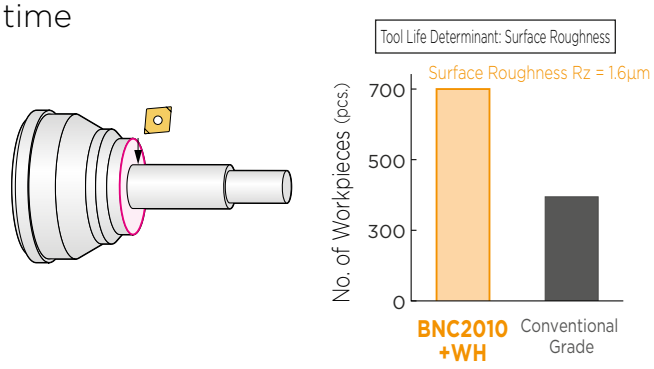
■ Recommended Cutting Conditions

Grade	Cutting Speed vc (m/min) Min.-**Optimum**-Max.	Feed Rate f (mm/rev) Min.-**Optimum**-Max.	Depth of Cut ap (mm) Min.-**Optimum**-Max.
BNC2010	50 - **140** - 180	0.03 -**0.10**- 0.20	0.03 -**0.20**- 0.35
BNC2020	50 - **120** - 180	0.03 -**0.20**- 0.40	0.05 -**0.30**- 0.50

■ Application Examples

C45 Hardened Steel CVJ Outer Race (60HRC) BNC2010 H

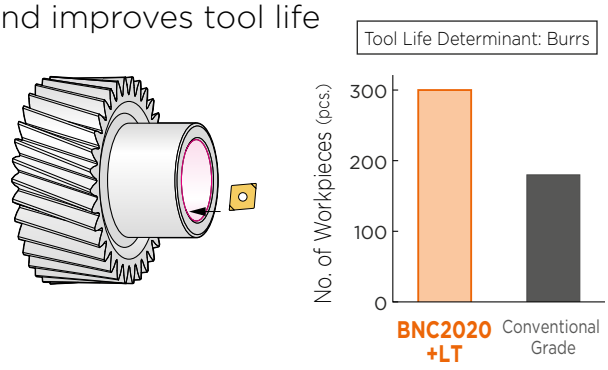
BNC2010 WH type wiper insert maintains excellent surface roughness for a long time



Tool: CNGA 120412 WH NC2 (BNC2010)
Cutting Conditions: vc = 150m/min f = 0.2mm/rev ap = 0.2mm
Dry

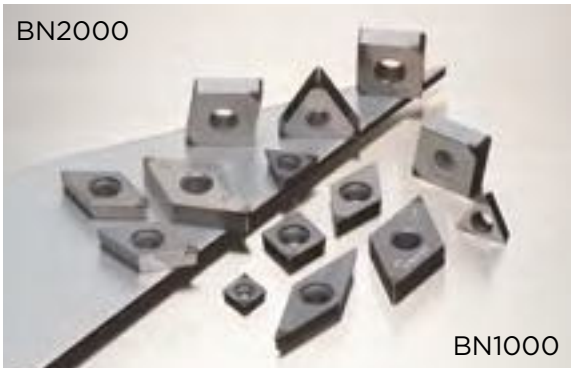
21MnCr5 Hardened Steel Gear (60HRC) BNC2020 H

BNC2020 with high-precision LT type cutting edge treatment suppresses burrs and improves tool life



Tool: CNGA 120408 LT NC2 (BNC2020)
Cutting Conditions: vc = 100m/min f = 0.10mm/rev ap = 0.15mm
Dry

BN1000/BN2000



■ Features

Uncoated SUMIBORON grades that utilize a newly developed high-purity ceramic binder.
Combines both fracture and wear resistance to achieve a stable tool life in a wide variety of hardened steel machining.
A wide selection of inserts are available, starting from a single-cornered type.

■ Lineup

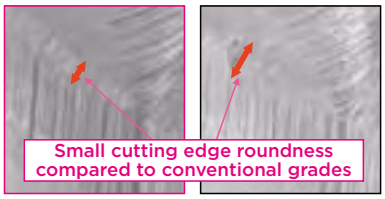
● **BN1000**

- **SUMIBORON grade for high-speed machining with the best wear resistance**
  Providing superior tool life in continuous cutting to light interrupted cutting.
- **Improved fracture resistance while emphasizing wear resistance.**
  Improved hardness and thermal resistance from the high-purity TiCN ceramic binder.

● **BN2000**

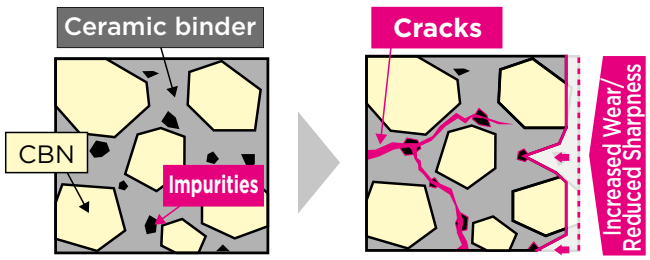
- **General-purpose grade suitable for typical hardened steel machining applications.**
  Provides stable tool life in continuous to light to medium interrupted machining.
- **Has a high degree of both fracture and wear resistance.**
  Significant improvements in the performance of both by employing a high-purity ceramic binder.
- **Stable surface roughness achieved by increasing edge sharpness (right figure).**

Sharpness Comparison



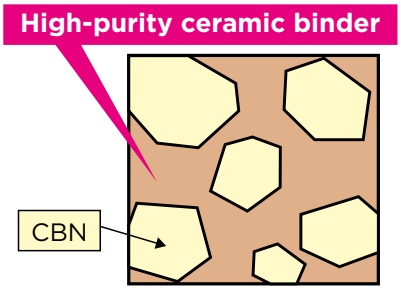
■ Newly Developed High-purity Ceramic Binder

Conventional Grade



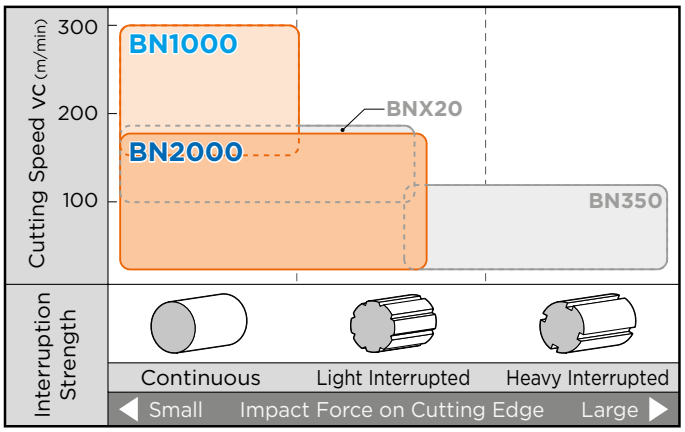
The impurities contained in the ceramic binder for conventional grades decrease the sintered body strength and thermal resistance, leading to cracks (fracture) and wear.

BN1000/BN2000



With a newly developed high-purity ceramic binder, BN1000/BN2000 achieve toughness and improved thermal resistance by decreasing impurities to an extreme.

■ Application Range



■ Recommended Cutting Conditions

● **BN1000**

Cutting Speed vc (m/min)	
30 100 120 150 200 250 300	
Feed Rate f (mm/rev)	Depth of Cut ap (mm)
0.03 to 0.15	0.03 to 0.2

● **BN2000**

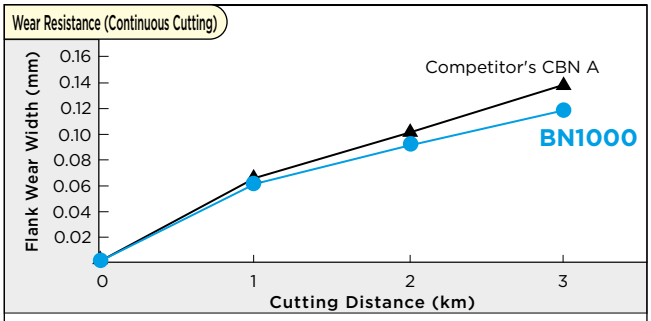
Cutting Speed vc (m/min)	
30 80 100 120 150 200 250 300	
Feed Rate f (mm/rev)	Depth of Cut ap (mm)
0.03 to 0.2	0.03 to 0.3

Cutting Oil: Continuous Cutting Dry, Wet
Interrupted Cutting Dry

BN1000/BN2000

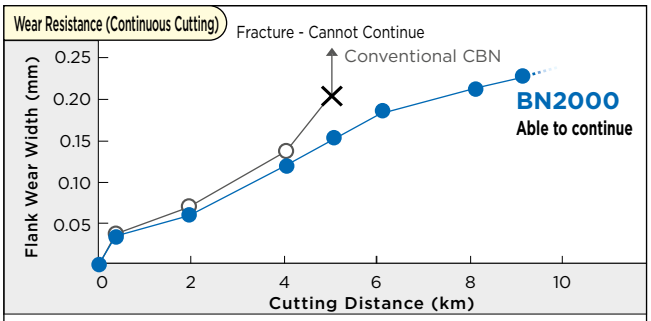
■ Cutting Performance

● BN1000



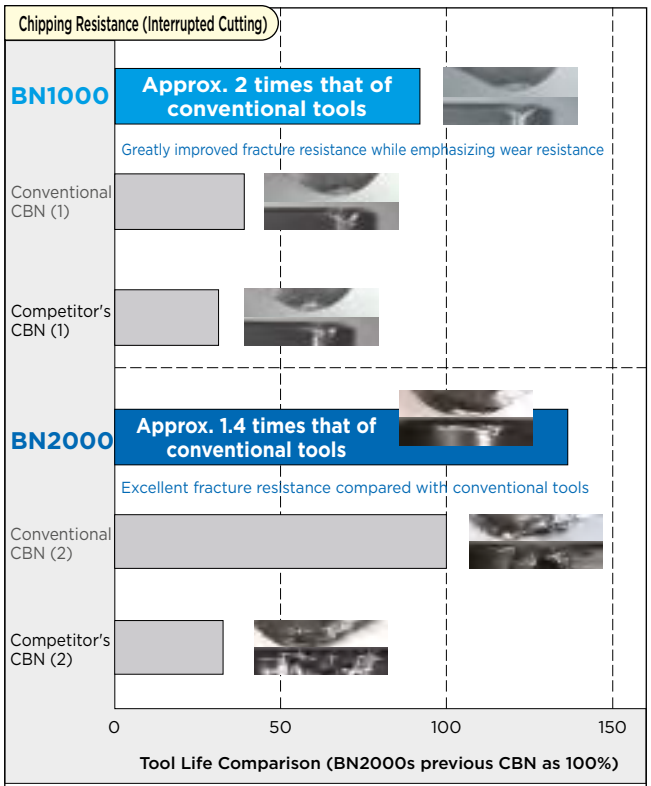
Work Material : 100Cr6 (58 to 62HRC)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 150m/min, f = 0.1mm/rev, ap = 0.2mm, Dry

● BN2000



Work Material : 15CrMo5 (58 to 62HRC)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm, Dry

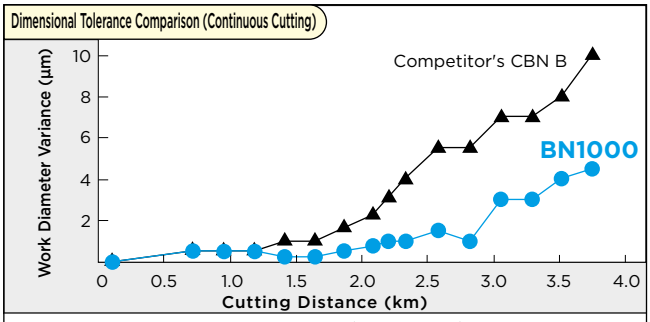
● BN1000/BN2000



Work Material : 15CrMo5 with 8 grooves (58 to 62HRC)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 150m/min, f = 0.1mm/rev, ap = 0.2mm, Dry

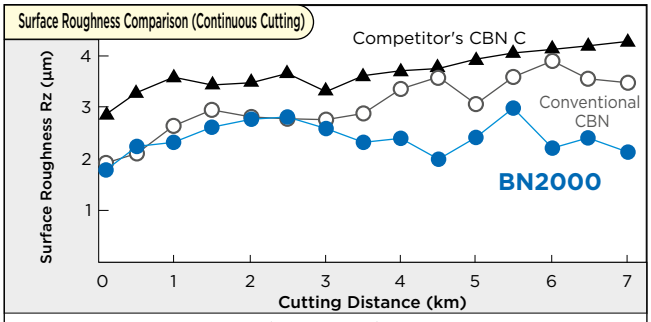
■ Machining Precision

● BN1000



Work Material : 15CrMo5 ø130 O.D. (58 to 62HRC)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap = 0.1mm Wet

● BN2000



Work Material : 15CrMo5 (58 to 62HRC)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 100m/min, f = 0.08mm/rev, ap = 0.2mm, Dry

BN7125 (K Cast Iron, Sintered Alloy) /BN7115 (Sintered Alloy)

VIDEO OF CUTTING BN7125

VIDEO OF CUTTING BN7115



■ Features

Improved wear resistance through high CBN content. Further, with improved CBN particle/binder boundary strength due to the special binder and improved binding strength between CBN particles thanks to our proprietary sintering process, excellent fracture resistance is achieved.
Provides stable performance for high-speed finishing of cast iron, sintered alloy and exotic alloys.

■ Lineup

● BN7125

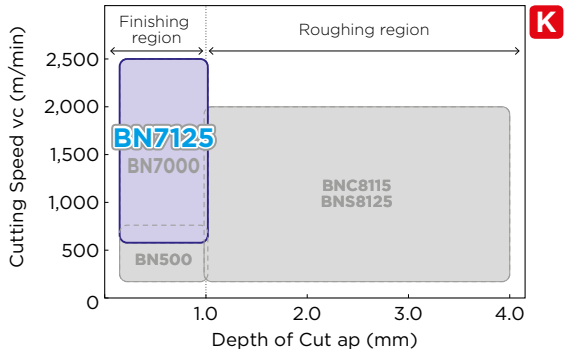
General-purpose Grade for Cast Iron/Sintered Alloy Machining
Achieves high-efficiency machining of sintered alloy with a standard + 3 types of cutting edge variations
Exhibits good thermal crack resistance in high-speed finishing of cast iron.
Also suitable for machining difficult-to-cut materials such as rolls, HSS, and heat-resistant alloys.

● BN7115

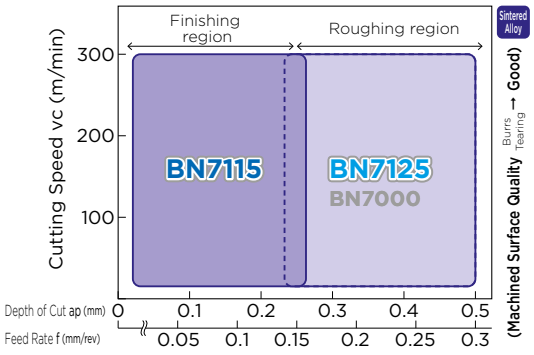
Edge sharpness in sintered alloy machining is excellent, suppressing burrs and tearing

■ Application Range

● Cast Iron



● Sintered Alloy



■ Recommended Cutting Conditions

● Cast Iron

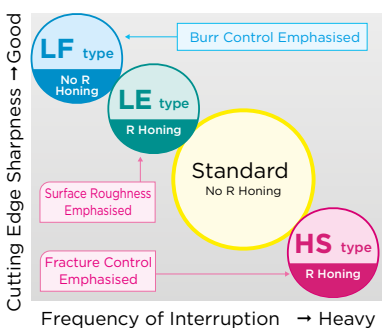
Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Cast Iron	BN7125	100-**1,000**-2,500	0.05-**0.30**-0.60	0.05-**0.50**-1.00

● Sintered Alloy

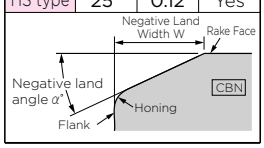
Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
General Sintered Alloy	BN7115	10-**150**-300	0.01-**0.08**-0.15	0.05-**0.13**-0.25
	BN7125	10-**150**-300	0.01-**0.15**-0.30	0.05-**0.25**-0.50
High-density Sintered Alloy	BN7115	10-**100**-200	0.01-**0.06**-0.12	0.05-**0.10**-0.20
	BN7125	10-**100**-200	0.01-**0.15**-0.30	0.05-**0.25**-0.50

■ Recommended Cutting Edge Treatment

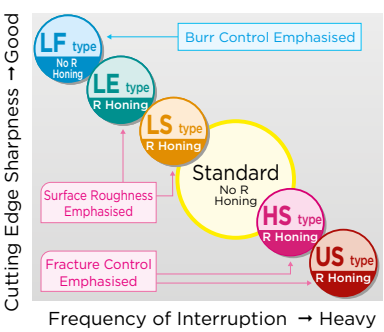
BN7125



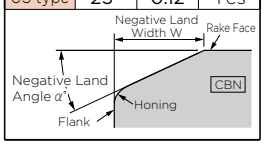
Type	α°	W (mm)	Honing
Standard	15°	0.12	No
LF type	Sharp Edge		No
LE type	Sharp Edge		Yes
HS type	25°	0.12	Yes



BN7115



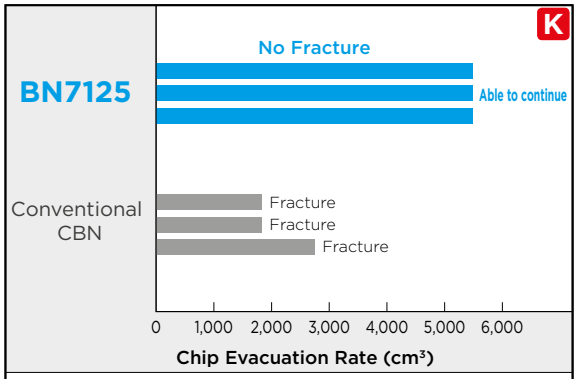
Type	α°	W (mm)	Honing
Standard	15°	0.12	No
LF type	Sharp Edge		No
LE type	Sharp Edge		Yes
LS type	15°	0.07	Yes
HS type	25°	0.05	Yes
US type	25°	0.12	Yes



BN7125 K Cast Iron Sintered Alloy /BN7115 Sintered Alloy

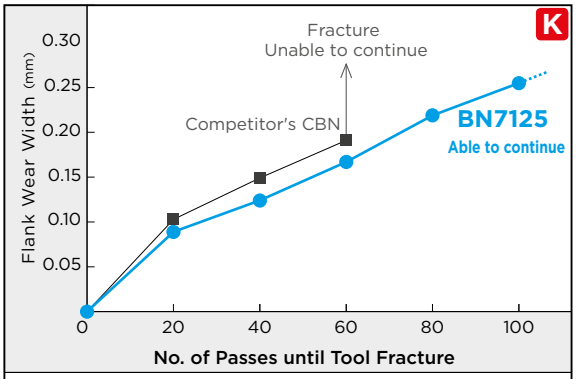
■ Cutting Performance (Cast Iron)

● BN7125 Milling (Fracture Resistance)



Work Material : GG-25 (Pearlite)
Tool Cat. No. : FMU4080R Insert: SNEW1203ADTR
Cutting Conditions : vc = 1,500m/min, fz = 0.13mm/t, ap = 0.3mm, Remainder Wet

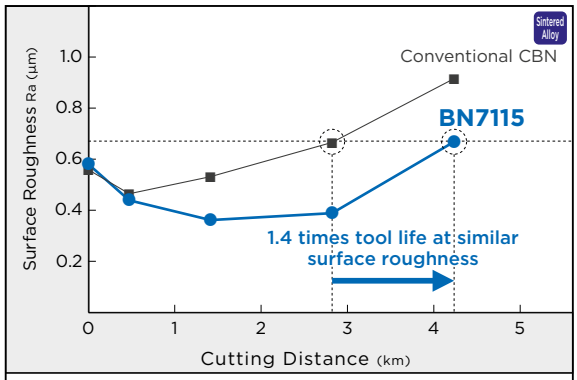
● BN7125 Interrupted Cutting (Fracture Resistance)



Work Material : GG-25 with 6 grooves
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 750m/min, f = 0.15mm/rev, ap = 0.2mm Wet

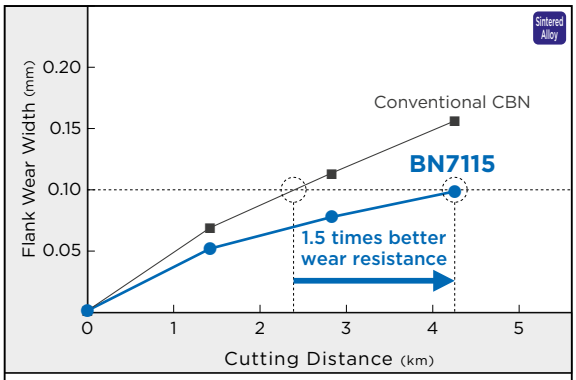
■ Cutting Performance (Sintered Alloy)

● BN7115 Continuous Cutting (Surface Roughness)

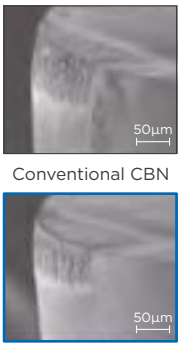


Work Material : Sintered Alloy F-08C2 equivalent (150HV)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap =0.2mm Wet

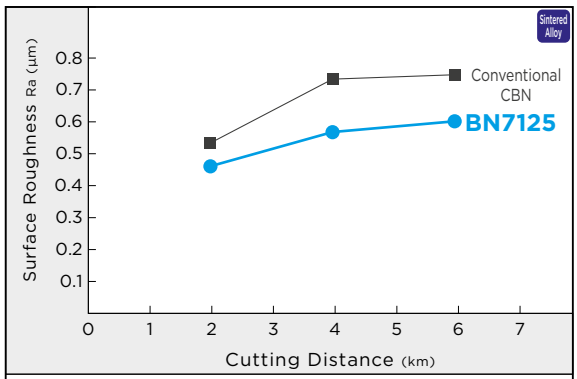
● BN7115 Continuous Cutting (Wear Resistance)



Work Material : Sintered Alloy F-08C2 equivalent (150HV)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap =0.2mm Wet

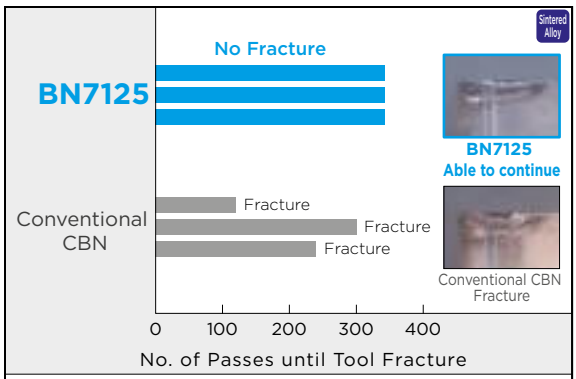


● BN7125 Continuous Cutting (Surface Roughness)



Work Material : Sintered Alloy F-08C2 equivalent (150HV)
Tool Cat. No. : CNGA 120408 NU2
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap = 0.2mm Wet

● BN7125 Interrupted Cutting (Fracture Resistance)



Work Material : Hardened Sintered Alloy FLA-07C2M equivalent (500HV)
Tool Cat. No. : TNGA 160404 LE NU3
Cutting Conditions : vc = 250m/min, f = 0.08mm/rev, ap = 0.5mm Wet

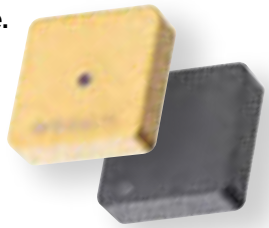
BNC8115/BNS8125 K Cast Iron H Hardened Steel

VIDEO OF CUTTING



■ Features

Covers a wide range of machining applications from roughing to finishing of cast iron, hard-to-cut cast iron, and hardened steel.
100% solid CBN structure enables depth-of-cut of 0.5mm and above.



■ Lineup

● BNC8115

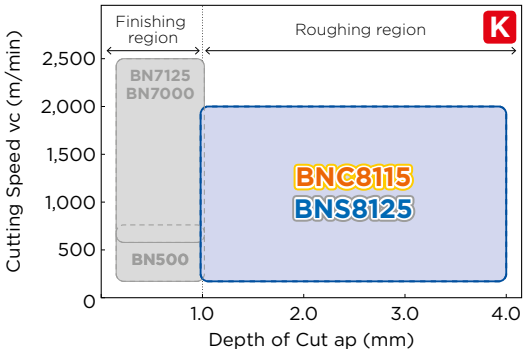
PVD coating with excellent wear resistance suppresses flank wear when machining difficult-to-cut cast iron and hardened steel.
Ideal for roughing and depth-of-cut of 0.5 to 3.0mm. Can also be used for roughing and finishing of grey cast iron. Gold coating improves visibility of used corners.

● BNS8125

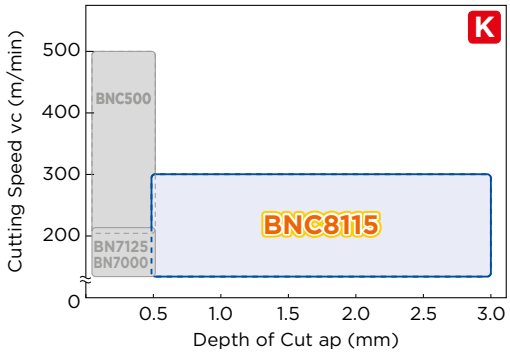
Optimising the particle size distribution of the CBN particles has resulted in improved fracture resistance and longer life while maintaining wear resistance during gray cast iron machining.

■ Application Range

● Grey Cast Iron

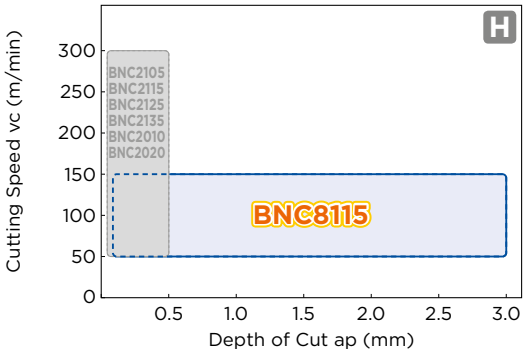


● Ductile Cast Iron



Wet machining is recommended for grey cast iron
For dry machining, BNC8115/BNS8125 are recommended for both roughing and finishing

● Hardened Steel



■ Recommended Cutting Conditions

● Cast Iron (Turning) K

Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Grey Cast Iron	BNC8115	200-**1,000**-2,000	0.10-**0.50**-1.00	≤ 4.0
	BNS8125	200-**1,000**-2,000	0.10-**0.50**-1.00	≤ 4.0
Ductile Cast Iron	BNC8115	80 - **160** - 300	0.10-**0.30**-0.50	≤ 3.0
	BNS8125	80 - **120** - 200	0.10-**0.30**-0.50	≤ 3.0

● Hardened Steel (Turning) H

Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Hardened Steel	BNC8115	50-**100**-150	0.10-**0.25**-0.40	≤ 3.0

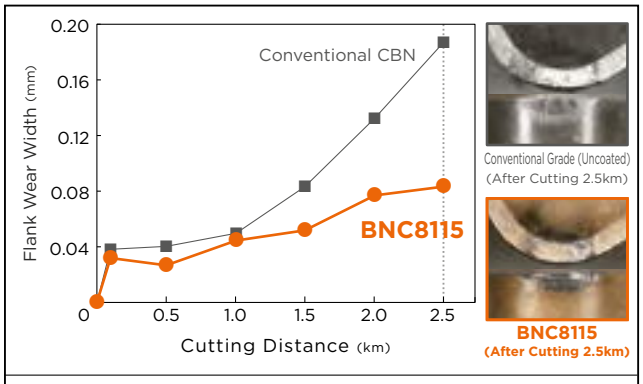
● Cast Iron (Milling) K

Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Grey Cast Iron	BNC8115	800-**1,400**-2,000	0.10-**0.50**-1.00	≤ 4.0
	BNS8125	800-**1,400**-2,000	0.10-**0.50**-1.00	≤ 4.0

BNC8115/BNS8125 K Cast Iron H Hardened Steel

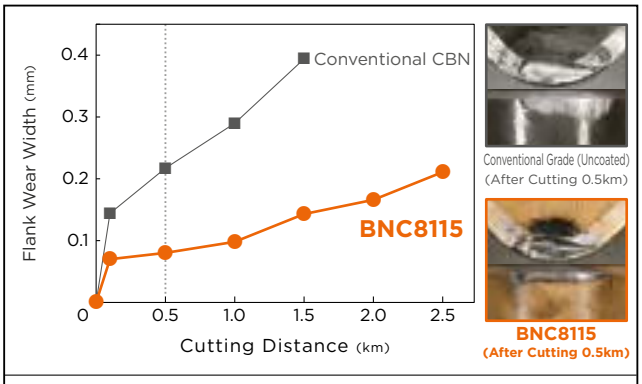
■ Cutting Performance (BNC8115)

● Wear Resistance (Ductile Cast Iron Machining) K



Work Material : GGG-40.3
Tool Cat. No. : SNGN 090308
Cutting Conditions: vc = 300m/min, f = 0.2mm/rev, ap = 0.2mm Wet

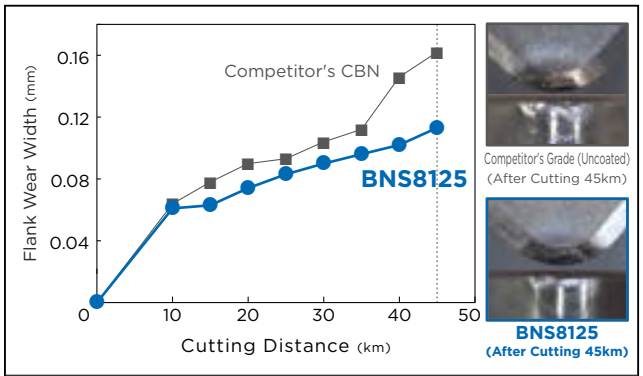
● Wear Resistance (Hardened Steel Machining) H



Work Material : 100Cr6 (58 to 62 HRC)
Tool Cat. No. : SNGN 090308
Cutting Conditions: vc = 150m/min, f = 0.2mm/rev, ap = 0.3mm Wet

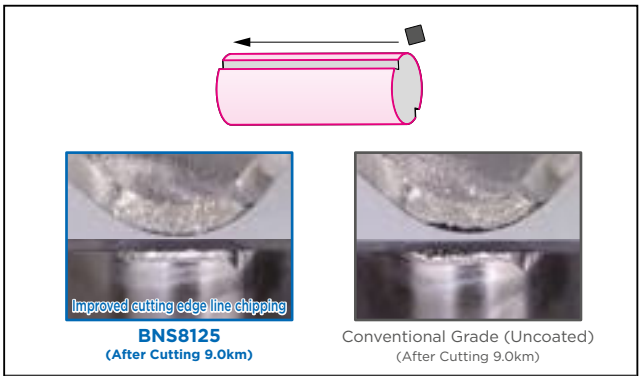
■ Cutting Performance (BNS8125)

● Wear Resistance (Grey Cast Iron Machining) K



Work Material : GG-30
Tool Cat. No. : SNGN 090308
Cutting Conditions: vc = 800m/min, f = 0.1mm/rev, ap = 0.2mm Wet

● Fracture Resistance (Ductile Cast Iron Machining) K



Work Material : GGG-40.3 with 2 V-grooves
Tool Cat. No. : SNGN 120408
Cutting Conditions: vc = 200m/min, f = 0.2mm/rev, ap = 0.5mm Wet

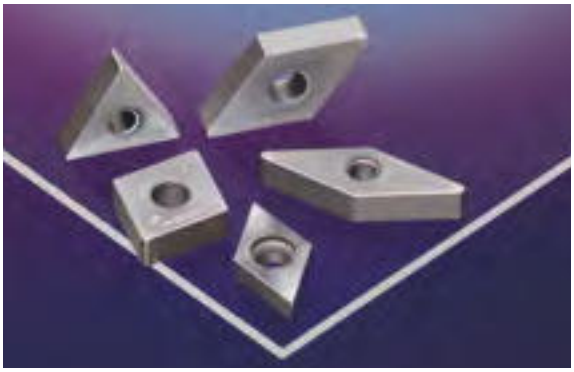
■ Choosing Between BNC8115 and BNS8125 (Cast Iron/Hardened Steel)

Work Material		Coated SUMIBORON BNC8115 Turning	Coated SUMIBORON BNC8115 Milling	SUMIBORON BNS8125 Turning	SUMIBORON BNS8125 Milling	SUMIBORON BN7125 Turning	SUMIBORON BN7125 Milling	Coated SUMIBORON BNC500 Turning		Coated SUMIBORON BNC2125 Turning	
K	Grey Cast Iron	○	Best	○	Best Economical	○	Depth of Cut 1.0mm or below High-speed Finishing	—	—	—	—
K	Ductile Cast Iron	○	Depth of Cut 0.5mm or above	○	Interrupted Machining	○	Depth of Cut 0.5mm or below Low-speed Machining	○	Depth of Cut 0.5mm or below	—	—
H	Hardened Steel	○	Depth of Cut 0.5mm or above	—	—	—	—	—	—	○	Depth of Cut 0.5mm or below High-speed Machining

○: Recommendation

BNC500

Coated CBN Grade for Ductile Cast Iron Machining



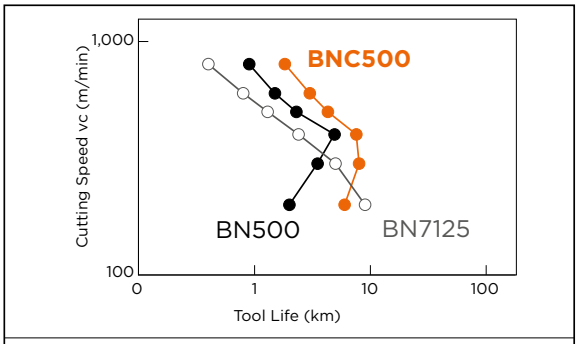
■ Features

Significant improvements in the toughness and wear resistance of the CBN substrate through the use of a newly developed high-purity TiC binder. In addition, the combination with a ceramic coating with excellent thermal resistance provides outstanding wear resistance. High-speed, high-precision machining is achieved when finishing ductile cast iron. Furthermore, long and stable tool life is realised in machining high-strength ductile cast iron, special cast irons such as vermicular cast iron and centrifugally-cast cast iron.

- **Achieves stable tool life for high-speed machining of ductile cast iron**
  Superior wear resistance, making stable machining possible under high-speed conditions.
- **Supports high-precision machining**
  Can maintain excellent dimensional tolerance and surface roughness over many hours.

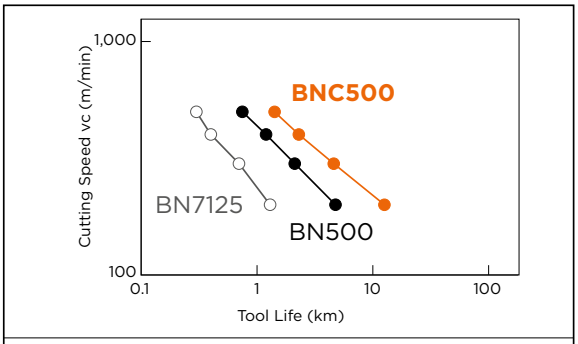
■ Cutting Performance

● GGG-40.3 Continuous Cutting (V-T Chart)



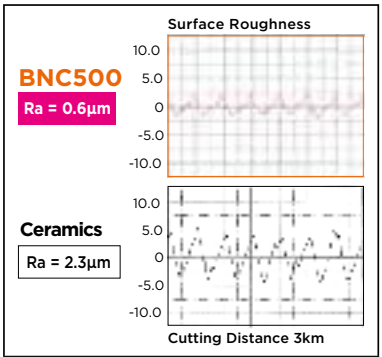
Work Material : GGG-40.3 (160HB) Tool Cat. No.: CNGA 120408 NC4
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet
Tool Life Criterion : $V_B$max. = 0.2mm

● GGG-70 Continuous Cutting (V-T Chart)



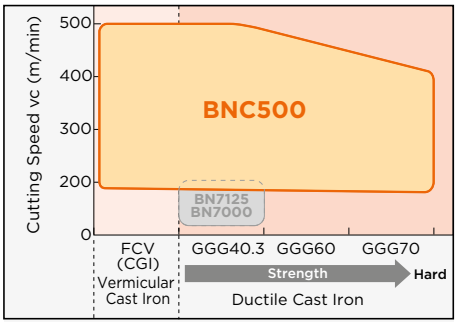
Work Material : GGG-70 (260HB) Tool Cat. No.: CNGA 120408 NC4
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet
Tool Life Criterion : $V_B$max. = 0.2mm

■ Machined Surface Quality

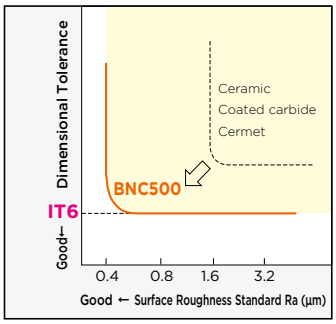


Work Material : GGG-70 (260HB)
Cutting Conditions : VC = 400m/min, f = 0.1mm/rev
ap=0.1mm Wet

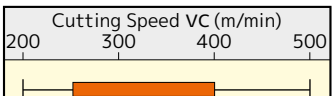
■ Application Range



■ High-precision Machining



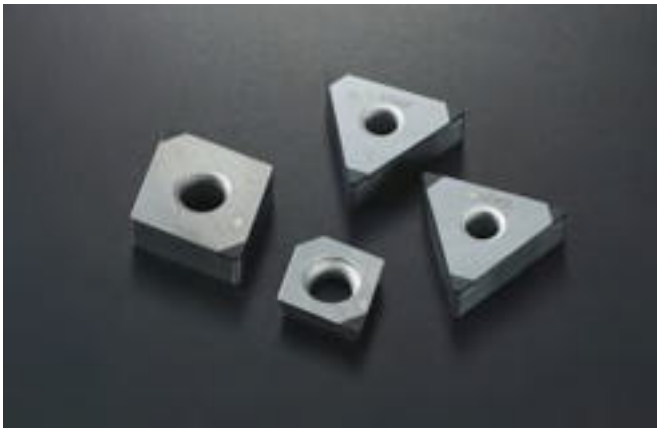
■ Recommended Cutting Conditions



Feed Rate f (mm/rev)	Depth of Cut ap (mm)
0.10 to 0.40	≤ 0.50

Cutting oil in recommended coolant

IT105 S Exotic Alloy



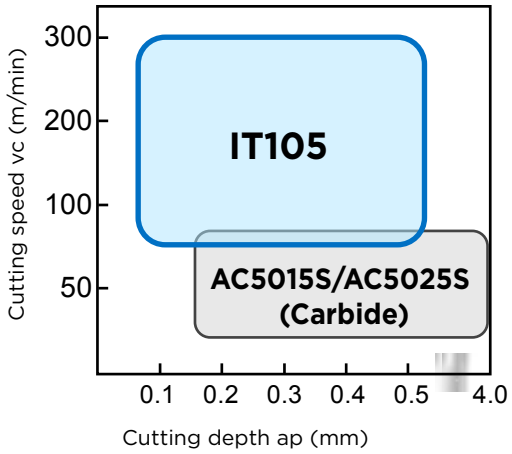
■ Features

- Stable and reliable tool life
- Excellent surface finish
- High productivity with high cutting speed
- For finish turning of heat resistance alloys
- Suitable for aerospace engine parts



(Photo of IHI Corporation)

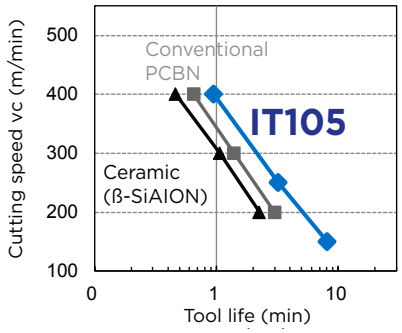
■ Application range



■ Cutting performance

Inconel718, Aging treated, HRC=44

Criteria: Flank wear VB Max. / Chipping ≥ 0.2mm

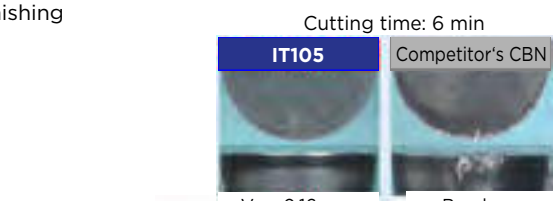


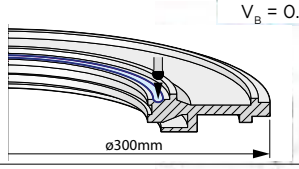
Insert:	CNGA120408NU2 - IT105
Cutting Conditions:	f = 0.2 mm/rev, a_p = 0.3 mm, wet

■ Application example

Inconel718, Jet engine disk

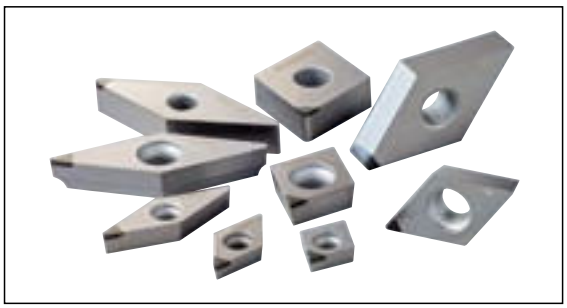
Excellent wear and chipping resistance in high speed finishing





Insert:	GCMN6030P - IT105
Cutting Conditions:	v_c = 120 m/min, f = 0.05 mm/rev, a_p = 5 mm, wet

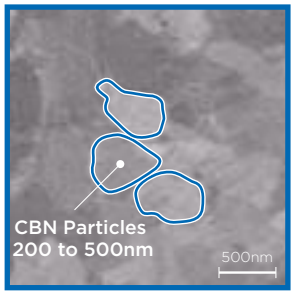
Nano-polycrystalline CBN



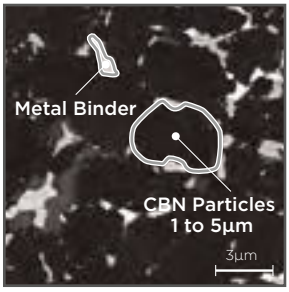
■ Features

**SUMIBORON BINDERLESS, which does not contain any binders, is a sintered CBN with directly and strongly bonded nano- to sub-micron CBN particles.
With higher hardness and thermal conductivity than conventional CBN grades, higher efficiency and longer tool life can be realised in machining hard-to-cut materials such as titanium alloys and cobalt-chrome alloys.**

■ Sintered Structure (SEM Image)



SUMIBORON BINDERLESS



Conventional CBN

■ Physical Values

	SUMIBORON BINDERLESS	Conventional CBN
CBN Content (vol%)	100	90 to 95
Binder	—	WC-Co
Hardness Hv (GPa)	51 to 54	41 to 44
Thermal Conductivity (W/m·K)	180 to 200	100 to 120

SUMIBORON BINDERLESS NCB100

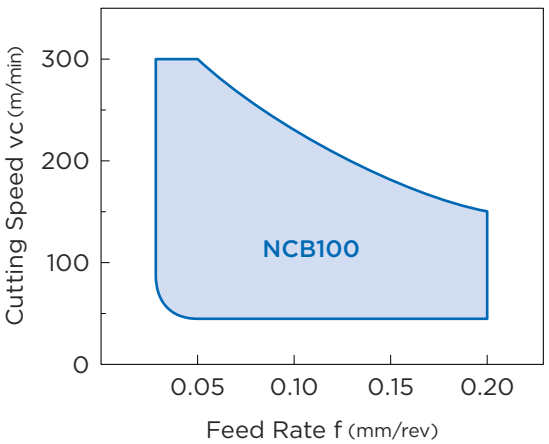


■ Features

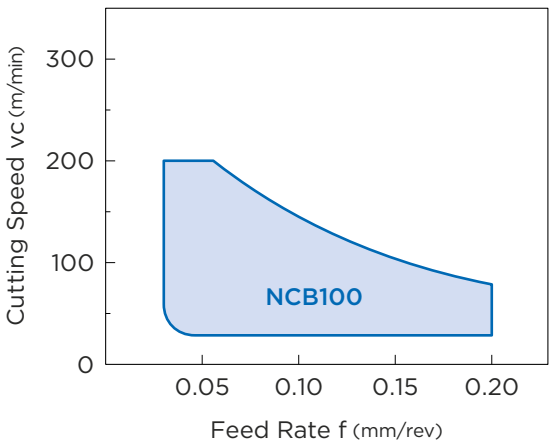
Adopts a nano-polycrystalline CBN sintered structure with hardness and thermal conductivity significantly higher than conventional sintered CBN. Enables overwhelmingly longer tool life, improved efficiency and machining accuracy when machining hard-to-cut materials such as titanium alloys or cobalt-chrome alloys

- **Ideal for high-efficiency finishing of hard-to-cut materials such as titanium alloys and cobalt-chrome alloys**
  Exhibits outstanding wear resistance due to the excellent hardness and thermal conductivity of nano-polycrystalline CBN
- **Excellent dimensional tolerance and machined surface roughness maintained for extended periods**
  Number of tool changes can be drastically reduced compared to conventional grades, enabling work efficiency to be improved and total costs to be reduced

■ Application Range (Titanium Alloy Machining)



■ Application Range (Cobalt-chrome Alloy Machining)

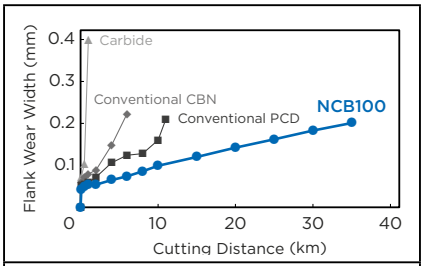


NCB100

K Cast Iron | S Exotic Alloy | Cemented Carbide | Hard Brittle Materials

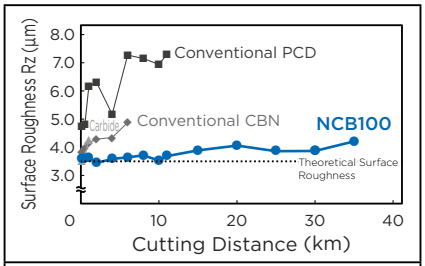
■ Cutting Performance (Titanium Alloy Machining)

● Wear Resistance

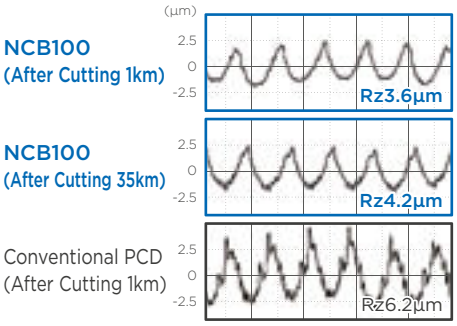


Work Material : Titanium Alloy (Ti-6Al-4V)
Tool Cat. No. : CNGA 120408 NU
Cutting Conditions : vc = 150m/min, f = 0.15mm/rev, ap = 0.5mm Wet (High Pressure Coolant)

● Machined Surface Roughness

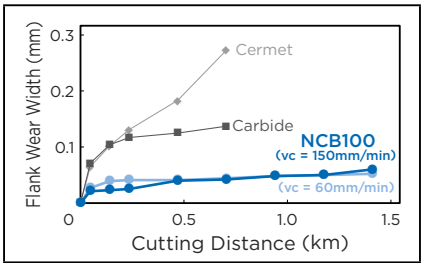


Work Material : Titanium Alloy (Ti-6Al-4V)
Tool Cat. No. : CNGA 120408 NU
Cutting Conditions : vc = 150m/min, f = 0.15mm/rev, ap = 0.5mm Wet (High Pressure Coolant)



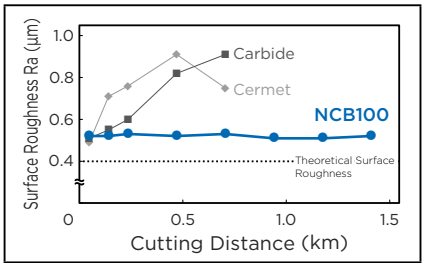
■ Cutting Performance (Cobalt-chrome Alloy Machining)

● Wear Resistance

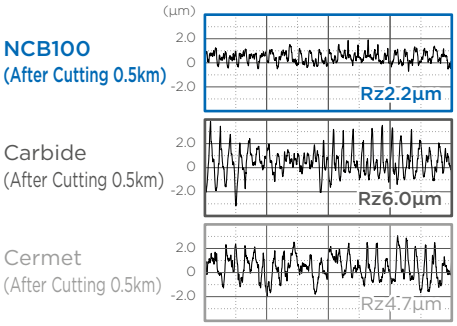


Work Material : Cobalt-chrome Alloy (Forging)
Tool Cat. No. : VNGA 160408 NU
Cutting Conditions : vc = 60,150m/min, f = 0.1mm/rev, ap = 0.4mm Wet

● Machined Surface Roughness



Work Material : Cobalt-chrome Alloy (Forging)
Tool Cat. No. : VNGA 160408 NU
Cutting Conditions : vc = 60m/min, f = 0.1mm/rev, ap = 0.4mm Wet



■ Recommended Cutting Conditions

● Titanium Alloy

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition	Hardness (HRC)		Cutting Speed vc (m/min) 50 100 150 200 250 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ti-6Al-4V	30 - 35	NCB100		0.05 - **0.15** - 0.20	0.10 - **0.30** - 0.50
Ti-5Al-5V-5Mo-3Cr	32 - 38	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.30** - 0.50
Ti-10V-2Fe-3Al	32 - 38	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.30** - 0.50

● Cobalt-chrome Alloy

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition	Hardness (HRC)		Cutting Speed vc (m/min) 50 100 150 200	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Co-30Cr-5Mo	35 - 45	NCB100		0.05 - **0.15** - 0.20	0.10 - **0.15** - 0.30

● Cemented Carbide

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition	Hardness (HRA)		Cutting Speed vc (m/min) 5 10 15 20 25 30 35 40	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
WC-20Co	Less than 85	NCB100		0.03 - **0.10** - 0.20	0.03 - **0.10** - 0.20

*SUMIDIA BINDERLESS NPD10 is recommended for cemented carbide machining of 83HRA or more.

● Others

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition/Material	Hardness (HV)		Cutting Speed vc (m/min) 10 50 100 200 300 400	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Pure Titanium	130 - 230	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.30** - 0.50
Cermet Material (Binder with Ferrous Metals)	1,000 - 1,500	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.20** - 0.30

Insert Identification Code

Regrindable type

Example **C N M A**

(1) **(1) Insert Shape** Refer to Table 1

(2) **(2) Relief Angle** Refer to Table 2

(3) **(3) Tolerance** Refer to Table 3

(4) **(4) Insert Hole** Refer to Table 4

One-use type (Disposable)

Example **C N G A**

(1) **(1) Insert Shape** Refer to Table 1

(2) **(2) Relief Angle** Refer to Table 2

(3) **(3) Tolerance** Refer to Table 3

(4) **(4) Insert Hole** Refer to Table 4

Table 1: (1) Insert Shape

Symbol	Insert Shape		Apex Angle
C		Diamond type	80°
D			55°
V			35°
R		Round type	—
S		Square type	90°
T		Triangular type	60°
W		Trigon type	80°

Table 2: (2) Relief Angle

Symbol	Relief Angle
B	5° 
C	7° 
N	0° 
P	11° 

Table 3: (3) Tolerance

Symbol	Tolerance of Corner Height (mm)	Inscribed Circle (mm)	Thickness (mm)
E	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.025	± 0.13
M*	±0.08 to ±0.2	±0.05 to ±0.15	± 0.13

★ Generally, these inserts have unground side faces
Refer to page B2 for details on M Class precision

Table 4: (4) Insert Hole

Symbol	Insert Hole	Hole Style	Chipbreaker	Shape (Cross Section)	Symbol	Insert Hole	Hole Style	Chipbreaker	Shape (Cross Section)
N	No	No	No		A	Yes	Straight hole	No	
W	Yes	Straight hole + Single chamfer (40° to 60°)	No		M			One Face	
T			One Face		G			Double-sided	
					X	—	—	—	Special

Table 9: (9) No. of Cutting Edges

Symbol	No. of Cutting Edges	Type
No	1	1-Cornered type
2	2	Multi-Cornered type
3	3	
4	4	
6	6	

Table 10: (10) Type Code (One-use type)

Symbol	Type	Grade
NC	Coated SUMIBORON	BNC2115,BNC2125,BNC2135,BNC2010, BNC2020,BNC200,BNC300,BNC500
NU	Uncoated SUMIBORON	BNX10,BNX20,BN1000,BN2000,BN350, BN500,BN7000,BN7115,BN7500
	SUMIBORON BINDERLESS	NCB100

*Cat. numbers that begin with a "T-" are 10-piece packs

Codes (1), (2), (3), and (4) show typical examples.

Insert Identification Code

12 04 08 (-)B

(5) (6) (7) (8)

- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Corner Radius — Refer to Table 7
- (8) Additional Information — Refer to Table 8

12 04 08 LT NU 2

(5) (6) (7) (8) (10) (9)

- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Corner Radius — Refer to Table 7
- (8) Additional Information — Refer to Table 8
- (10) Type Code — Refer to Table 10
- (9) No. of Cutting Edges — Refer to Table 9

Table 5: (5) Cutting Edge Length (Side Length) (Typical Examples) Note: Cutting edge length indicated is measured without corner radii. (mm)

Shape	Symbol	Cutting Edge Length (Side Length)	Inscribed Circle
C 80° Diamond type	04	4.37	4.30
	06	6.4	6.35
	08	8.0	7.94
	09	9.7	9.525
	12	12.9	12.70
D 55° Diamond type	07	7.7	6.35
	11	11.6	9.525
	15	15.5	12.70
R Round type	09	9.525	9.525
	12	12.70	12.70
S Square type	09	9.525	9.525
	12	12.70	12.70
T Triangular type	06	6.9	3.97
	08	8.2	4.76
	09	9.6	5.56
	11	11.0	6.35
	16	16.5	9.525
	22	22.0	12.70
V 35° Diamond type	08	8.3	4.76
	11	11.1	6.35
	16	16.6	9.525

Shape	Symbol	Cutting Edge Length (Side Length) Negative	Cutting Edge Length (Side Length) Positive	Inscribed Circle Negative	Inscribed Circle Positive
W Trigon type	06		3.2		3.97
	08	8.7	4.6	12.70	4.76

For the one-use type, cutting edge length indicates the side length of the CBN tip. See page L34 on for the one-use type cutting edge length.

Table 6: (6) Thickness

Symbol	Thickness (mm)
X1	*
01	1.59
02	2.38
03	3.18
T3	3.97
04	4.76
06	6.35

(*)
CC□T03X1 Insert Thickness: 1.40
CC□T04X1 Insert Thickness: 1.80

Table 7: (7) Corner Radius

Symbol	Corner Radius (mm)
00	Sharp Edged
01	0.1
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4

Table 8 (8) Additional Information L30

Symbol	Old symbol	Code Description Uncoated	Code Description Coated
No	No	Standard Cutting Edge	
(-)B	(-)B	Full-top CBN type	
-BSTN	-BSN	Full-top CBN type (emphasis on edge sharpness)	
LF	F	Sharp Edge type	
LE			
LT	S	Emphasis on Edge Sharpness	
LS	M	General-purpose type for Continuous Cutting	Emphasis on Edge Sharpness
ES	—	—	High-efficiency type
HT	T	Strong-edged type	
HS			
US	—	Strong-edged type	

Symbol	Code Description
WG	Wiper Insert type
WH	
W	
LFW	Wiper Sharp Edge type
N-FV	Chipbreaker type
N-LV	
N-SV	

Codes (5), (6) and (7) show typical examples.

FV type/LV type/SV type

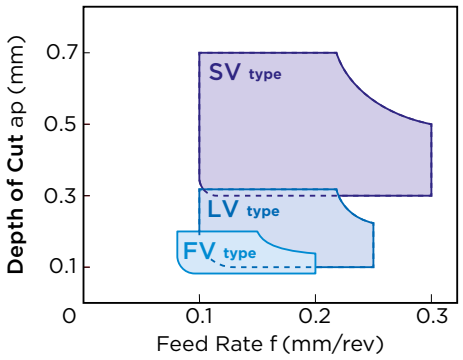
VIDEO OF CUTTING
FV type / LV type



■ Features

- One-use SUMIBORON insert with chipbreaker. SV type is ideal for carburised layer removal, while FV and LV types are ideal for hardened steel machining.
- Chipbreaker incorporated on the CBN cutting edge to maintain chip control capabilities throughout the machining process.
- Unique chipbreaker design can be applied to both hardened and non-hardened parts with effective chip control.

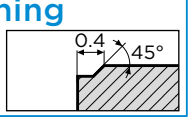
■ Application Range





FV type For Finishing

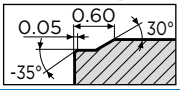
Excellent chip evacuation under finishing conditions with depth of cut at 0.2mm or below





LV type For Light Cutting

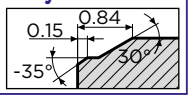
Excellent chip evacuation with depth of cut at 0.3mm or below





SV type For Carburised Layer Removal

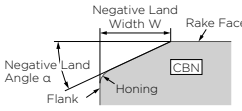
Ideal for carburised layer removal
Eliminates choked stoppages and dimensional defects



■ FV type / LV type / SV type Cutting Edge Specifications

Type	Series	Notation	Cutting Edge Specification Identification Code	α	W	Honing
With Chipbreaker	FV type	N-FV	—	0°	0	Yes
	LV type	N-LV	S00535	35°	0.05	Yes
	SV type	N-SV	S01235	35°	0.12	Yes

Cutting edge specification identification code

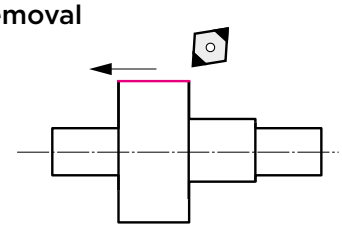


S 0 0 5 3 5
- Negative Land Width
- Negative Land Angle
- Cutting Edge Shape T: Negative Land S: Negative Land + Honing

Example: S00535
→ 35°/0.05mm Negative Land with Honing

■ Application Examples

External Carburised Layer Removal



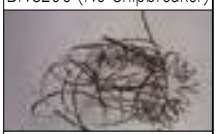
· No constant stoppages or incorrect part dimension problems and the chips are small.
· Double the tool life of competitors' CBN.

BREAK MASTER SV type



Tool Life = 200 pcs.

BNC200 (No Chipbreaker)



Tool Life = 200 pcs.

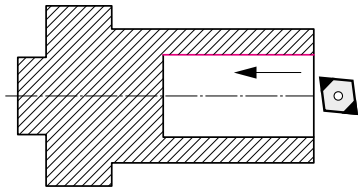
Competitor CBN (with chipbreaker)



Tool Life = 100 pcs.

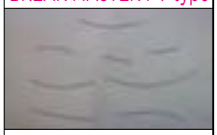
Work Material : 21MnCr5 Carburised Steel (Shaft)
Tool Cat. No. : CNGG 120408 NSV NC4 (BNC200)
Cutting Conditions : vc = 150m/min, f = 0.15mm/rev
ap = 0.5mm, 2 Passes Wet

Finishing of Hardened Steel



· Improved chip control for internal boring

BREAK MASTER FV type



Tool Life = 300 pcs.

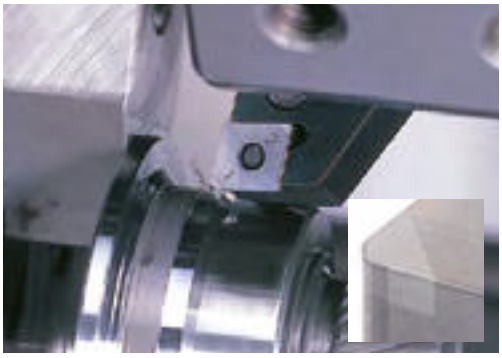
BNC200 (No Chipbreaker)



Tool Life = 300 pcs.

Work Material : Carburised Steel (60HRC Automotive Component)
Tool Cat. No. : CCGT 060204 NFV NC2 (BNC200)
Cutting Conditions : vc = 80m/min, f = 0.08mm/rev
ap = 0.15mm Wet

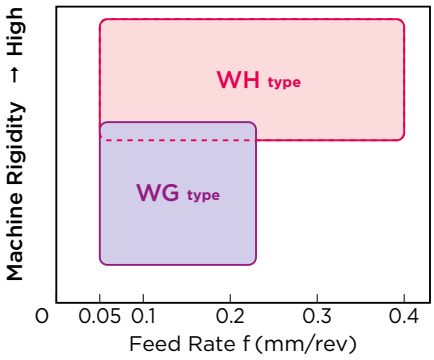
WG/WH type



■ Features

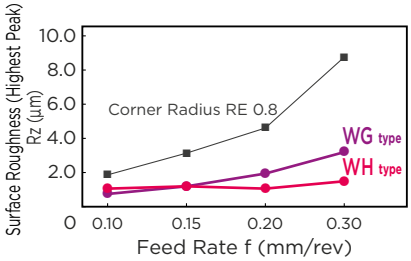
- SUMIBORON one-use insert with wiper flat for hardened steel machining.
- Excellent surface roughness comparable to grinding.
- Improved machining efficiency with higher speeds and feeds.
- Lineup of low feed WG type and high feed WH type.

■ Application Range



Use WH type for high-rigidity workpieces and equipment, and WG type for issues of undulation or chatter.

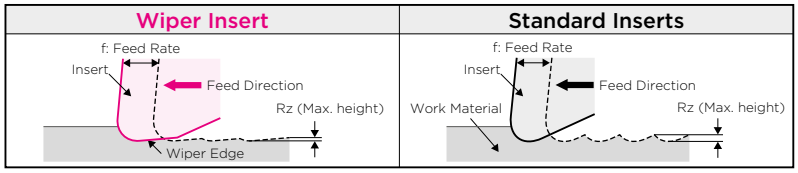
■ Surface Finish



The wiper insert offers good surface finish and improved machining efficiency.

Work Material : 15CrMo5 (60HRC)
Tool Cat. No. : CNGA 120408
Cutting Conditions: vc = 135m/min, ap = 0.1mm, Dry

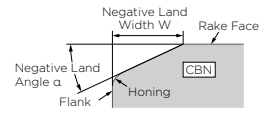
■ Wiper Insert Operation



■ WG type / WH type Cutting Edge Specifications

Type	Series	Notation	Cutting Edge Specification Identification Code	α	W	Honing
Wiper	WG type	WG	S01215	15°	0.12	Yes
	WH type	WH	S01215	15°	0.12	Yes

Cutting edge specification identification code



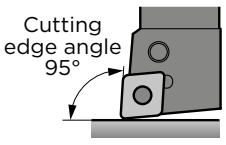
S 0 1 2 1 5
- Negative Land Width
- Negative Land Angle
- Cutting Edge Shape T: Negative Land S: Negative Land + Honing

Example: S01215
→ 15°/0.12mm Negative Land with Honing

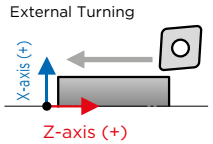
■ Precautions When Using Wiper Inserts

CNGA type/CCGW type/WNGA type WG type / WH type Wiper Insert

- Use a holder with a cutting edge angle of 95°.
- Machining program modification required as CNGA type / CCGW type / WNGA type wiper inserts do not comply with the ISO standard profiles. Correct the cutting edge position (tool offset) as explained on the right.



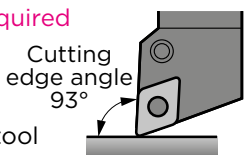
CNGA type / CCGW type / WNGA type Wiper Insert Cutting Edge Position Offset (WG type / WH type)



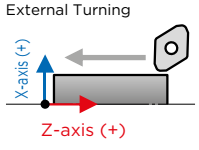
Corner Radius	Type	X-axis direction	Z-axis direction
R0.4	WG type	-0.02	-0.02
	WH type	-0.06	-0.06
R0.8/R1.2	WG type	-0.01	-0.01
	WH type	-0.06	-0.06

DNGA type / DCGW type WG type / WH type Wiper Insert

- Use a holder with a cutting edge angle of 93°.
- Machining program modification required as DNGA type / DCGW type wiper inserts do not comply with the ISO standard profiles. Correct the cutting edge position (tool offset) as explained on the right.



DNGA type / DCGW type Wiper Insert Cutting Edge Position Offset (WG type / WH type)



Corner Radius	Type	X-axis direction	Z-axis direction
R0.4	WG type	-0.17	-0.01
	WH type	-0.70	-0.06
R0.8	WG type	-0.05	0
	WH type	-0.58	-0.05

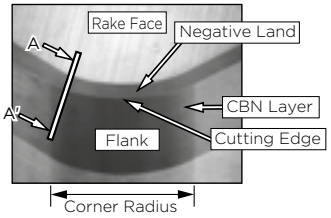
Note: Unlike other contour shapes, the DNGA/DCGW types can only exhibit wiper effect for external and internal diameter machining, and cannot be used for facing.

SUMIBORON Insert Edge Specifications

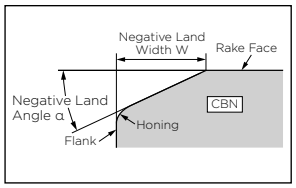
SUMIBORON Insert Edge Treatment

All SUMIBORON inserts are enhanced with the optimum cutting edge preparation for the various grades and geometries (shown on the right). This is to avoid cutting edge fracture caused by heavy loads generated during the machining of high-hardness materials such as hardened steel.
As the pioneer of CBN tools, SUMIBORON's vast selection of grades and edge treatment combinations is our trump card for hardened steel machining.

Close-up of cutting edge



Section A-A'



■ SUMIBORON Insert Edge Specification Overview

Series	Work Material	Grade	Neg.-Pos.	Standard: Cutting Edge Specification Identification Code	Standard: α	Standard: W	Standard: Honing	Low Cutting Force type L: Notation	Low Cutting Force type L: Cutting Edge Specification Identification Code	Low Cutting Force type L: α	Low Cutting Force type L: W	Low Cutting Force type L: Honing	Strong-edged type H / U: Notation	Strong-edged type H / U: Cutting Edge Specification Identification Code	Strong-edged type H / U: α	Strong-edged type H / U: W	Strong-edged type H / U: Honing	High-efficiency type E: Notation	High-efficiency type E: Cutting Edge Specification Identification Code	High-efficiency type E: α	High-efficiency type E: W	High-efficiency type E: Honing
Uncoated SUMIBORON	Hardened Steel	BNX10	Negative/Positive	T01225	25°	0.12	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BNX20	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215*	15°	0.12	No	—	—	—	—	—	—	—	—	—	—
		BNX25	Negative/Positive	S01725	25°	0.17	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BN1000	Negative/Positive	S01225	25°	0.12	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BN2000	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215	15°	0.12	No	HS	S01235	35°	0.12	Yes	—	—	—	—	—
		BN350	Negative	T01225	25°	0.12	No	—	—	—	—	—	HT	T01235	35°	0.12	No	—	—	—	—	—
			Positive	T01235	35°	0.12	No						—	—	—	—	—	—	—	—	—	—
	Cast Iron Sintered Alloy Exotic Alloy	BN500	Negative/Positive	T01215	15°	0.12	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BN7125	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S01225	25°	0.12	Yes	—	—	—	—	—
								LE	—	0°	0	Yes										
		BN7000	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S01225	25°	0.12	Yes	—	—	—	—	—
		BN7115	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S00525	25°	0.05	Yes	—	—	—	—	—
								LE	—	0°	0	Yes	US	S01225	25°	0.12	Yes	—	—	—	—	—
								LS	S00715	15°	0.07	Yes	—	—	—	—	—	—	—	—	—	—
		BN7500	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No										
								LE	—	0°	0	Yes	HS	S00525	25°	0.05	Yes	—	—	—	—	—
								LS	S00715	15°	0.07	Yes										
		BNS8125	Negative	T02020	20°	0.2	No	LF	—	—	—	No	—	—	—	—	—	—	—	—	—	—
Coated SUMIBORON	Hardened Steel	BNC2105	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01730	30°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2115	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01730	30°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2125	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S02735	35°	0.27	Yes	ES	S00535	35°	0.05	Yes
		BNC2135	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01735	35°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2010	Negative/Positive	S01225	25°	0.12	Yes	LE	—	0°	0	Yes	HS	S01730	30°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2020	Negative/Positive	S01225	25°	0.12	Yes	LT	T00515	15°	0.05	No	HS	S02735	35°	0.27	Yes	ES	S00535	35°	0.05	Yes
		BNC200	Negative/Positive	S01225	25°	0.12	Yes	LS	S01015	15°	0.10	Yes	HS	S01735	35°	0.17	Yes	—	—	—	—	—
		BNC300	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01735	35°	0.17	Yes	—	—	—	—	—
	Cast Iron	BNC500	Negative/Positive	S01215	15°	0.12	Yes	—	—	—	—	—	HS	S01225	25°	0.12	Yes	—	—	—	—	—
	Cast Iron/Hardened Steel	BNC8115	Negative	S02020	20°	0.2	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SUMIBORON BINDERLESS	Cast Iron/Exotic Alloy Cemented Carbide/Hard Brittle Material	NCB100	Negative/Positive	T01215	15°	0.12	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

*BNX20 inserts with an inscribed circle of less than ø4.76 will have an identification code of T00715.

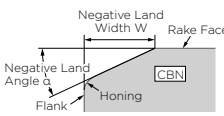
■ Insert Edge Specification with Wiper/Chipbreaker

Type	Notation	Cutting Edge Specification Identification Code	α	W	Honing	Uncoated SUMIBORON: BN2000	Uncoated SUMIBORON: BNS8125	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC200	BNC500	BNC8115
Wiper	WG	S01215	15°	0.12	Yes	★		★	★	★	★	★	★		
	WH	S01215	15°	0.12	Yes	★		★	★	★	★	★	★		
	W	S01215	15°	0.12	Yes								★	★	
		S01715	15°	0.17	Yes										
		S02020	20°	0.20	Yes										★
		T02020	20°	0.20	No		★								
Wiper Sharp Edge	LFW	—	0°	0	No										
With Chipbreaker	N-FV	—	0°	0	Yes	★			★	★	★	★	★		
	N-LV	S00535	35°	0.05	Yes	★			★	★	★	★	★		
	N-SV	S01235	35°	0.12	Yes				★	★	★	★	★		

■ Edge Specification Identification Code

Edge Treatment Notation				
No	Standard Cutting Edge			
L	Low Cutting Force	+	F	Sharp Edge
E	High Efficiency		E	Honing
H	Strong Edged		T	Negative Land
U	Strong Edged		S	Negative Land + Honing
WG/WH/W	Wiper			
N-FV/N-LV/N-SV	With Chipbreaker			

● Cutting edge specification identification code



S 0 1 2 2 5

- 1st digit: Cutting Edge Shape T: Negative Land, S: Negative Land + Honing
- 2nd–3rd digits: Negative Land Width
- 4th–5th digits: Negative Land Angle

Example: S01225
→ 25°/0.12mm Negative Land with Honing

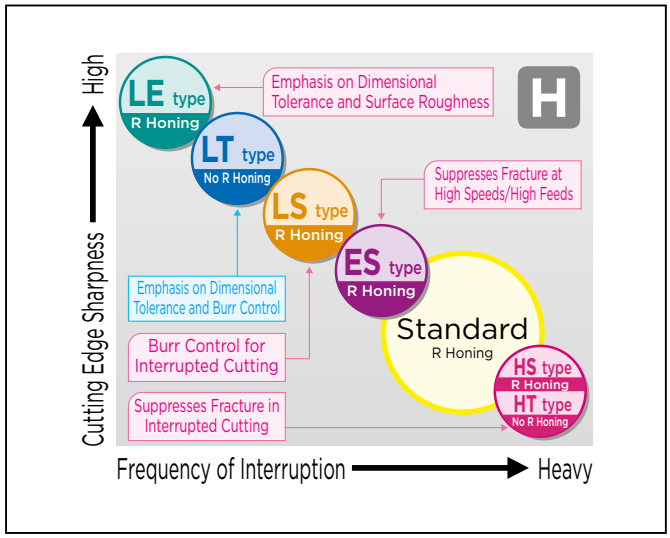
★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

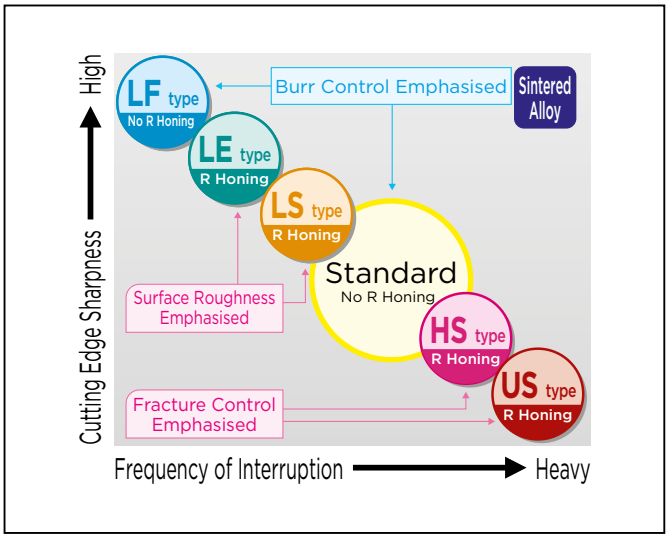
SUMIBORON Insert Edge Specifications

■ Edge Treatment Performance

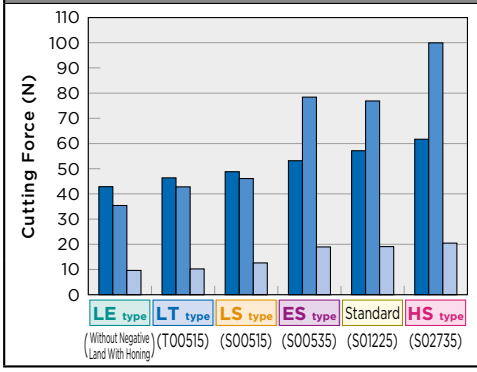
Machining of Hardened Steel



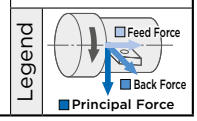
Machining of Sintered Alloy



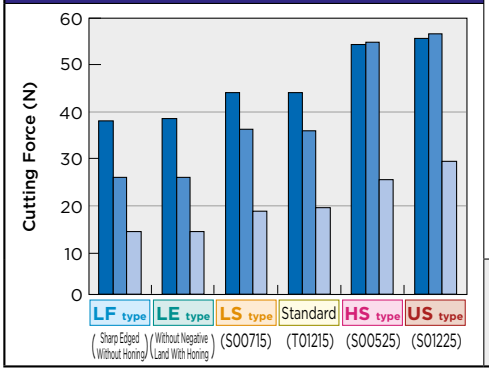
Comparison of Cutting Force with Coated SUMIBORON (vc = 100mm/min)



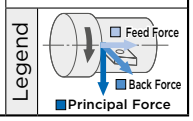
Work Material:
15CrMo5
Tool Cat. No.
DNGA 150408
Cutting Conditions:
vc = 100m/min
f = 0.1mm/rev
ap = 0.1mm
Dry



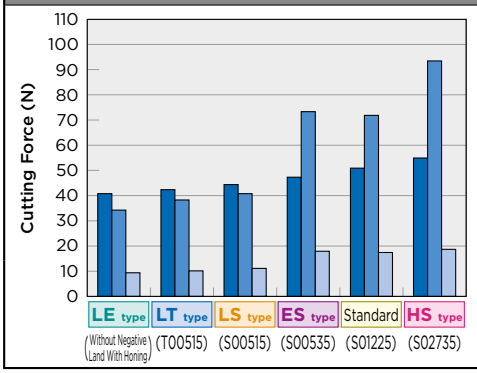
Cutting Force Comparison (Feed Rate: f = 0.05mm/rev)



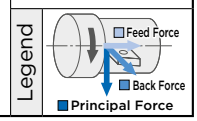
Work Material:
F-08C2 equivalent
Tool Cat. No.
CNGA 120408
Cutting Conditions:
vc = 200m/min
f = 0.05mm/rev
ap = 0.2mm
Dry



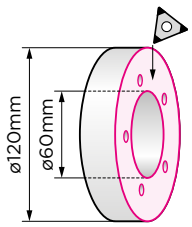
Comparison of Cutting Force with Coated SUMIBORON (vc = 200mm/min)



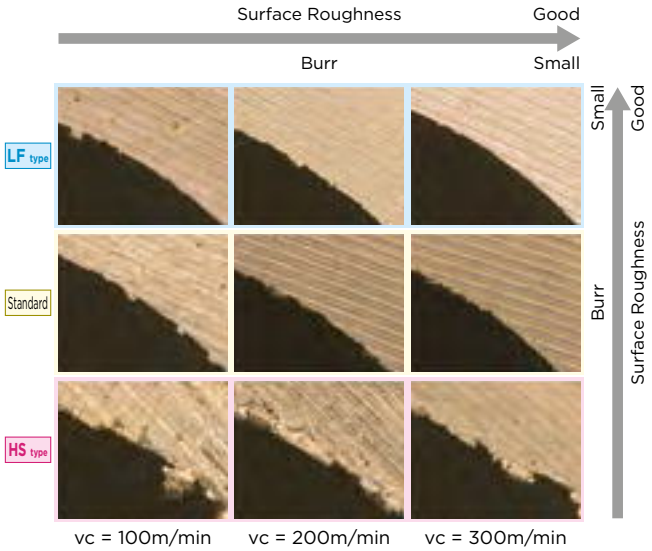
Work Material:
15CrMo5
Tool Cat. No.
DNGA 150408
Cutting Conditions:
vc = 200m/min
f = 0.1mm/rev
ap = 0.1mm
Dry

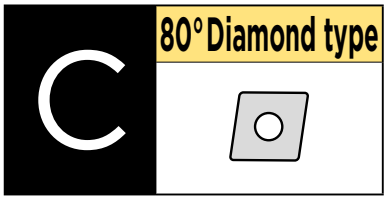


Relationship between Cutting Edge Treatment and Machining Quality



Work Material : F-08C2 equivalent
Tool Cat. No. : TNGA 160408 NU3 (BN7500)
Cutting Edge Specification : LF type, Standard, HS type
Cutting Conditions : vc = 100, 200, 300m/min
f = 0.1mm/rev
ap = 0.2mm
Wet





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

CN■■1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✱	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable External Holders ☞ C10 to C12 Applicable Boring Bars ☞ E15, E25 to E27

One-Use type / Negative (With Hole)

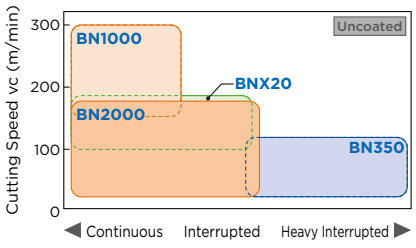
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNMA 120404**	1	1	0.4	4.6		★									—	—
		CNMA 120412			1.2	4.4		★									—	—
	Standard	**CNMA 120402 NU**	1	1	0.2	2.5				★							—	—
		CNMA 120404 NU			0.4	2.4	★	★	★	★	★	★	★	▲			—	—
		CNMA 120408 NU			0.8	2.3	★	★	★	★	★	★		▲			—	—
		CNMA 120412 NU			1.2	2.2	★	★	★	★	★	★		▲			—	—
	Standard	**CNMA 120402 NU/10VP**	10	1	0.2	2.5											—	—
		CNMA 120404 NU/10VP			0.4	2.4	★	★	★	★	★	★					—	—
		CNMA 120408 NU/10VP			0.8	2.3	★	★	★	★	★	★					—	—
		CNMA 120412 NU/10VP			1.2	2.2	★	★	★	★	★	★					—	—
	Standard	**CNGA 120404 NU**	1	1	0.4	2.4	—	—	—	—	—	—	—	—	—	—	—	★
		CNGA 120408 NU			0.8	2.3	—	—	—	—	—	—	—	—	—	—	—	★
		CNGA 120412 NU			1.2	2.2	—	—	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

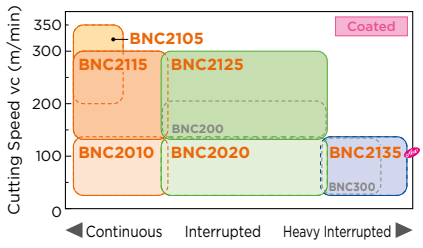
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

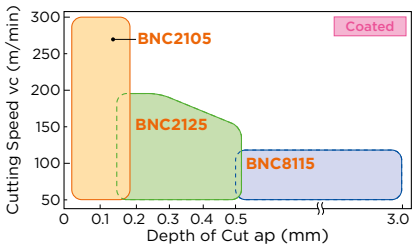
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type

CN■■1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders ☞ C10 to C12 Applicable Boring Bars ☞ E15, E25 to E27

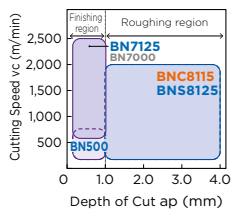
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGA 120404 NU2**	1	2	0.4	2.4		★	★	★	★		★	▲	★	▲	—	
		CNGA 120408 NU2			0.8	2.3	★	★	★	★	★		★	▲	★	▲	—	
		CNGA 120412 NU2			1.2	2.2	★	★	★	★	★		★	▲	★	▲	—	
	Standard	**CNGA 120404 NU2/10VP**	10	2	0.4	2.4		★		★							—	—
		CNGA 120408 NU2/10VP			0.8	2.3		★		★	★		★	▲			—	—
		CNGA 120412 NU2/10VP			1.2	2.2		★		★							—	—
	H Strong Edge S Negative Land With Honing	**CNGA 120408 HS NU2**	1	2	0.8	2.3										★	—	—
	Low Feed Wiper Insert	**CNGA 120404 NU WG2**	1	2	0.4	2.4				★							—	
		CNGA 120408 NU WG2			0.8	2.4				★							—	
		CNGA 120412 NU WG2			1.2	2.3				★							—	
	High Feed Wiper Insert	**CNGA 120404 NU WH2**	1	2	0.4	2.4				★							—	
		CNGA 120408 NU WH2			0.8	2.3				★							—	
		CNGA 120412 NU WH2			1.2	2.2				★							—	
	Light Cutting Chipbreaker	**CNGM 120404 NLV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—
		CNGM 120408 NLV NU2			0.8	2.3	—	—		★	—	—	—	—	—	—	—	—
		CNGM 120412 NLV NU2			1.2	2.2	—	—		★	—	—	—	—	—	—	—	—

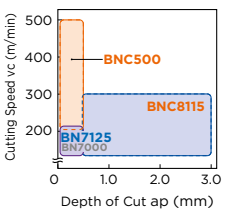
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞ L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

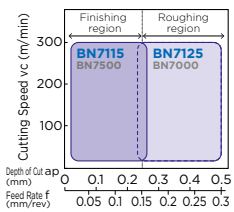
K Grey Cast Iron



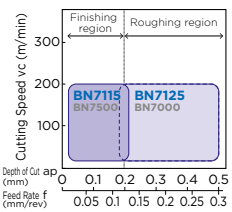
K Ductile Cast Iron



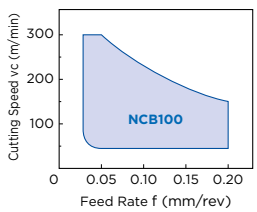
Sintered Alloy General Sintered Alloy



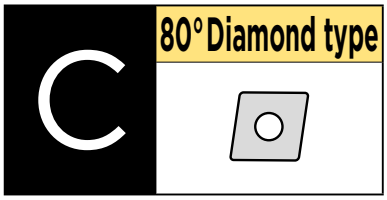
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	●				●	
	S Exotic Alloy							●				●	●
	H Hardened Steel	○	○	●	●	●							
	Sintered Components							●		●			

CN■■1204●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders ☞C10 to C12 | Applicable Boring Bars ☞E15, E25 to E27

Multi-Cornered One-Use type / Negative (With Hole)

Uncoated SUMIBORON | BINDERLESS SUMIBORON

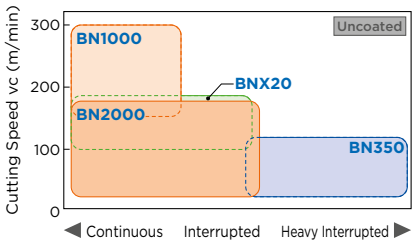
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**CNGA 120404 LF NU2**	1	2	0.4	2.4	—	—	—	—	—	—	★	▲	★	▲	—	—
		CNGA 120408 LF NU2			0.8	2.3	—	—	—	—	—	—	★	▲	★	▲	—	—
		CNGA 120412 LF NU2			1.2	2.2	—	—	—	—	—	—					—	—
	L Low Resistance E With Honing	**CNGA 120404 LE NU2**	1	2	0.4	2.4	—	—	—	—	—	—	★	—	★	▲	—	—
		CNGA 120408 LE NU2			0.8	2.3	—	—	—	—	—	—	★	—	★	▲	—	—
	L Low Resistance T Negative Land	**CNGA 120404 LT NU2**	1	2	0.4	2.4	—		—	★	—	—	—	—	—	—	—	—
		CNGA 120408 LT NU2			0.8	2.3	—		—	★	—	—	—	—	—	—	—	—
		CNGA 120412 LT NU2			1.2	2.2	—		—	★	—	—	—	—	—	—	—	—
	L Low Resistance S Negative Land With Honing	**CNGA 120404 LS NU2**	1	2	0.4	2.4	—	—	—	—	—	—	—	—	★	▲	—	—
		CNGA 120408 LS NU2			0.8	2.3	—	—	—	—	—	—	—			▲	—	—
	H Strong Edge T Negative Land	**CNGA 120404 HT NU2**	1	2	0.4	2.4	—	—	—	—	★	—	—	—	—	—	—	—
		CNGA 120408 HT NU2			0.8	2.3	—	—	—	—	★	—	—	—	—	—	—	—
		CNGA 120412 HT NU2			1.2	2.2	—	—	—	—	★	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**CNGA 120404 HS NU2**	1	2	0.4	2.4	—	—	—	★	—	—	★	▲	★		—	—
		CNGA 120408 HS NU2			0.8	2.3	—	—	—	★	—	—	★	▲			—	—
		CNGA 120412 HS NU2			1.2	2.2	—	—	—	★	—	—	★	▲			—	—
	U Strong Edge S Negative Land With Honing	**CNGA 120404 US NU2**	1	2	0.4	2.4	—	—	—	—	—	—	—	—	★	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

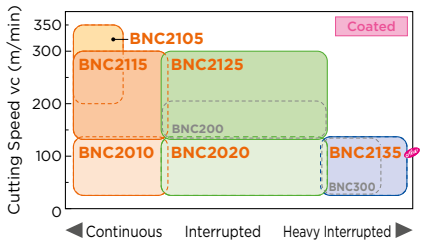
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

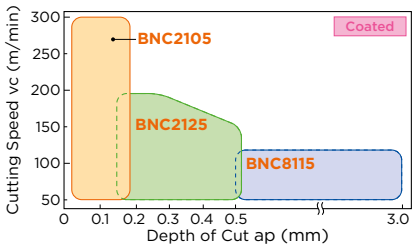
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

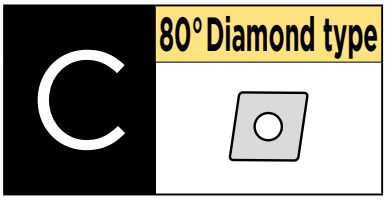


H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts



CN■■1204●● Uncoated

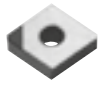
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱
S	Exotic Alloy	● ◕ ◔ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders C10 to C12 | Applicable Boring Bars E15, E25 to E27

Negative type (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Unit	No. of cutting edges	Corner radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNMA 120404**	1	1	0.4	4.6		★		★		★					—	—
		CNMA 120408			0.8	4.5		★		★		★		▲			—	—
		CNMA 120412			1.2	4.4		★		★		★		▲			—	—

Uncoated SUMIBORON | BINDERLESS SUMIBORON

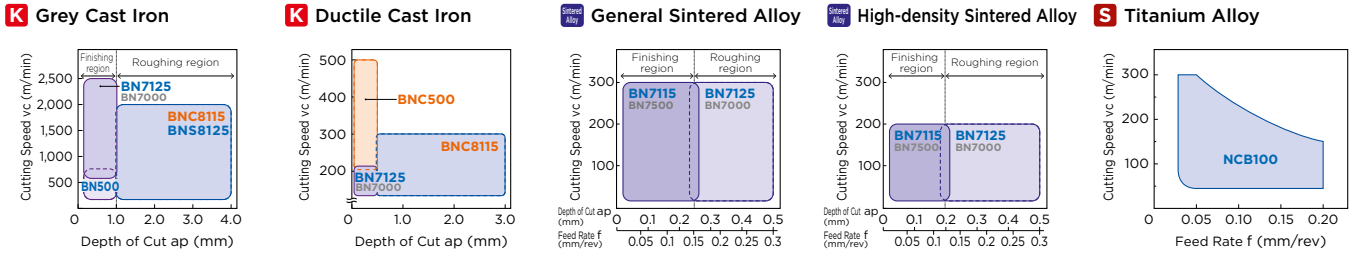
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

Solid type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Unit	No. of cutting edges	Corner radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGA 120408**	1	4	0.8	12.9	—	—	—	—	—	—	—	—	—	—	★	—
		CNGA 120412			1.2	12.9	—	—	—	—	—	—	—	—	—	—	★	—

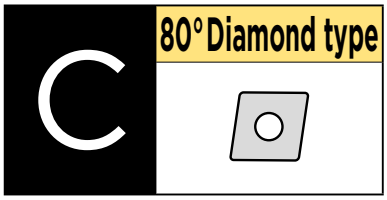
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application										
K	Cast Iron								●	✖
S	Exotic Alloy									
H	Hardened Steel	○	●	●	✖	○	○			
	Sintered Components									

CNG■1204●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C10 to C12 | Applicable Boring Bars E15, E25 to E27

Multi-Cornered One-Use type / Negative (With Hole)

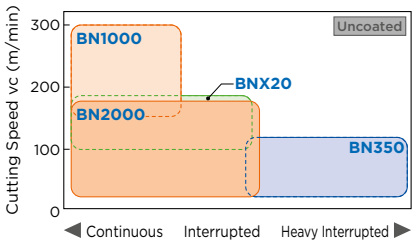
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
							Coated SUMIBORON									
	Standard	**CNGA 120404 NC2**	1	2	0.4	2.4			★		★	★	★			—
		CNGA 120408 NC2			0.8	2.3			★		★	★	★			—
		CNGA 120412 NC2			1.2	2.2			★		★	★				—
		CNGA 120416 NC2*			1.6	3.3					★	★	★	★		—
		CNGA 120420 NC2*			2.0	3.2					★	★	★	★		—
		CNGA 120424 NC2*			2.4	3.1					★	★	★	★		—
	Standard	**CNGA 120402 NC4**	1	4	0.2	2.4		★	★		★	★				—
		CNGA 120404 NC4			0.4	2.4	★	★	★	★	★	★	★	★	★	—
		CNGA 120408 NC4			0.8	2.3	★	★	★	★	★	★	★	★	★	—
		CNGA 120412 NC4			1.2	2.2	★	★	★	★	★	★	★	★	★	—
		CNGA 120416 NC4*			1.6	3.3		★	★	★	★	★	★	★		—
		CNGA 120420 NC4*			2.0	3.2		★	★	★	★	★	★	★		—
		CNGA 120424 NC4*			2.4	3.1		★	★	★	★	★	★	★		—
	Low Feed Wiper Insert	**CNGA 120404 NC WG4**	1	4	0.4	2.4	★	★	★		★	★	★			—
		CNGA 120408 NC WG4			0.8	2.4	★	★	★		★	★	★			—
		CNGA 120412 NC WG4			1.2	2.3	★	★	★		★	★	★			—
	High Feed Wiper Insert	**CNGA 120404 NC WH4**	1	4	0.4	2.4	★	★	★		★	★	★			—
		CNGA 120408 NC WH4			0.8	2.3	★	★	★		★	★	★			—
		CNGA 120412 NC WH4			1.2	2.2	★	★	★		★	★	★			—
	Wiper Insert	**CNGA 120404 NC W4**	1	4	0.4	2.4		★	★				★			—
		CNGA 120408 NC W4			0.8	2.3							★		★	—
		CNGA 120412 NC W4			1.2	2.2										—
	Finishing Chipbreaker	**CNGG 120404 NFV NC4**	1	4	0.4	2.4		★	★	—	★	★	★	—		—
		CNGG 120408 NFV NC4			0.8	2.3		★	★	—	★	★	★	—		—
		CNGG 120412 NFV NC4			1.2	2.2		★	★	—	★	★	★	—		—
	Light Cutting Chipbreaker	**CNGG 120404 NLV NC4**	1	4	0.4	2.4		★	★	—	★	★	★	—		—
		CNGG 120408 NLV NC4			0.8	2.3		★	★	—	★	★	★	—		—
		CNGG 120412 NLV NC4			1.2	2.2		★	★	—	★	★	★	—		—
	Carburised Layer Removal Chipbreaker	**CNGG 120404 NSV NC4**	1	4	0.4	2.4				—				—		—
		CNGG 120408 NSV NC4			0.8	2.3		★	★	—		★	★	—		—
		CNGG 120412 NSV NC4			1.2	2.2		★	★	—		★	★	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*For use with the SUMIBORON Special Holders for High-Efficiency Machining shown on page L129.

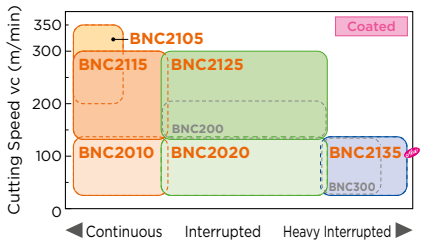
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

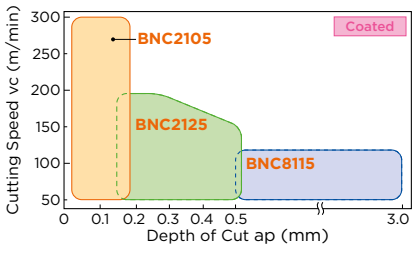
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type



CNG■1204●● Coated

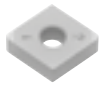
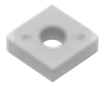
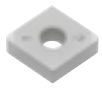
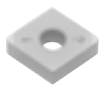
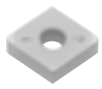
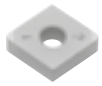
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		
	K	Cast Iron
	S	Exotic Alloy
	H	Hardened Steel
		Sintered Components

Applicable External Holders C10 to C12
Applicable Boring Bars E15, E25 to E27

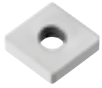
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**CNGA 120404 LE NC2**	1	2	0.4	2.4	—	—	—	—	★	—	—	—	—	—
		CNGA 120408 LE NC2			0.8	2.3	—	—	—	—	★	—	—	—	—	—
		CNGA 120412 LE NC2			1.2	2.2	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**CNGA 120402 LT NC2**	1	2	0.2	2.4	—	—	—	—	—	★	—	—	—	—
		CNGA 120404 LT NC2			0.4	2.4	—	—	—	—	—	★	—	—	—	—
		CNGA 120408 LT NC2			0.8	2.3	—	—	—	—	—	★	—	—	—	—
		CNGA 120412 LT NC2			1.2	2.2	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**CNGA 120402 LS NC2**	1	2	0.2	2.4			★		—	—			—	—
		CNGA 120404 LS NC2			0.4	2.4	★	★	★	★	—	—	★	★	—	—
		CNGA 120408 LS NC2			0.8	2.3	★	★	★	★	—	—	★	★	—	—
		CNGA 120412 LS NC2			1.2	2.2	★	★	★	★	—	—		★	—	—
	H Strong Edge S Negative Land With Honing	**CNGA 120404 HS NC2**	1	2	0.4	2.4			★			★	★	★		—
		CNGA 120408 HS NC2			0.8	2.3			★	★		★	★	★		—
		CNGA 120412 HS NC2			1.2	2.2			★			★	★	★		—
		CNGA 120408 HS NC2/10VP	10	2	0.8	2.3							★			—
		CNGA 120412 HS NC2/10VP			1.2	2.2							★			—
	L Low Resistance S Negative Land With Honing	**CNGA 120404 LS NC4**	1	4	0.4	2.4	—	—	—		—	—	★		—	—
		CNGA 120408 LS NC4			0.8	2.3	—	—	—		—	—	★		—	—
		CNGA 120412 LS NC4			1.2	2.2	—	—	—		—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**CNGA 120404 HS NC4**	1	4	0.4	2.4		★	★	★	★	★	★	★	★	—
		CNGA 120408 HS NC4			0.8	2.3		★	★	★	★	★	★	★	★	—
		CNGA 120412 HS NC4			1.2	2.2		★	★	★	★	★	★	★	★	—
	E High Efficiency S Negative Land With Honing	**CNGA 120404 ES NC4**	1	4	0.4	2.4			★			★	—	—	—	—
		CNGA 120408 ES NC4			0.8	2.3	★	★				★	—	—	—	—
		CNGA 120412 ES NC4			1.2	2.2	★	★				★	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

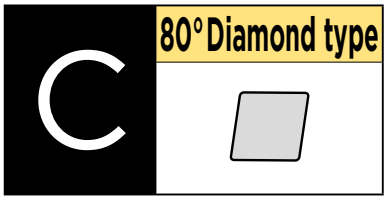
Solid type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGA 120408**	1	4	0.8	12.9	—	—	—	—	—	—	—	—	—	★
		CNGA 120412			1.2	12.9	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

CNGN0903●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders ☞ L127

Recommended Application		BINDERLESS SUMIBORON
	K Cast Iron	○ ● ✖ ✖
	S Exotic Alloy	● ● ●
	H Hardened Steel	○ ◔ ● ● ✖
	Sintered Components	● ●

Uncoated SUMIBORON

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGN 090308**	1	4	0.8	9.5	—	—	—	—	—	—	—	—	—	—	★	—
		CNGN 090312			1.2	9.4	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**CNGN 090308 LF**	1	4	0.8	9.5	—	—	—	—	—	—	—	—	—	—		—
		CNGN 090312 LF			1.2	9.4	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

CNGN0903●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders ☞ L127

Recommended Application	
	K Cast Iron ● ✖
	S Exotic Alloy
	H Hardened Steel ○ ● ● ✖ ○ ◔
	Sintered Components

Coated SUMIBORON

Solid type / Negative (Without Hole)

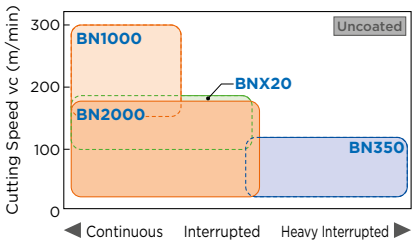
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGN 090308**	1	4	0.8	9.5	—	—	—	—	—	—	—	—	—	★
		CNGN 090312			1.2	9.4	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

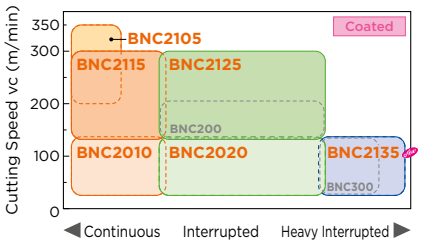
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

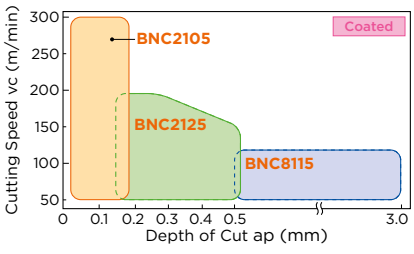
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type

CNG■1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L127

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGN 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	—	★	—
		CNGN 120412			1.2	12.6	—	—	—	—	—	—	—	—	—	—	★	—
		CNGN 120416			1.6	12.5	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

CNG■1204●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L127

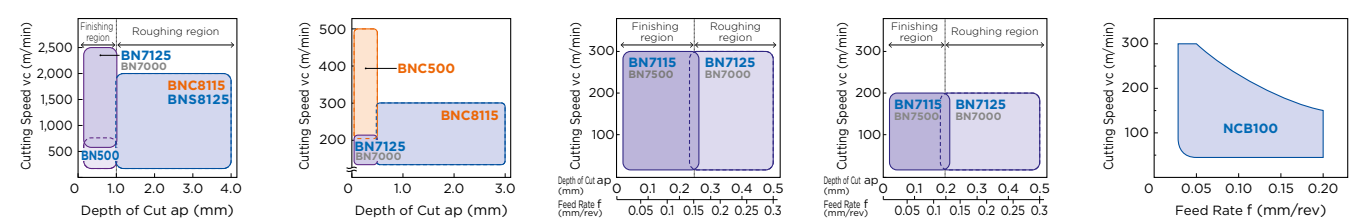
Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGN 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	★
		CNGN 120412			1.2	12.6	—	—	—	—	—	—	—	—	—	★
		CNGN 120416			1.6	12.5	—	—	—	—	—	—	—	—	—	★

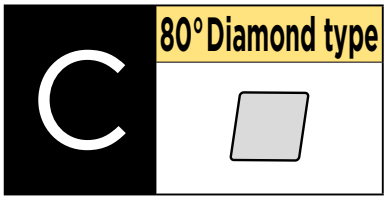
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

CNG■1204●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L127

Uncoated SUMIBORON

BINDERLESS SUMIBORON

Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGX 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	—		—
		CNGX 120412			1.2	12.6	—	—	—	—	—	—	—	—	—	—	★	—
		CNGX 120416			1.6	12.5	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

CNG■1204●● Coated

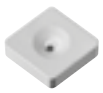
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L127

Recommended Application												
K	Cast Iron									●	✖	
S	Exotic Alloy											
H	Hardened Steel	○	●	◔	✖	○	◔					
	Sintered Components											

Coated SUMIBORON

Solid type / Negative (Dimple Lock)

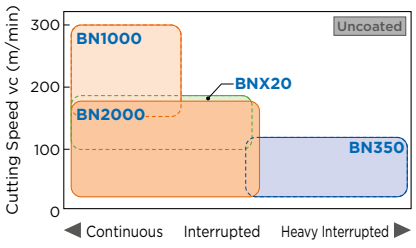
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGX 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	
		CNGX 120412			1.2	12.6	—	—	—	—	—	—	—	—	—	★
		CNGX 120416			1.6	12.5	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

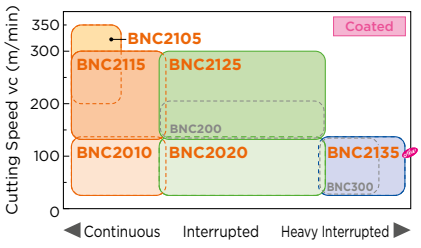
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

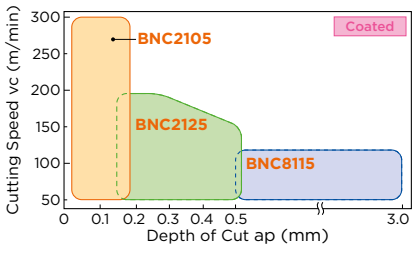
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type

CCEW03X1●● Uncoated

Dimensions (mm)	Inscribed Circle	3.5	Hole Dia.	1.9
	Thickness	1.4		

Applicable Boring Bars E18, E22

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting ● 1st Recommendation ○ 2nd Recommendation

Recommended Application	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	●				✖	
S Exotic Alloy							●				●	●
H Hardened Steel	○	◔	●	●	✖							
Sintered Components							●		●			
		Uncoated SUMIBORON									BINDERLESS SUMIBORON	

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**CCEW 03X102 LF NU**	1	1	0.2	1.2	—	—	—	—	—	—	★	▲	★	▲	—	—
		CCEW 03X104 LF NU			0.4	1.1	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**CCEW 03X102 LT NU**	1	1	0.2	1.2	—	★	—		—	—					—	—
		CCEW 03X104 LT NU			0.4	1.1	—	★	—		—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

CCEW03X1●● Coated

Dimensions (mm)	Inscribed Circle	3.5	Hole Dia.	1.9
	Thickness	1.4		

Applicable Boring Bars E18, E22

Recommended Application	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✖
S Exotic Alloy										
H Hardened Steel	○	●	◔	✖	○	◔				
Sintered Components										
				Coated SUMIBORON						

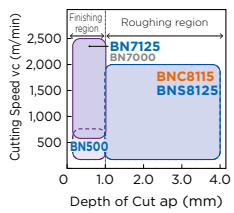
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**CCEW 03X102 LE NC**	1	1	0.2	1.2	—	—	—	—		—	—	—	—	—
		CCEW 03X104 LE NC			0.4	1.1	—	—	—	—		—	—	—	—	—
	L Low Resistance T Negative Land	**CCEW 03X102 LT NC**	1	1	0.2	1.2	—	—	—	—	—		—	—	—	—
		CCEW 03X104 LT NC			0.4	1.1	—	—	—	—	—		—	—	—	—

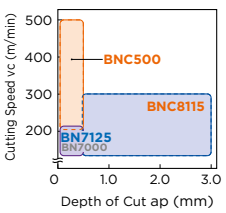
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

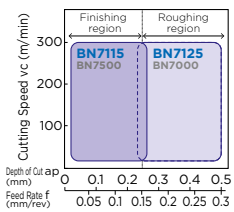
K Grey Cast Iron



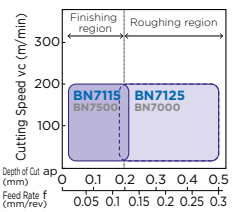
K Ductile Cast Iron



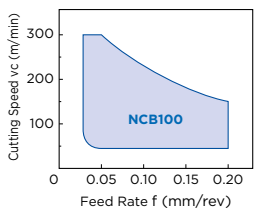
General Sintered Alloy



High-density Sintered Alloy

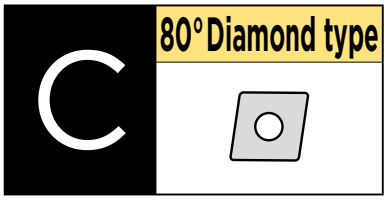


S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	●				✖	
	S Exotic Alloy							●				●	●
	H Hardened Steel	○	◔	●	●	✖							
	Sintered Components							●		●			
		Uncoated SUMIBORON										BINDERLESS SUMIBORON	

CCEW04X1●● Uncoated

Dimensions (mm)	Inscribed Circle	4.3	Hole Dia.	2.3
	Thickness	1.8		

Applicable Boring Bars ☞ E18, E22

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**CCEW 04X102 LF NU**	1	1	0.2	1.7	—	—	—	—	—	—	★	▲			—	—
		CCEW 04X104 LF NU			0.4	1.6	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**CCEW 04X102 LT NU**	1	1	0.2	1.7	—	★	—		—	—	—	—	—	—	—	—
		CCEW 04X104 LT NU			0.4	1.6	—	★	—		—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

*Depth of cut for one-use types is 0.5mm or less.

CCEW04X1●● Coated

Dimensions (mm)	Inscribed Circle	4.3	Hole Dia.	2.3
	Thickness	1.8		

Applicable Boring Bars ☞ E18, E22

Recommended Application		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	K Cast Iron									●	✖
	S Exotic Alloy										
	H Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										
		Coated SUMIBORON									

One-Use type / 7° Positive (With Hole)

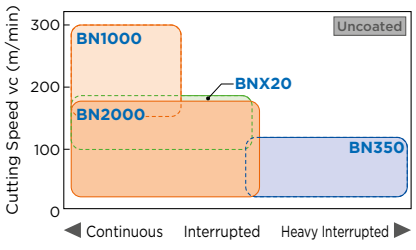
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**CCEW 04X102 LE NC**	1	1	0.2	1.6	—	—	—	—		—	—	—	—	—
		CCEW 04X104 LE NC			0.4	1.5	—	—	—	—		—	—	—	—	—
	L Low Resistance T Negative Land	**CCEW 04X102 LT NC**	1	1	0.2	1.6	—	—	—	—	—		—	—	—	—
		CCEW 04X104 LT NC			0.4	1.5	—	—	—	—	—		—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

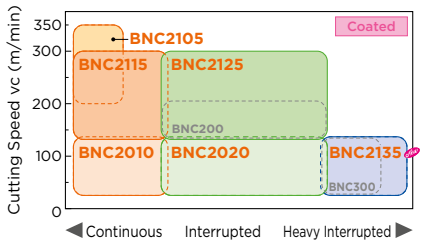
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

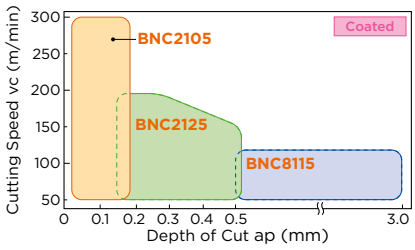
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

C 80° Diamond type

CCG■0602●● Uncoated

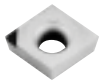
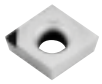
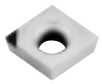
Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

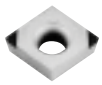
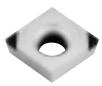
Applicable External Holders ☞ C13, D26, D30, D31, D42 Applicable Boring Bars ☞ E18 to E22

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CCGW 060202 NU**	1	1	0.2	2.4		★	★	★			★	▲			—	
		CCGW 060204 NU			0.4	2.3*	★	★	★	★	★	★	★	▲			—	★
		CCGW 060208 NU			0.8	2.3		★		★			★	▲			—	
		CCGW 060202 NU/10VP	10	1	0.2	2.4				★							—	—
		CCGW 060204 NU/10VP			0.4	2.3				★							—	—
		CCGW 060208 NU/10VP			0.8	2.3											—	—
	L Low Resistance T Negative Land	**CCGW 060202 LT NU**	1	1	0.2	2.4	—		—	★	—	—	—	—	—	—	—	—
		CCGW 060204 LT NU			0.4	2.3	—		—	★	—	—	—	—	—	—	—	—
		CCGW 060208 LT NU			0.8	2.3	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**CCGW 060202 HS NU**	1	1	0.2	2.4	—	—	—	★	—	—					—	—
		CCGW 060204 HS NU			0.4	2.3	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33
Depth of cut for one-use types is 0.5mm or less.
*NCB100 cutting edge length is 2.3.

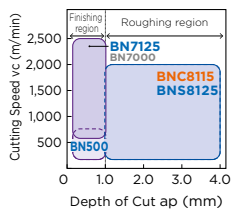
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CCGW 060202 NU2**	1	2	0.2	2.4							★				—	
		CCGW 060204 NU2			0.4	2.3							★	▲	★	▲	—	
		CCGW 060208 NU2														▲	—	
	Finishing Chipbreaker	**CCGT 060204 NFV NU2**	1	2	0.4	2.3	—	—		★	—	—	—	—	—	—	—	—

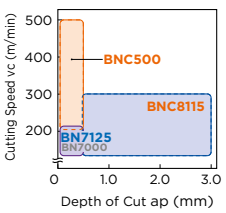
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33
Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

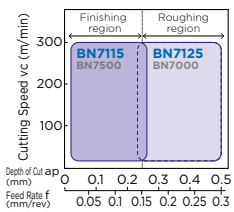
K Grey Cast Iron



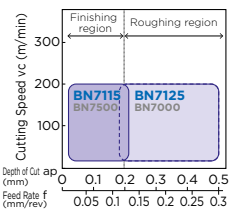
K Ductile Cast Iron



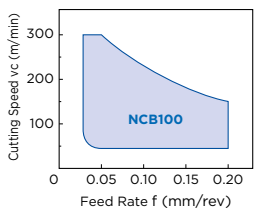
Sintered Alloy General Sintered Alloy



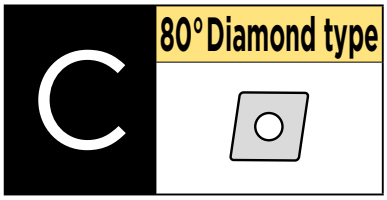
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application										
K Cast Iron									●	✖
S Exotic Alloy										
H Hardened Steel	○	●	◕	✖	○	◔				
Sintered Components										

CCG■0602●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

Applicable External Holders C13, D26, D30, D31, D42
Applicable Boring Bars E18 to E22

Multi-Cornered One-Use type / 7° Positive (With Hole)

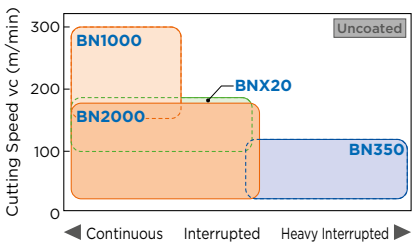
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CCGW 060202 NC2**	1	2	0.2	2.4	★	★	★		★	★	★		★	—
		CCGW 060204 NC2			0.4	2.3	★	★	★	★	★	★	★	★	★	—
		CCGW 060208 NC2			0.8	2.3		★	★	★		★	★	★	★	—
	Finishing Chipbreaker	**CCGT 060204 NFV NC2**	1	2	0.4	2.3		★	★	—	★	★	★	—		—
	L Low Resistance E With Honing	**CCGW 060202 LE NC2**	1	2	0.2	2.4	—	—	—	—	★	—	—	—	—	—
		CCGW 060204 LE NC2			0.4	2.3	—	—	—	—	★	—	—	—	—	—
		CCGW 060208 LE NC2/10VP	10	2	0.8	2.3	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**CCGW 060202 LT NC2**	1	2	0.2	2.4	—	—	—	—	—	★	—	—	—	—
		CCGW 060204 LT NC2			0.4	2.3	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**CCGW 060202 LS NC2**	1	2	0.2	2.4		★	★		—	—	★		—	—
		CCGW 060204 LS NC2			0.4	2.3		★	★		—	—	★		—	—
		CCGW 060208 LS NC2			0.8	2.3		★	★		—	—			—	—
	H Strong Edge S Negative Land With Honing	**CCGW 060208 HS NC2**	1	2	0.8	2.4								★		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

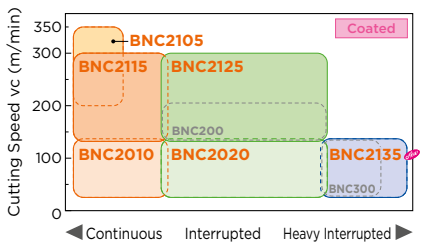
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

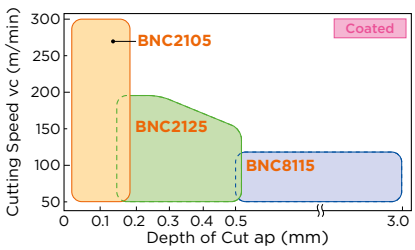
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type

CCG■09T3●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕			✱	
S	Exotic Alloy							●			◕	●
H	Hardened Steel	○	◔	●	◕	✱						
	Sintered Components							◕		●		

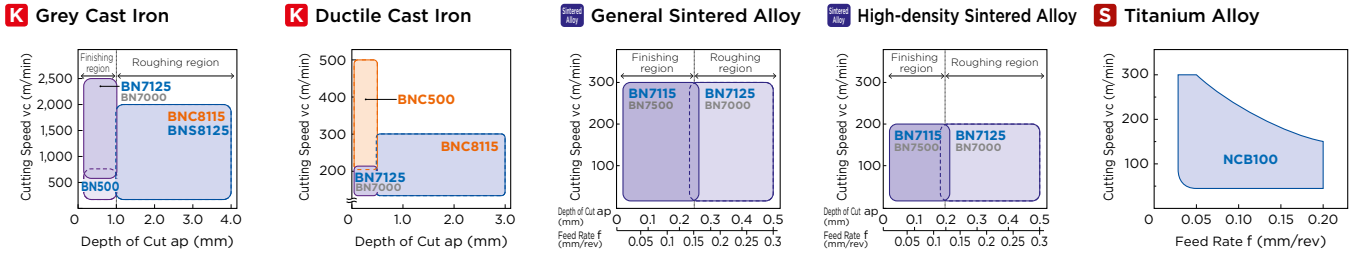
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
		CCGW 09T302 NU			0.2	2.4		★	★	★							—	
		CCGW 09T304 NU	1	1	0.4	2.4	★	★	★	★			★	▲			—	★
		CCGW 09T308 NU			0.8	2.3	★	★		★	★		★	▲			—	★
	Standard	**CCGW 09T302 NU/10VP**			0.2	2.4				★							—	—
		CCGW 09T304 NU/10VP	10	1	0.4	2.4				★							—	—
		CCGW 09T308 NU/10VP			0.8	2.3											—	—
		CCGW 09T302 LT NU			0.2	2.4	—		—	★	—	—	—	—	—	—	—	—
	L Low Resistance T Negative Land	**CCGW 09T304 LT NU**	1	1	0.4	2.4	—		—	★	—	—	—	—	—	—	—	—
		CCGW 09T308 LT NU			0.8	2.3	—		—	★	—	—	—	—	—	—	—	—
		CCGW 09T302 HS NU			0.2	2.4	—	—	—	★	—	—					—	—
	H Strong Edge S Negative Land With Honing	**CCGW 09T304 HS NU**	1	1	0.4	2.4	—	—	—	★	—	—					—	—
		CCGW 09T308 HS NU			0.8	2.3	—	—	—	★	—	—					—	—

Uncoated SUMIBORON / BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

C 80° Diamond type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	●				✖	
	S Exotic Alloy							●				●	●
	H Hardened Steel	○	◔	●	●	✖							
	Sintered Components							●		●			

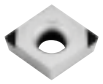
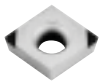
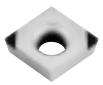
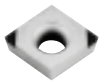
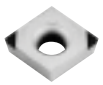
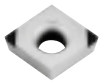
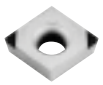
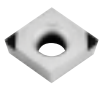
CCG■09T3●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

Applicable External Holders ☞C13, D26, D30, D31, D42

Applicable Boring Bars ☞E12, E18 to E22

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**CCGW 09T302 NU2**	1	2	0.2	2.4							★				—	
		CCGW 09T304 NU2			0.4	2.4	★	★		★			★	▲	★	▲	—	
		CCGW 09T308 NU2			0.8	2.3	★	★	★	★	★		★	▲	★	▲	—	
		CCGW 09T308 NU2/10VP	10	2	0.8	2.3										▲	—	
	Low Feed Wiper Insert	**CCGW 09T304 NU WG2**	1	2	0.4	2.4				★							—	
		CCGW 09T308 NU WG2			0.8	2.4				★							—	
	High Feed Wiper Insert	**CCGW 09T304 NU WH2**	1	2	0.4	2.4				★							—	
		CCGW 09T308 NU WH2			0.8	2.3				★							—	
	Finishing Chipbreaker	**CCGT 09T304 NFV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—
		CCGT 09T308 NFV NU2			0.8	2.3	—	—		★	—	—	—	—	—	—	—	—
	Light Cutting Chipbreaker	**CCGT 09T304 NLV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—
		CCGT 09T308 NLV NU2			0.8	2.3	—	—		★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**CCGW 09T308 HS NU2**	1	2	0.8	2.4									★	▲	—	
	L Low Resistance F Sharp Edge	**CCGW 09T302 LF NU2**	1	2	0.2	2.4	—	—	—	—	—	—	★				—	—
		CCGW 09T304 LF NU2			0.4	2.4	—	—	—	—	—	—	★			▲	—	—
		CCGW 09T308 LF NU2			0.8	2.3	—	—	—	—	—	—	★				—	—
	L Low Resistance E With Honing	**CCGW 09T302 LE NU2**	1	2	0.2	2.4	—	—	—	—	—	—	★	—			—	—
		CCGW 09T304 LE NU2			0.4	2.4	—	—	—	—	—	—	★	—			—	—
		CCGW 09T308 LE NU2			0.8	2.3	—	—	—	—	—	—	★	—			—	—

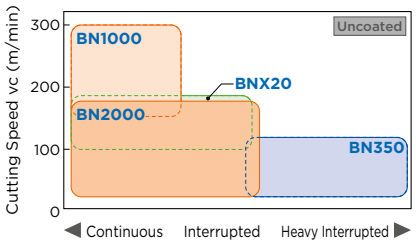
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞L32, L33

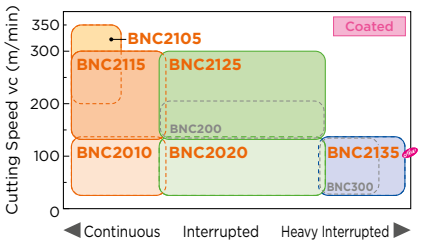
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

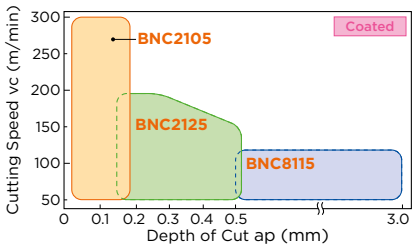
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item

▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

C 80° Diamond type

CCG■09T3●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application										
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Applicable External Holders ☞C13, D26, D30, D31, D42 Applicable Boring Bars ☞E12, E18 to E22

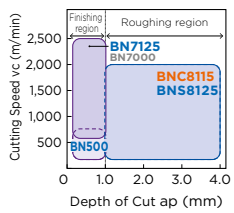
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CCGW 09T302 NC2**	1	2	0.2	2.5		★	★		★	★	★		★	—
		CCGW 09T304 NC2			0.4	2.5	★	★	★	★	★	★	★	★	★	—
		CCGW 09T308 NC2			0.8	2.4	★	★	★	★	★	★	★	★	★	—
		CCGW 09T312 NC2			0.8	2.4	★	★	★							—
		CCGW 09T304 NC2/10VP	10	2	0.4	2.5							★			—
	Low Feed Wiper Insert	**CCGW 09T304 NC W2**	1	2	0.4	2.4							★			—
		CCGW 09T308 NC W2			0.8	2.3							★			—
	Low Feed Wiper Insert	**CCGW 09T304 NC WG2**	1	2	0.4	2.4		★	★		★	★	★			—
		CCGW 09T308 NC WG2			0.8	2.3		★	★		★	★	★			—
	High Feed Wiper Insert	**CCGW 09T304 NC WH2**	1	2	0.4	2.4		★	★		★	★	★			—
		CCGW 09T308 NC WH2			0.8	2.3		★	★		★	★	★			—
	Finishing Chipbreaker	**CCGT 09T304 NFV NC2**	1	2	0.4	2.4		★	★	—	★	★	★	—		—
		CCGT 09T308 NFV NC2			0.8	2.3		★	★	—	★	★	★	—		—
	Light Cutting Chipbreaker	**CCGT 09T304 NLV NC2**	1	2	0.4	2.4		★	★	—	★	★	★	—		—
		CCGT 09T308 NLV NC2			0.8	2.3		★	★	—	★	★	★	—		—
		CCGT 09T304 NLV NC2/10VP	10	2	0.4	2.4				—		★	★	—		—
	L Low Resistance E With Honing	**CCGW 09T302 LE NC2**	1	2	0.2	2.4	—	—	—	—	★	—	—	—	—	—
		CCGW 09T304 LE NC2			0.4	2.4	—	—	—	—	★	—	—	—	—	—
		CCGW 09T308 LE NC2			0.8	2.3	—	—	—	—	★	—	—	—	—	—

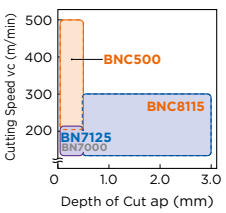
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

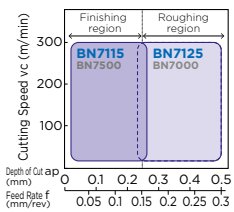
K Grey Cast Iron



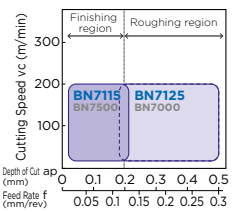
K Ductile Cast Iron



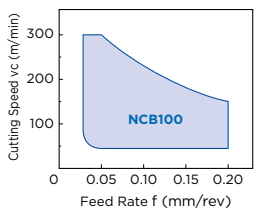
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy

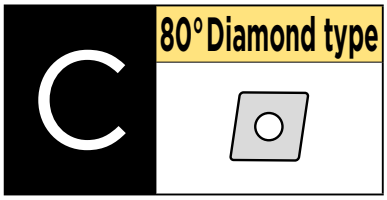


S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	○ ● ◔ ✖ ○ ◔
	Sintered Components	

CCG■09T3●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

Applicable External Holders ☞C13, D26, D30, D31, D42 Applicable Boring Bars ☞E12, E18 to E22

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance T Negative Land	**CCGW 09T302 LT NC2**	1	2	0.2	2.4	—	—	—	—	—	★	—	—	—	—
		CCGW 09T304 LT NC2			0.4	2.4	—	—	—	—	—	★	—	—	—	—
		CCGW 09T308 LT NC2			0.8	2.3	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**CCGW 09T302 LS NC2**	1	2	0.2	2.4		★	★		—	—	★		—	—
		CCGW 09T304 LS NC2			0.4	2.4	★	★	★	★	—	—	★	★	—	—
		CCGW 09T308 LS NC2			0.8	2.3	★	★	★	★	—	—	★	★	—	—
	H Strong Edge S Negative Land With Honing	**CCGW 09T304 HS NC2**	1	2	0.4	2.4				★		★	★	★		—
		CCGW 09T308 HS NC2			0.8	2.3			★	★		★	★	★		—
		CCGW 09T308 HS NC2/10VP	1	2	0.8	2.3			★			★	★			—
	E High Efficiency S Negative Land With Honing	**CCGW 09T308 ES NC2**	1	2	0.8	2.3			★							—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

CC■1204●● Uncoated

Dimensions (mm)				
	Cutting Edge Length L	12.9	Thickness S	4.76
	Inscribed Circle IC	12.7	Hole Dia. D1	5.5

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

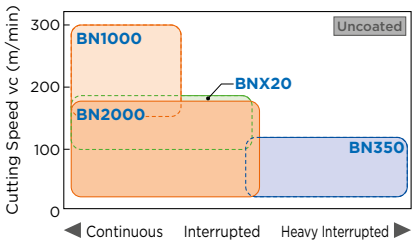
Recommended Application		
K	Cast Iron	○ ● ✖ ✱
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ◔ ● ● ✖
	Sintered Components	● ●

One-Use type / 7° Positive (With Hole)

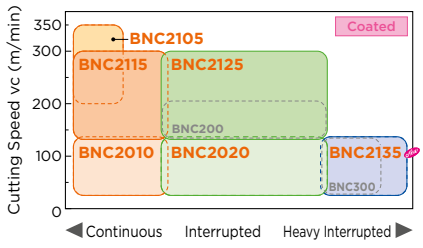
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CCGW 120408 NU**	1	1	0.8	2.3	★	★									—	

SUMIBORON Application Range Map

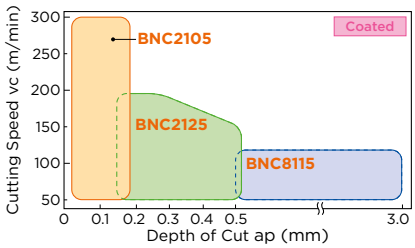
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type



CCGN0401●● Uncoated

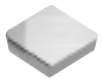
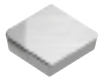
Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	-
	Thickness	1.59		

Applicable Holder: Special Holder

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕			✱	
S	Exotic Alloy							●			◕	●
H	Hardened Steel	○	◔	●	◕	✱						
	Sintered Components							◕		●		

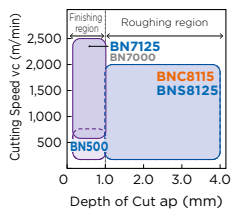
One-Use type / 7° Positive (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	**CCGN 040104 NU**	1	1	0.4	2.5				★							—	
		CCGN 040108 NU			0.8	2.4				★							—	
	Standard	**CCGN 040104 NU/10VP**	10	1	0.4	2.5				★							—	—
		CCGN 040108 NU/10VP			0.8	2.4				★							—	—
	H Strong Edge S Negative Land With Honing	**CCGN 040104 HS NU**	1	1	0.4	2.5	—	—	—	★	—	—					—	—
		CCGN 040108 HS NU			0.8	2.4	—	—	—	★	—	—					—	—

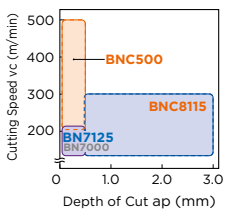
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞ L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

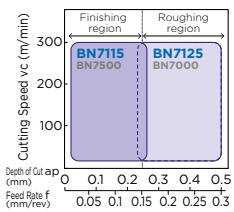
K Grey Cast Iron



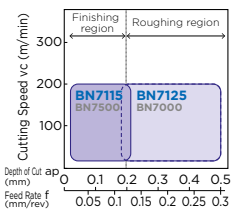
K Ductile Cast Iron



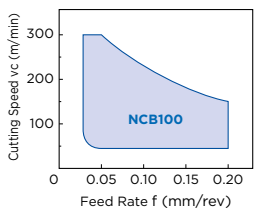
General Sintered Alloy



High-density Sintered Alloy

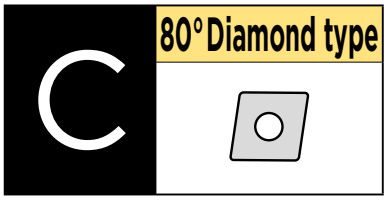


S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

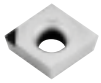
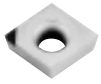
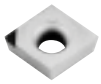
CPGW0802●● Uncoated

Dimensions (mm)				
	Inscribed Circle	7.94	Hole Dia.	3.4
	Thickness	2.38		

Applicable Boring Bars ☞ E23, E25

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CPGW 080202 NU**	1	1	0.2	2.3				★							—	
		CPGW 080204 NU			0.4	2.3			★	★							—	
		CPGW 080208 NU			0.8	2.2				★							—	
	L Low Resistance T Negative Land	**CPGW 080204 LT NU**	1	1	0.4	2.3	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**CPGW 080202 HS NU**	1	1	0.2	2.3	—	—	—	★	—	—					—	—
		CPGW 080204 HS NU			0.4	2.3	—	—	—	★	—	—					—	—
		CPGW 080208 HS NU			0.8	2.2	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞ L32, L33

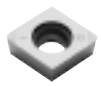
CPGW0802●● Coated

Dimensions (mm)				
	Inscribed Circle	7.94	Hole Dia.	3.4
	Thickness	2.38		

Applicable Boring Bars ☞ E23, E24

Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

Multi-Cornered One-Use type / 11° Positive (With Hole)

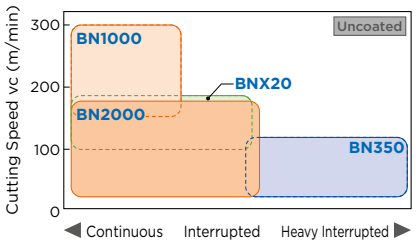
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CPGW 080202 NC2**	1	2	0.2	2.3					★	★				—
		CPGW 080204 NC2			0.4	2.3					★	★				—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

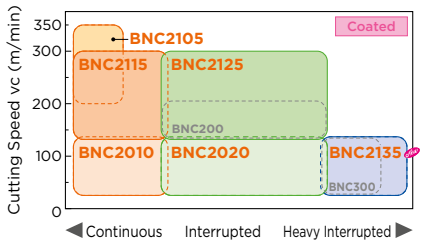
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

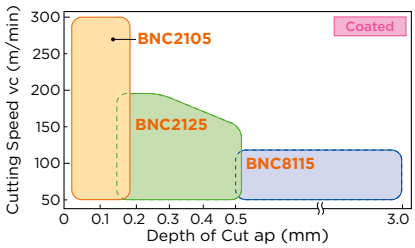
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

C 80° Diamond type

CPGW0903 Uncoated

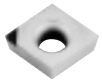
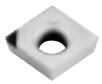
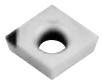
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

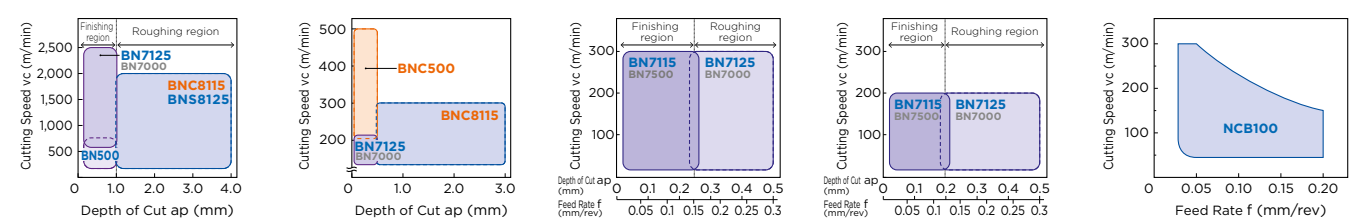
Applicable Boring Bars ☞E12, E23, E24

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	**CPGW 090302 NU**	1	1	0.2	2.4			★	★							—	
		CPGW 090304 NU			0.4	2.4			★	★							—	
		CPGW 090308 NU			0.8	2.3			★	★							—	
	L Low Resistance T Negative Land	**CPGW 090302 LT NU**	1	1	0.2	2.4	—		—	★	—	—	—	—	—	—	—	—
		CPGW 090304 LT NU			0.4	2.4	—		—	★	—	—	—	—	—	—	—	—
		CPGW 090308 LT NU			0.8	2.3	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**CPGW 090302 HS NU**	1	1	0.2	2.4	—	—	—	★	—	—					—	—
		CPGW 090304 HS NU			0.4	2.4	—	—	—	★	—	—					—	—
		CPGW 090308 HS NU			0.8	2.3	—	—	—	★	—	—					—	—

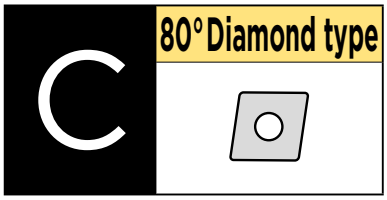
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

CPG■0903●● Coated

Dimensions (mm)	Inscribed Circle	7.94	Hole Dia.	2.38
	Thickness	3.4		

Applicable Boring Bars E12, E23, E25

Multi-Cornered One-Use type / 11° Positive (With Hole)

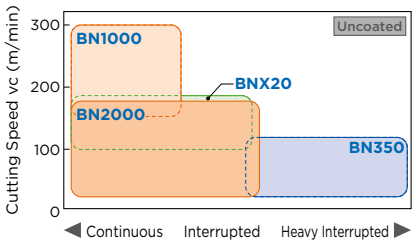
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CPGW 090302 NC2**	1	2	0.2	2.4					★	★				—
		CPGW 090304 NC2			0.4	2.4					★	★				—
	Light Cutting Chipbreaker	**CPGT 090304 NLV NC2**	1	2	0.4	2.3		★	★	—				—		—
		CPGT 090308 NLV NC2			0.8	2.2		★	★	—				—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

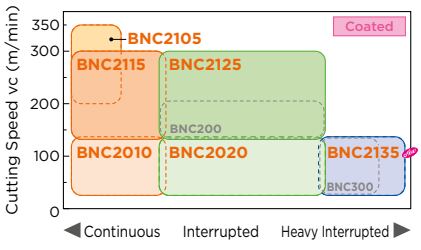
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

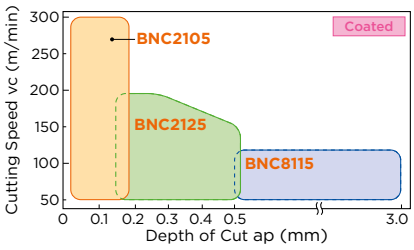
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

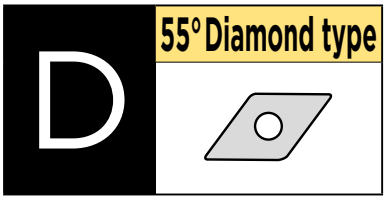


H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



DNGA1104●● Coated

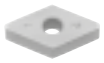
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C16 | Applicable Boring Bars E34, E35

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation | General Machining ◕ 1st Recommendation ◔ 2nd Recommendation | Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**DNGA 110404 NC2**	1	2	0.4	2.4		★	★		★	★	★			—
		DNGA 110408 NC2			0.8	2.0		★	★		★	★	★			—
		DNGA 110412 NC2			1.2	2.0		★	★		★	★				—
		DNGA 110408 NC2/10VP	10	2	0.8	2.0							★			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

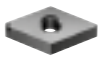
DN■■1504●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E33 to E35

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNMA 150401 NU**	1	1	0.1	2.7				★							—	—
		DNMA 150402 NU			0.2	2.5				★							—	—
		DNMA 150404 NU			0.4	2.4	★	★	★	★	★	★		▲			—	—
		DNMA 150408 NU			0.8	2.0	★	★	★	★	★	★		▲			—	—
		DNMA 150412 NU			1.2	1.9				★		★		▲			—	—
		DNMA 150401 NU/10VP	10	1	0.1	2.7											—	—
		DNMA 150402 NU/10VP			0.2	2.5											—	—
		DNMA 150404 NU/10VP			0.4	2.4	★	★	★	★	★	★					—	—
		DNMA 150408 NU/10VP			0.8	2.0	★	★	★	★	★	★					—	—
		DNMA 150412 NU/10VP			1.2	1.9						★					—	—

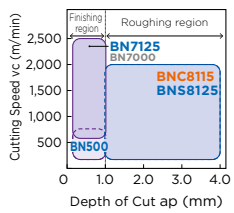
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

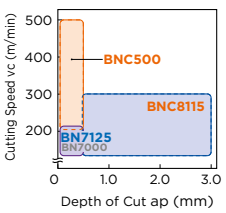
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

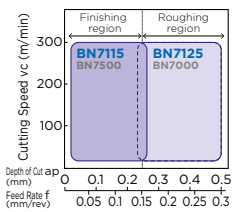
K Grey Cast Iron



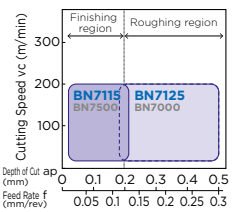
K Ductile Cast Iron



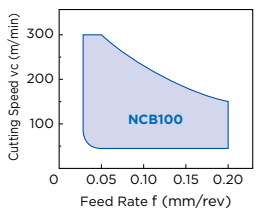
General Sintered Alloy



High-density Sintered Alloy

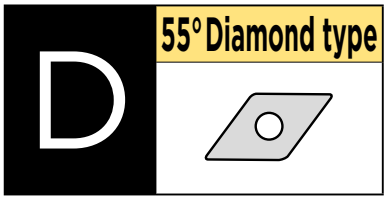


S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

DN■■1504●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E33 to E35

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNGA 150404 NU**	1	1	0.4	2.4	—	—	—	—	—	—	—	—	—	—	—	★
		DNGA 150408 NU			0.8	2.0	—	—	—	—	—	—	—	—	—	—	—	★
		DNGA 150412 NU			1.2	1.9	—	—	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

Multi-Cornered One-Use type / Negative (With Hole)

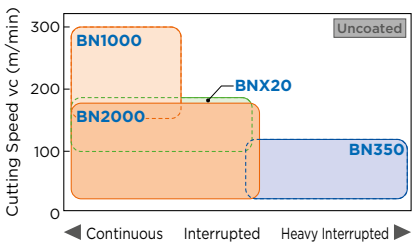
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNGA 150404 NU2**	1	2	0.4	2.4		★	★	★	★		★	▲	★	▲	—	
		DNGA 150408 NU2			0.8	2.0		★	★	★	★		★	▲	★	▲	—	
		DNGA 150412 NU2			1.2	1.9				★			★	▲	★		—	
		DNGA 150404 NU2/10VP	10	2	0.4	2.4		★		★							—	—
		DNGA 150408 NU2/10VP			0.8	2.0		★		★	★		★	▲			—	—
		DNGA 150412 NU2/10VP			1.2	1.9											—	—
	Low Feed Wiper Insert	**DNGA 150404 NU WG2**	1	2	0.4	2.3				★							—	
		DNGA 150408 NU WG2			0.8	2.0				★							—	
	High Feed Wiper Insert	**DNGA 150404 NU WH2**	1	2	0.4	2.1				★							—	
		DNGA 150408 NU WH2			0.8	1.8				★							—	
	Light Cutting Chipbreaker	**DNGM 150404 NLV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—
		DNGM 150408 NLV NU2			0.8	2.0	—	—		★	—	—	—	—	—	—	—	—
		DNGM 150412 NLV NU2			1.2	1.9	—	—		★	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

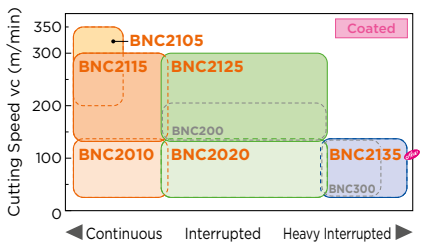
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

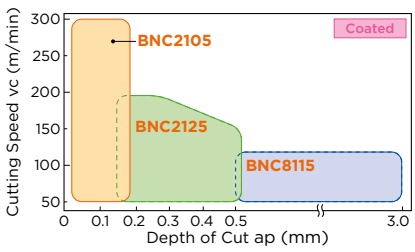
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

D 55° Diamond type



DN■■1504●● Uncoated

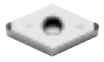
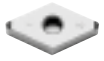
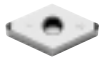
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders ☞C14 to C16 Applicable Boring Bars ☞E15, E33 to E35

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	L Low Resistance F Sharp Edge	**DNGA 150404 LF NU2**	1	2	0.4	2.4	—	—	—	—	—	—	★	▲			—	—
		DNGA 150408 LF NU2			0.8	2.0	—	—	—	—	—	—	★	▲			—	—
		DNGA 150412 LF NU2			1.2	1.9	—	—	—	—	—	—	—	—			—	—
	L Low Resistance E With Honing	**DNGA 150404 LE NU2**	1	2	0.4	2.4	—	—	—	—	—	—	★	—			—	—
		DNGA 150408 LE NU2			0.8	2.0	—	—	—	—	—	—	★	—			—	—
	L Low Resistance T Negative Land	**DNGA 150404 LT NU2**	1	2	0.4	2.4	—		—	★	—	—	—	—	—	—	—	—
		DNGA 150408 LT NU2			0.8	2.0	—		—	★	—	—	—	—	—	—	—	—
		DNGA 150412 LT NU2			1.2	1.9	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge T Negative Land	**DNGA 150404 HT NU2**	1	2	0.4	2.4	—	—	—	—	★	—	—	—	—	—	—	—
		DNGA 150408 HT NU2			0.8	2.0	—	—	—	—	★	—	—	—	—	—	—	—
		DNGA 150412 HT NU2			1.2	1.9	—	—	—	—		—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**DNGA 150404 HS NU2**	1	2	0.4	2.4	—	—	—	★	—	—	★	▲			—	—
		DNGA 150408 HS NU2			0.8	2.0	—	—	—	★	—	—	★	▲			—	—
		DNGA 150412 HS NU2			1.2	1.9	—	—	—	★	—	—	★		★		—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞L32, L33
*Depth of cut for one-use types is 0.5mm or less.

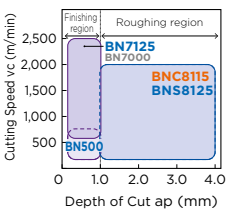
Negative type (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNMA 150404**	1	1	0.4	5.0		★		★				▲			—	—
		DNMA 150408			0.8	4.7		★		★		★		▲			—	—
		DNMA 150412			1.2	4.3				★				▲			—	—

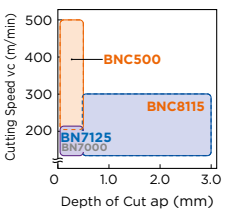
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

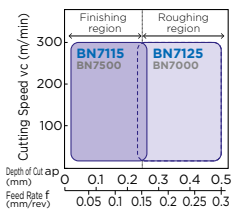
K Grey Cast Iron



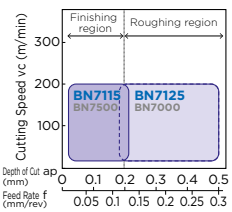
K Ductile Cast Iron



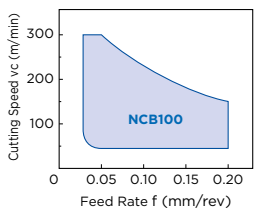
General Sintered Alloy



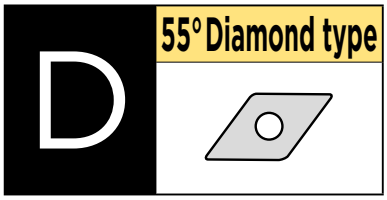
High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

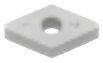
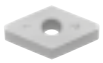
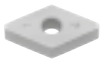
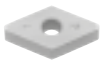
Recommended Application											
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

DNG■1504●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E33 to E35

Multi-Cornered One-Use type / Negative (With Hole)

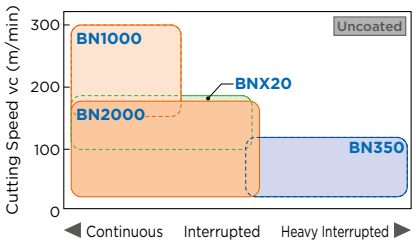
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**DNGA 150404 NC2**	1	2	0.4	2.4			★		★	★	★			—
		DNGA 150408 NC2			0.8	2.0			★		★	★	★			—
		DNGA 150412 NC2			1.2	1.9			★		★	★				—
		DNGA 150416 NC2*1			1.6	3.4					★	★	★	★		—
		DNGA 150420 NC2*1			2.0	3.0					★	★	★	★		—
		DNGA 150424 NC2*1			2.4	2.7					★	★	★	★		—
	Standard	**DNGA 150402 NC4**	1	4	0.2	2.5		★	★		★	★				—
		DNGA 150404 NC4			0.4	2.4	★	★	★	★	★	★	★	★	★	—
		DNGA 150408 NC4			0.8	2.0	★	★	★	★	★	★	★	★	★	—
		DNGA 150412 NC4			1.2	1.9		★	★	★	★	★	★	★	★	—
		DNGA 150416 NC4*1			1.6	3.4		★	★	★	★	★	★	★		—
		DNGA 150420 NC4*1			2.0	3.0		★	★	★	★	★	★	★		—
		DNGA 150424 NC4*1			2.4	2.7		★	★	★	★	★	★	★		—
	Low Feed Wiper Insert	**DNGA 150404 NC WG4***2	1	4	0.4	2.3		★	★		★	★	★			—
		DNGA 150408 NC WG4*2			0.8	1.9		★	★		★	★	★			—
	High Feed Wiper Insert	**DNGA 150404 NC WH4***2	1	4	0.4	2.1		★	★		★	★	★			—
		DNGA 150408 NC WH4*2			0.8	1.8		★	★		★	★	★			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

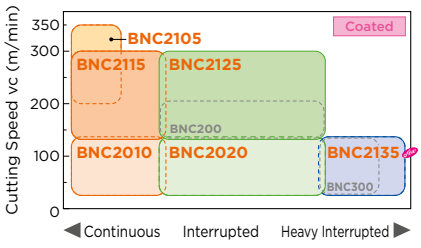
*1 For use with the SUMIBORON holders for high-efficiency machining shown on pages L129 and L130.
*2 Use a holder with a cutting edge angle of 93° .

SUMIBORON Application Range Map

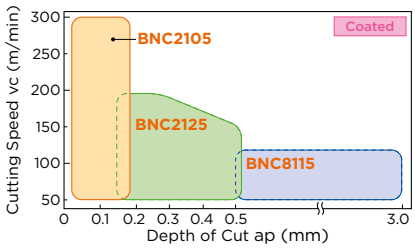
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

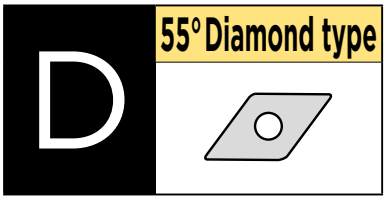


H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



DNG■1504●● Coated

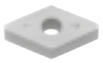
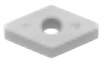
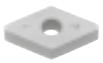
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders ☞ C14 to C16 Applicable Boring Bars ☞ E15, E33 to E35

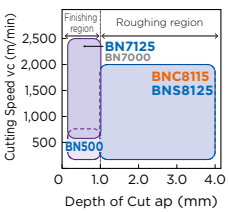
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Finishing Chipbreaker	**DNGG 150404 NFV NC4**	1	4	0.4	2.4		★	★	—	★	★	★	—		—
		DNGG 150408 NFV NC4			0.8	2.0		★	★	—	★	★	★	—		—
		DNGG 150412 NFV NC4			1.2	1.9		★	★	—	★	★	★	—		—
	Light Cutting Chipbreaker	**DNGG 150404 NLV NC4**	1	4	0.4	2.4		★	★	—	★	★	★	—		—
		DNGG 150408 NLV NC4			0.8	2.0		★	★	—	★	★	★	—		—
		DNGG 150412 NLV NC4			1.2	1.9		★	★	—	★	★	★	—		—
	Carburised Layer Removal Chipbreaker	**DNGG 150404 NSV NC4**	1	4	0.4	2.4				—				—		—
		DNGG 150408 NSV NC4			0.8	2.0		★	★	—	★	★	★	—		—
		DNGG 150412 NSV NC4			1.2	1.9		★	★	—	★	★	★	—		—
	L Low Resistance E With Honing	**DNGA 150404 LE NC2**	1	2	0.4	2.4	—	—	—	—	★	—	—	—	—	—
		DNGA 150408 LE NC2			0.8	2.0	—	—	—	—	★	—	—	—	—	—
		DNGA 150412 LE NC2			1.2	1.9	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**DNGA 150402 LT NC2**	1	2	0.2	2.5	—	—	—	—	—	★	—	—	—	—
		DNGA 150404 LT NC2			0.4	2.4	—	—	—	—	—	★	—	—	—	—
		DNGA 150408 LT NC2			0.8	2.0	—	—	—	—	—	★	—	—	—	—
		DNGA 150412 LT NC2			1.2	1.9	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**DNGA 150402 LS NC2**	1	2	0.2	2.5			★		—	—			—	—
		DNGA 150404 LS NC2			0.4	2.4	★	★	★	★	—	—		★	—	—
		DNGA 150408 LS NC2			0.8	2.0	★	★	★	★	—	—		★	—	—
		DNGA 150412 LS NC2			1.2	1.9	★	★	★	★	—	—		★	—	—

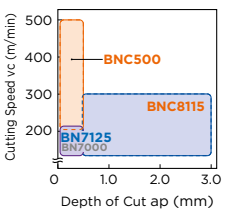
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

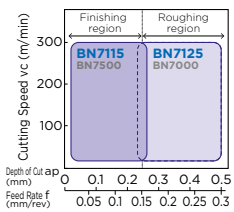
K Grey Cast Iron



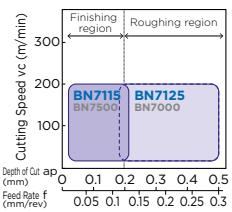
K Ductile Cast Iron



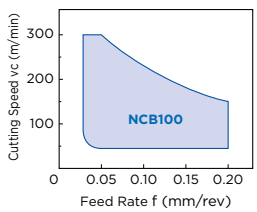
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy

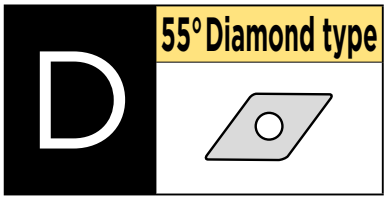


S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

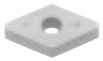
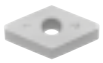
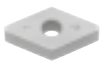
Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

DNG■1504●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E33 to E35

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance S Negative Land With Honing	**DNGA 150404 LS NC4**	1	4	0.4	2.4	—	—	—		—	—	★		—	—
		DNGA 150408 LS NC4			0.8	2.0	—	—	—		—	—	★		—	—
		DNGA 150412 LS NC4			1.2	1.9	—	—	—		—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**DNGA 150404 HS NC4**	1	4	0.4	2.4		★	★	★	★	★	★	★	★	—
		DNGA 150408 HS NC4			0.8	2.0		★	★	★	★	★	★	★	★	—
		DNGA 150412 HS NC4			1.2	1.9		★	★	★	★	★	★	★	★	—
	E High Efficiency S Negative Land With Honing	**DNGA 150404 ES NC4**	1	4	0.4	2.4						★	—	—	—	—
		DNGA 150408 ES NC4			0.8	2.0						★	—	—	—	—
		DNGA 150412 ES NC4			1.2	1.9						★	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

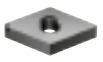
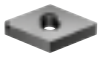
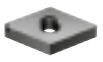
Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

DN■A1506●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	6.35		

Applicable External Holders C14, C16 | Applicable Boring Bars E34

One-Use type / Negative (With Hole)

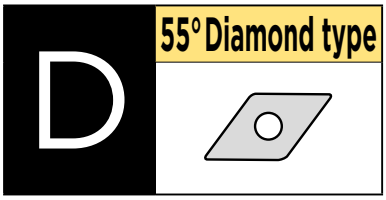
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNMA 150604**	1	1	0.4	2.4		★									—	—
		DNMA 150612			1.2	1.9		★									—	—
	Standard	**DNMA 150604 NU**	1	1	0.4	2.4		★		★				▲			—	—
		DNMA 150608 NU			0.8	2.0	★	★		★	★	★	★	▲			—	—
		DNMA 150612 NU			1.2	1.9	★	★		★							—	—
		DNMA 150612 NU/10VP	10	1	1.2	1.9				★							—	—
	Standard	**DNGA 150604 NU2**	1	2	0.4	2.4		★		★	★		★				—	—
		DNGA 150608 NU2			0.8	2.0	★	★	★	★	★		★			▲	—	—
		DNGA 150612 NU2			1.2	1.9	★						★				—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



DNG■1506●● Coated

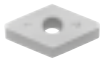
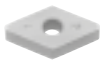
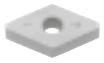
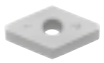
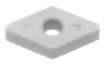
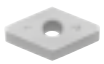
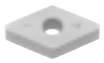
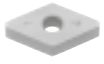
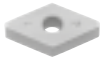
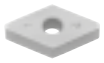
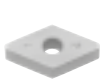
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	6.35		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ● 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application											
	K Cast Iron									●	✖
	S Exotic Alloy										
	H Hardened Steel	○	●	◔	✖	○	◔				
	Sintered Components										

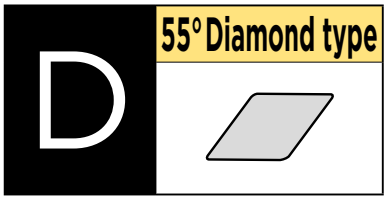
Applicable External Holders C14, C16 | Applicable Boring Bars E34

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	E High Efficiency S Negative Land With Honing	**DNGA 150608 ES NC2**	1	2	0.8	2.0						★			—	—
		DNGA 150612 ES NC2			1.2	1.9		★	★						—	—
	H Strong Edge S Negative Land With Honing	**DNGA 150604 HS NC2**	1	2	0.4	2.4				★		★	★	★		—
		DNGA 150608 HS NC2			0.8	2.0			★	★	★	★	★	★		—
		DNGA 150612 HS NC2			1.2	1.9			★	★		★	★	★		—
	L Low Resistance E With Honing	**DNGA 150608 LE NC2**	1	2	0.8	2.0					★				—	—
	L Low Resistance S Negative Land With Honing	**DNGA 150604 LS NC2**	1	2	0.4	2.4			★				★		—	—
		DNGA 150608 LS NC2			0.8	2.0			★				★	★	—	—
		DNGA 150612 LS NC2			1.2	1.9							★		—	—
	L Low Resistance T Negative Land	**DNGA 150608 LT NC2**	1	2	0.8	2.0						★			—	—
		DNGA 150612 LT NC2			1.2	1.9						★			—	—
		DNGA 150608 LT NC2/10VP	10	2	0.8	2.0						★			—	—
		DNGA 150612 LT NC2/10VP			1.2	1.9						★			—	—
	Standard	**DNGA 150604 NC4**	1	4	0.4	2.4	★	★	★	★	★	★	★	★	★	—
		DNGA 150608 NC4			0.8	2.0	★		★	★	★	★	★	★	★	—
		DNGA 150612 NC4			1.2	1.9		★	★	★	★	★	★	★	★	—
		DNGA 150608 NC4/10VP	10	4	0.8	2.0					★					—
		DNGA 150612 NC4/10VP			1.2	1.9					★					—
	Low Feed Wiper Insert	**DNGA 150604 NC WG4**	1	4	0.4	2.4			★		★	★	★			—
		DNGA 150608 NC WG4			0.8	2.0			★		★	★	★			—
		DNGA 150612 NC WG4			1.2	1.9						★				—
	High Feed Wiper Insert	**DNGA 150604 NC WH4**	1	4	0.4	2.4			★							—
		DNGA 150608 NC WH4			0.8	2.0			★			★				—
		DNGA 150612 NC WH4			1.2	1.9					★					—
	Finishing Chipbreaker	**DNGG 150604 NFV NC4**	1	4	0.4	2.4					★					
		DNGG 150608 NFV NC4			0.8	2.0			★		★		★			—
	Light Cutting Chipbreaker	**DNGG 150604 NLV NC4**	1	4	0.4	2.4					★		★			—
		DNGG 150608 NLV NC4			0.8	2.0			★		★	★	★			—
		DNGG 150612 NLV NC4			1.2	1.9			★		★	★	★			—
	Carburised Layer Removal Chipbreaker	**DNGG 150608 NSV NC4**	1	4	0.8	2.0			★			★	★			—
		DNGG 150612 NSV NC4			1.2	1.9			★		★	★	★			—
		DNGG 150612 NSV NC4/10VP	10	4	1.2	1.9							★			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

DNGN1103●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L127

Solid type / Negative (Without Hole)

Uncoated SUMIBORON

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125 BINDERLESS SUMIBORON	NCB100
	Standard	**DNGN 110308**	1	4	0.8	10.8	—	—	—	—	—	—	—	—	—	—	★	—
		DNGN 110312			1.2	10.5	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**DNGN 110308 LF**	1	4	0.8	10.8	—	—	—	—	—	—	—	—	—	—		—
		DNGN 110312 LF			1.2	10.5	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

DNGN1103●● Coated

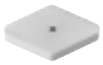
Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L127

Recommended Application												
K	Cast Iron									●	✖	
S	Exotic Alloy											
H	Hardened Steel	○	●	◔	✖	○	◔					
	Sintered Components											

Solid type / Negative (Without Hole)

Coated SUMIBORON

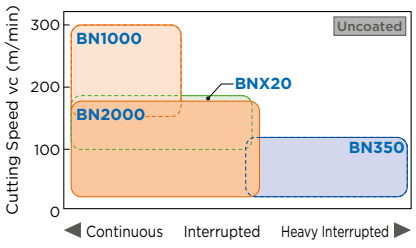
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**DNGN 110308**	1	4	0.8	10.8	—	—	—	—	—	—	—	—	—	★
		DNGN 110312			1.2	10.5	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

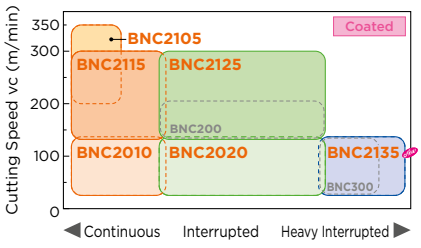
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

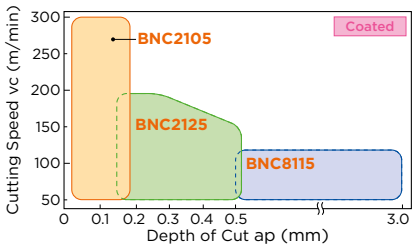
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

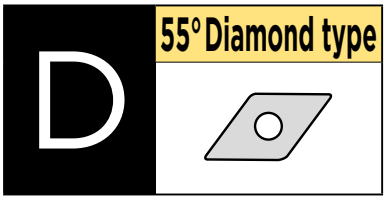


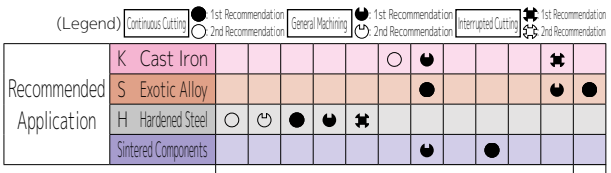
H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



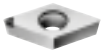
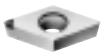
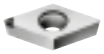


DCG■0702●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

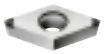
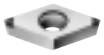
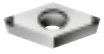
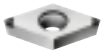
Applicable External Holders C17, D27, D28, D32, D33, D43
Applicable Boring Bars E16, E28 to E32

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**DCGW 070202 NU**	1	1	0.2	2.6	★	★	★	★	★		★	▲			—	
		DCGW 070204 NU			0.4	2.4	★	★	★	★			★	▲			—	★
		DCGW 070208 NU			0.8	2.0		★		★			★	▲			—	
		DCGW 070202 NU/10VP	10	1	0.2	2.6				★							—	—
		DCGW 070204 NU/10VP			0.4	2.4				★							—	—
		DCGW 070208 NU/10VP			0.8	2.0											—	—
	L Low Resistance T Negative Land	**DCGW 070202 LT NU**	1	1	0.2	2.6	—		—	★	—	—	—	—	—	—	—	—
		DCGW 070204 LT NU			0.4	2.4	—		—	★	—	—	—	—	—	—	—	—
		DCGW 070208 LT NU			0.8	2.0	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**DCGW 070202 HS NU**	1	1	0.2	2.6	—	—	—	★	—	—					—	—
		DCGW 070204 HS NU			0.4	2.4	—	—	—	★	—	—					—	—

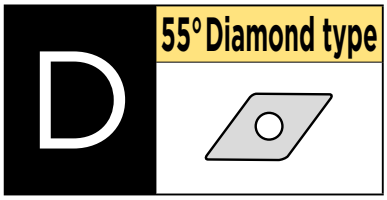
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DCGW 070202 NU2**	1	2	0.2	2.6				★			★				—	
		DCGW 070204 NU2			0.4	2.4	★	★	★	★	★		★	▲	★	▲	—	
		DCGW 070208 NU2			0.8	2.0		★		★			★	▲	★	▲	—	
	H Strong Edge S Negative Land With Honing	**DCGW 070208 HS NU2**	1	2	0.8	2.1									★	▲	—	
	L Low Resistance F Sharp Edge	**DCGW 070202 LF NU2**	1	2	0.2	2.7										▲	—	—
		DCGW 070204 LF NU2	1	2	0.4	2.5										▲	—	—
	Finishing Chipbreaker	**DCGT 070204 NFV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	K Cast Iron									●	✖
	S Exotic Alloy										
	H Hardened Steel	○	●	◔	✖	○	◔				
	Sintered Components										

DCG■0702●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

Applicable External Holders ☞C17, D27, D28, D32, D33, D43 Applicable Boring Bars ☞E16, E28 to E32

Multi-Cornered One-Use type / 7° Positive (With Hole)

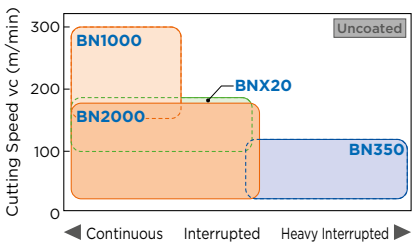
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
							Coated SUMIBORON									
	Standard	**DCGW 070202 NC2**	1	2	0.2	2.6	★	★	★		★	★	★	★		—
		DCGW 070204 NC2			0.4	2.4	★	★	★	★	★	★	★	★	★	—
		DCGW 070208 NC2			0.8	2.0		★	★	★	★	★	★	★		—
		DCGW 070208 NC2/10VP	10	2	0.8	2.0							★			—
	Finishing Chipbreaker	**DCGT 070204 NFV NC2**	1	2	0.4	2.4		★	★	—	★	★	★	—		—
	L Low Resistance T Negative Land	**DCGW 070202 LT NC2**	1	2	0.2	2.6	—	—	—	—	—	★	—	—	—	—
		DCGW 070204 LT NC2			0.4	2.4	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**DCGW 070202 LS NC2**	1	2	0.2	2.6		★	★		—	—	★		—	—
		DCGW 070204 LS NC2			0.4	2.4		★	★		—	—	★		—	—
		DCGW 070208 LS NC2			0.8	2.0		★	★		—	—			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

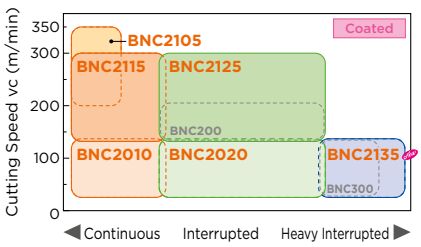
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

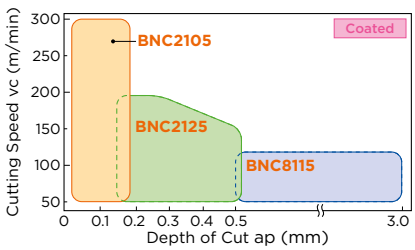
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

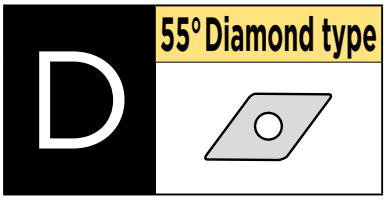


H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



DCG■11T3●● Uncoated

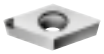
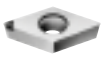
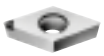
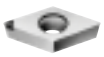
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders ☞C17, D32, D33, D43 Applicable Boring Bars ☞E13, E28 to E32

One-Use type / 7° Positive (With Hole)

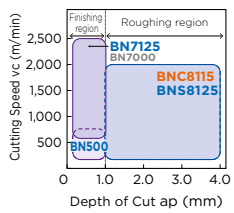
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON NCB100
	Standard	**DCGW 11T301 NU**	1	1	0.1	2.8											—	★
		DCGW 11T302 NU			0.2	2.6	★	★	★	★	★		★	▲			—	★
		DCGW 11T304 NU			0.4	2.4	★	★	★	★	★	★	★	▲			—	★
		DCGW 11T308 NU			0.8	2.0	★	★	★	★	★	★	★	▲			—	★
		DCGW 11T312 NU			1.2	2.0				★							—	
		DCGW 11T302 NU/10VP	10	1	0.2	2.6				★							—	—
		DCGW 11T304 NU/10VP			0.4	2.4				★							—	—
		DCGW 11T308 NU/10VP			0.8	2.0		★									—	—
		DCGW 11T312 NU/10VP			1.2	2.0											—	—
	L Low Resistance F Sharp Edge	**DCGW 11T302 LF NU**	1	1	0.2	2.6	—	—	—	—	—	—		▲			—	—
		DCGW 11T304 LF NU			0.4	2.4	—	—	—	—	—	—		▲			—	—
		DCGW 11T308 LF NU			0.8	2.0	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**DCGW 11T302 LT NU**	1	1	0.2	2.6	—		—	★	—	—	—	—	—	—	—	—
		DCGW 11T304 LT NU			0.4	2.4	—		—	★	—	—	—	—	—	—	—	—
		DCGW 11T308 LT NU			0.8	2.0	—		—	★	—	—	—	—	—	—	—	—
		DCGW 11T312 LT NU			1.2	2.0	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**DCGW 11T302 HS NU**	1	1	0.2	2.6	—	—	—	★	—	—					—	—
		DCGW 11T304 HS NU			0.4	2.4	—	—	—	★	—	—					—	—
		DCGW 11T308 HS NU			0.8	2.0	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

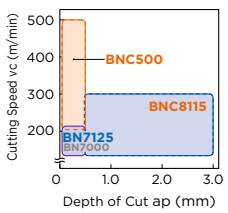
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

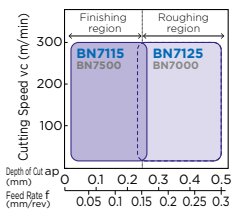
K Grey Cast Iron



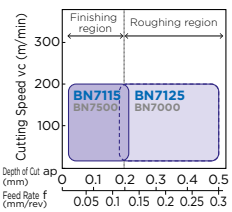
K Ductile Cast Iron



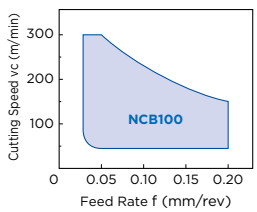
General Sintered Alloy



High-density Sintered Alloy

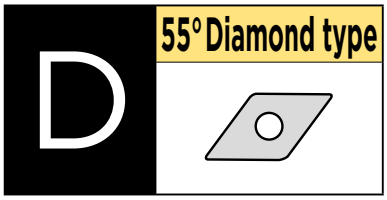


S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

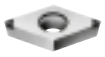
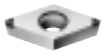
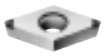
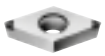
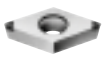
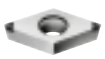
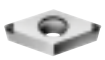
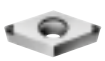
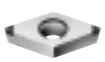
Recommended Application		BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
	K Cast Iron	●	○	●	●	✖	✖	
	S Exotic Alloy	●					●	●
	H Hardened Steel	●	●	●	✖			
	Sintered Components	●		●				

DCG■11T3●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

Applicable External Holders C17, D27, D28, D32, D33, D43 Applicable Boring Bars E13, E28 to E32

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**DCGW 11T301 NU2**	1	2	0.1	2.8										▲	—	
		DCGW 11T302 NU2			0.2	2.6							★	▲	★	▲	—	
		DCGW 11T304 NU2			0.4	2.4	★	★	★	★	★		★	▲	★	▲	—	
		DCGW 11T308 NU2			0.8	2.0	★	★	★	★	★		★	▲	★	▲	—	
		DCGW 11T302 NU2/10VP	10	2	0.2	2.6											—	—
		DCGW 11T304 NU2/10VP			0.4	2.4			★	★					★	▲	—	—
		DCGW 11T308 NU2/10VP			0.8	2.0				★							—	—
	Low Feed Wiper Insert	**DCGW 11T304 NU WG2***	1	2	0.4	2.3				★							—	
		DCGW 11T308 NU WG2*			0.8	2.0				★							—	
	High Feed Wiper Insert	**DCGW 11T304 NU WH2***	1	2	0.4	2.1				★							—	
		DCGW 11T308 NU WH2*			0.8	1.8				★							—	
	Finishing Chipbreaker	**DCGT 11T304 NFV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—
		DCGT 11T308 NFV NU2			0.8	2.0	—	—		★	—	—	—	—	—	—	—	—
	Light Cutting Chipbreaker	**DCGT 11T304 NLV NU2**	1	2	0.4	2.4	—	—		★	—	—	—	—	—	—	—	—
		DCGT 11T308 NLV NU2			0.8	2.0	—	—		★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**DCGW 11T304 HS NU2**	1	2	0.4	2.5								▲		▲	—	—
		DCGW 11T308 HS NU2			0.8	2.1								▲	★	▲	—	—
	L Low Resistance F Sharp Edge	**DCGW 11T302 LF NU2**	1	2	0.2	2.6	—	—	—	—	—	—	★	▲	★	▲	—	—
		DCGW 11T304 LF NU2			0.4	2.4	—	—	—	—	—	—	★	▲	★	▲	—	—
		DCGW 11T308 LF NU2			0.8	2.0	—	—	—	—	—	—	★	▲	★	▲	—	—
	L Low Resistance E With Honing	**DCGW 11T302 LE NU2**	1	2	0.2	2.6	—	—	—	—	—	—	★	—	★	▲	—	—
		DCGW 11T304 LE NU2			0.4	2.4	—	—	—	—	—	—	★	—	★	▲	—	—
		DCGW 11T308 LE NU2			0.8	2.0	—	—	—	—	—	—	★	—	★	▲	—	—
	L Low Resistance S Negative Land With Honing	**DCGW 11T302 LS NU2**	1	2	0.2	2.6	—	—	—	—	—	—	—	—	★	▲	—	—
		DCGW 11T304 LS NU2			0.4	2.4	—	—	—	—	—	—	—	—	★	▲	—	—
		DCGW 11T308 LS NU2			0.8	2.0	—	—	—	—	—	—	—	—	★	▲	—	—

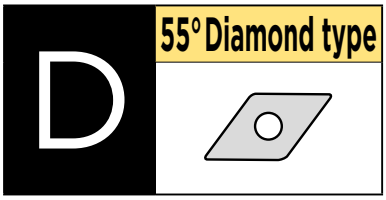
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.
*Use a holder with a cutting edge angle of 93°.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



DCG■11T3●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders C17, D27, D28, D32, D33, D43 | Applicable Boring Bars E13, E28 to E32

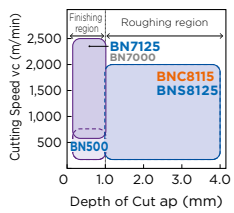
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**DCGW 11T302 NC2**	1	2	0.2	2.6		★	★		★	★	★	★	★	—
		DCGW 11T304 NC2			0.4	2.4	★	★	★	★	★	★	★	★	★	—
		DCGW 11T308 NC2			0.8	2.0	★	★	★	★	★	★	★	★	★	—
		DCGW 11T312 NC2			1.2	1.9		★	★							—
		DCGW1 11T304 NC2/10VP	10	2	0.4	2.4		★								—
	Low Feed Wiper Insert	**DCGW 11T304 NC WG2***	1	2	0.4	2.3		★	★		★	★	★			—
		DCGW 11T308 NC WG2*			0.8	2.0		★	★		★	★	★			—
	High Feed Wiper Insert	**DCGW 11T304 NC WH2***	1	2	0.4	2.0		★	★		★	★	★			—
		DCGW 11T308 NC WH2*			0.8	1.8		★	★		★	★	★			—
	Finishing Chipbreaker	**DCGT 11T304 NFV NC2**	1	2	0.4	2.4		★	★	—	★	★	★	—		—
		DCGT 11T308 NFV NC2			0.8	2.0		★	★	—	★	★	★	—		—
		DCGT 11T308 NFV NC2/10VP	10	2	0.8	2.0			★	—				—		—
	Light Cutting Chipbreaker	**DCGT 11T304 NLV NC2**	1	2	0.4	2.4		★	★	—	★	★	★	—		—
		DCGT 11T308 NLV NC2			0.8	2.0		★	★	—	★	★	★	—		—
	E High Efficiency Negative Land S With Honing	**DCGW 11T308 ES NC2**	1	2	0.8	2.1			★						—	—

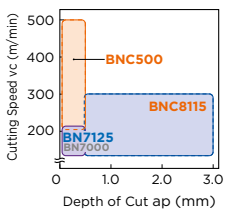
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Use a holder with a cutting edge angle of 93°.

SUMIBORON Application Range Map

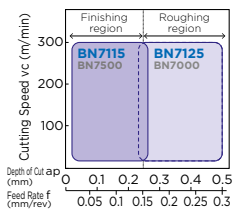
K Grey Cast Iron



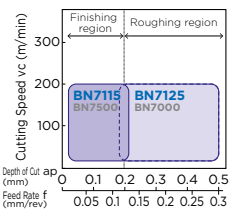
K Ductile Cast Iron



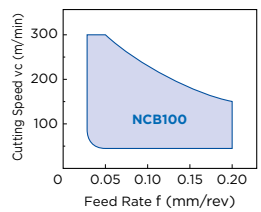
General Sintered Alloy



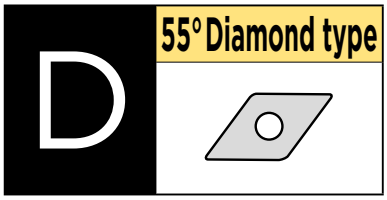
High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

DCG■11T3●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

Applicable External Holders ☞C17, D27, D28, D32, D33, D43 Applicable Boring Bars E13, E28 to E32

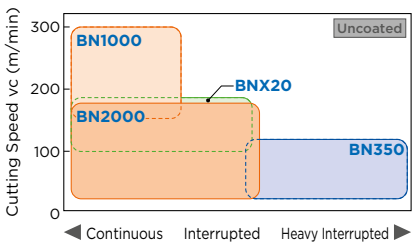
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**DCGW 11T302 LE NC2**	1	2	0.2	2.6	—	—	—	—	★	—	—	—	—	—
		DCGW 11T304 LE NC2			0.4	2.4	—	—	—	—	★	—	—	—	—	—
		DCGW 11T308 LE NC2			0.8	2.0	—	—	—	—	★	—	—	—	—	—
		DCGW 11T304 LE NC2/10VP	10	2	0.4	2.4	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**DCGW 11T302 LT NC2**	1	2	0.2	2.6	—	—	—	—	—	★	—	—	—	—
		DCGW 11T304 LT NC2			0.4	2.4	—	—	—	—	—	★	—	—	—	—
		DCGW 11T308 LT NC2			0.8	2.0	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**DCGW 11T302 LS NC2**	1	2	0.2	2.6		★	★		—	—	★		—	—
		DCGW 11T304 LS NC2			0.4	2.4	★	★	★	★	—	—	★	★	—	—
		DCGW 11T308 LS NC2			0.8	2.0	★	★	★	★	—	—	★	★	—	—
		DCGW 11T312 LS NC2			1.2	1.9		★	★		—	—				—
		DCGW 11T308 LS NC2/10VP	10	2	0.8	2.0					—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**DCGW 11T304 HS NC2**	1	2	0.4	2.4			★	★	★	★	★	★		—
		DCGW 11T308 HS NC2			0.8	2.0			★	★		★	★	★		—
		DCGW 11T308 HS NC2/10VP	10	2	0.8	2.0						★	★			—

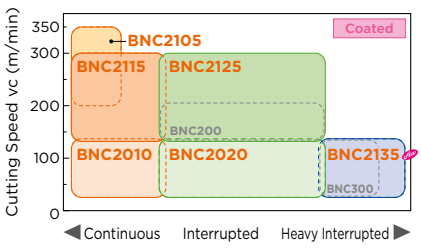
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

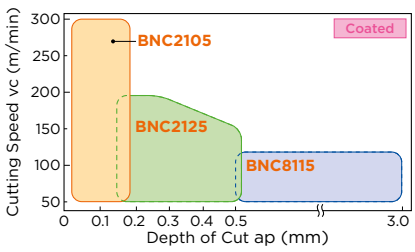
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

R Round type



RNGN●●●●●●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
	Thickness	3.18 to 4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders ☞L128

Negative type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	**RNGN 120400 B**	1	—	12.7							★	▲			—	—
	Full-top CBN (Standard)	**RNGN 150400 B**	1	—	15.88											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

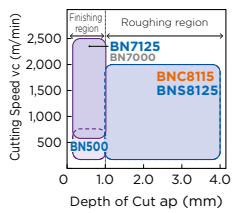
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	**Standard**	**RNGN 090300**	1	—	9.5	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**RNGN 090300 LF**	1	—	9.5	—	—	—	—	—	—	—	—	—	—		—
	**Standard**	**RNGN 120300**	1	—	12.7	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**RNGN 120300 LF**	1	—	12.7	—	—	—	—	—	—	—	—	—	—		—

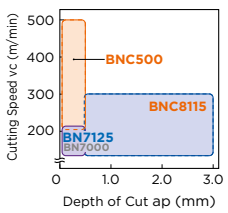
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

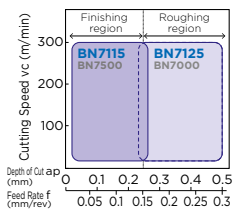
K Grey Cast Iron



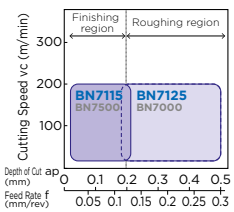
K Ductile Cast Iron



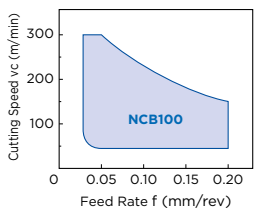
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

R Round type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application												
K Cast Iron						○	◔ ●				✖	
S Exotic Alloy							●				◔ ●	●
H Hardened Steel	○	◔	●	◔ ●	✖							
Sintered Components							◔ ●		●			

RNGN●●●●●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
	Thickness	3.18 to 4.76		

Applicable External Holders ☞L128

Solid type / Negative (Without Hole)

Uncoated SUMIBORON

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**RNGN 120400**	1	—	12.7	—	—	—	—	—	—	—	—	—	—	★	—

BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞L32, L33

Recommended Application												
K Cast Iron										●	✖	
S Exotic Alloy												
H Hardened Steel	○	●	◔ ●	✖	○	◔						
Sintered Components												

RNGN●●●●●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
	Thickness	3.18 to 4.76		

Applicable External Holders ☞L128

Solid type / Negative (Without Hole)

Coated SUMIBORON

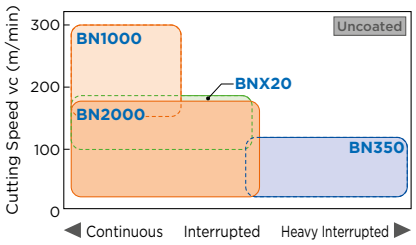
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**RNGN 090300**	1	—	9.5	—	—	—	—	—	—	—	—	—	★
	Standard	**RNGN 090300 B**	1	—	9.5	—	—	—	—	—	—	★	★	—	—
		RNGN 090300 B/10VP	10	—	9.5	—	—	—	—	—	—	★		—	—
	Standard	**RNGN 120300**	1	—	12.7	—	—	—	—	—	—	—	—	—	★
	Standard	**RNGN 120400**	1	—	12.7	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

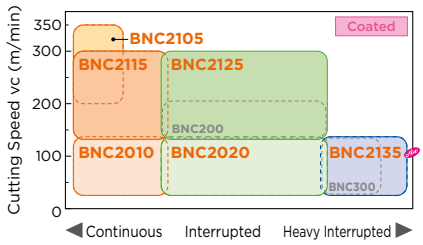
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

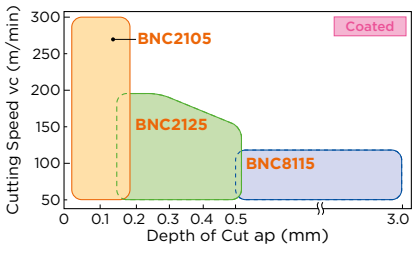
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)

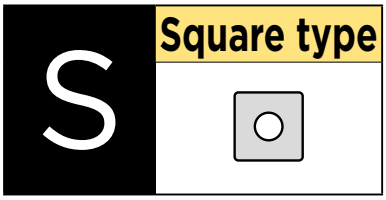


★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

S Square type



SN■A1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron	○	◕				✱	
	S Exotic Alloy		●				◕	●
	H Hardened Steel							
	Sintered Components		◕		●			

Uncoated SUMIBORON | BINDERLESS SUMIBORON

Applicable External Holders C22 to C28 | Applicable Boring Bars E39 to E41

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNMA 120404 NU**	1	1	0.4	2.5				★		★		▲			—	—
		SNMA 120408 NU			0.8	2.5		★	★	★	★	★		▲			—	—
		SNMA 120412 NU			1.2	2.5		★	★	★	★	★		▲			—	—
	Standard	**SNMA 120404 NU/10VP**	10	1	0.4	2.5				★							—	—
		SNMA 120408 NU/10VP			0.8	2.5		★		★		★					—	—
		SNMA 120412 NU/10VP			1.2	2.5		★		★	★						—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

Multi-Cornered One-Use type / Negative (With Hole)

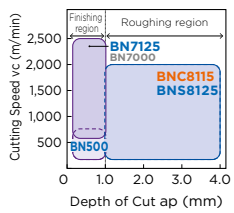
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGA 120404 NU2**	1	2	0.4	2.5		★		★			★	▲			—	
		SNGA 120408 NU2			0.8	2.5		★	★	★			★	▲			—	
		SNGA 120412 NU2			1.2	2.5		★	★	★			★	▲			—	
	Standard	**SNGA 120404 NU2/10VP**	10	2	0.4	2.5		★		★							—	—
		SNGA 120408 NU2/10VP			0.8	2.5		★		★							—	—
		SNGA 120412 NU2/10VP			1.2	2.5		★		★							—	—
	L Low Resistance T Negative Land	**SNGA 120404 LT NU2**	1	2	0.4	2.5	—		—	★	—	—	—	—	—	—	—	—
		SNGA 120408 LT NU2			0.8	2.5	—		—	★	—	—	—	—	—	—	—	—
		SNGA 120412 LT NU2			1.2	2.5	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**SNGA 120404 HS NU2**	1	2	0.4	2.5	—	—	—	★	—	—					—	—
		SNGA 120408 HS NU2			0.8	2.5	—	—	—	★	—	—					—	—
		SNGA 120412 HS NU2			1.2	2.5	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

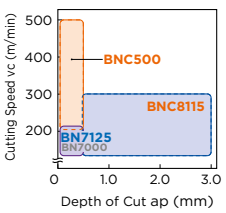
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

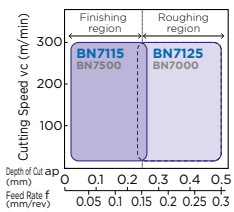
K Grey Cast Iron



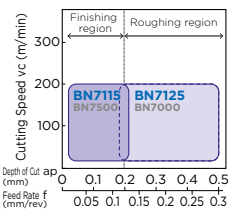
K Ductile Cast Iron



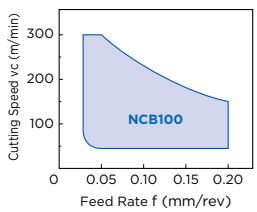
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

S Square type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
		Uncoated SUMIBORON										BINDERLESS SUMIBORON	
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

SNA1204 Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C22 to C28 | Applicable Boring Bars E39 to E41

Negative type (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNMA 120404**	1	1	0.4	4.9											—	—
		SNMA 120408			0.8	4.9		★		★				▲			—	—
		SNMA 120412			1.2	4.9		★		★				▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

Solid type / Negative (With Hole)

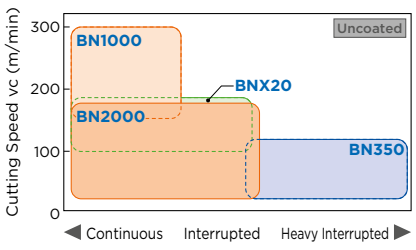
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGA 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	★	
		SNGA 120412			1.2	12.7	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

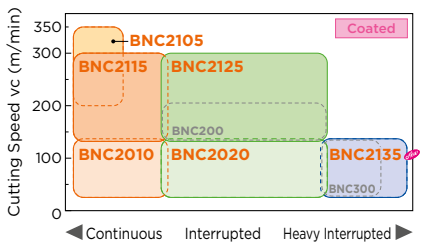
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

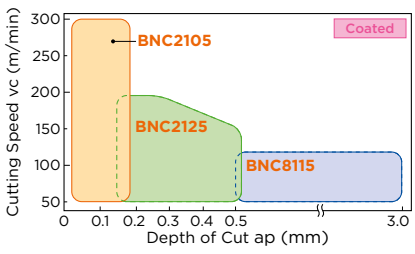
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

S Square type



SNGA1204●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
	K	Cast Iron
	S	Exotic Alloy
	H	Hardened Steel
		Sintered Components

Applicable External Holders C22 to C28 | Applicable Boring Bars E39 to E41

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGA 120408 NC2**	1	2	0.8	2.4									★	—
		SNGA 120412 NC2			1.2	2.4									★	—
	H Strong Edge S Negative Land With Honing	**SNGA 120412 HS NC2**	1	2	1.2	2.4							★	★		
	Standard	**SNGA 120404 NC4**	1	4	0.4	2.4		★	★	★	★	★	★	★		—
		SNGA 120408 NC4			0.8	2.4		★	★		★	★				—
		SNGA 120412 NC4			1.2	2.4		★	★		★	★	★			—
	H Strong Edge S Negative Land With Honing	**SNGA 120412 HS NC4**	1	4	1.2	2.4				★						

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

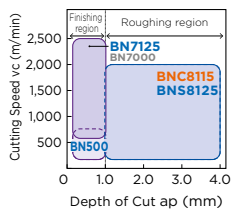
Solid Insert / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGA 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	★
		SNGA 120412			1.2	12.7	—	—	—	—	—	—	—	—	—	★

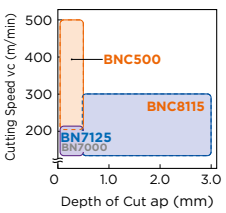
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

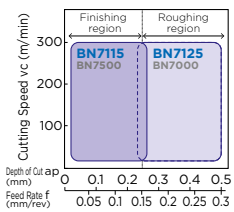
K Grey Cast Iron



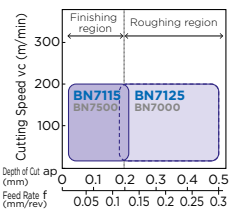
K Ductile Cast Iron



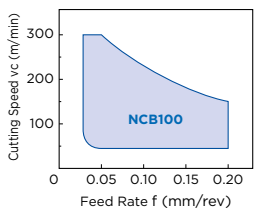
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S Square type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

SNGN090308 Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				◕	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	◕							
	Sintered Components							◕		●			

Applicable External Holders ☞ L126

Negative type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	**SNGN 090308 B**	1	4	0.8	9.5							★	▲			—	—
		SNGN 090312 B			1.2	9.5											—	—
		SNGN 090316 B			1.6	9.5											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

Solid type / Negative (Without Hole)

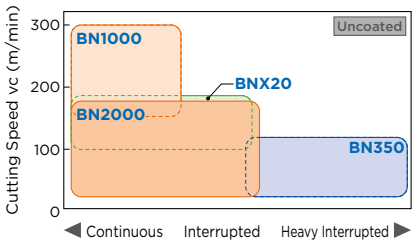
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 090308**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—	★	—
		SNGN 090312			1.2	9.5	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**SNGN 090308 LF**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—		—
		SNGN 090312 LF			1.2	9.5	—	—	—	—	—	—	—	—	—	—		—
	Wiper Insert	**SNEN 090308 W**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge Wiper Insert	**SNEN 090308 LFW**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

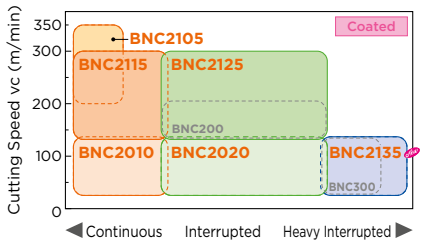
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

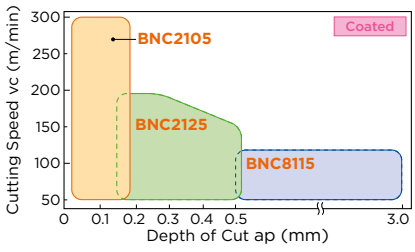
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

S Square type



SN■N0903●● Coated

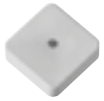
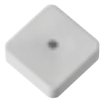
Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	● ✱
S	Exotic Alloy	
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

Applicable External Holders ☞ L126

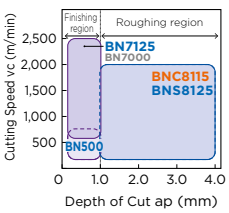
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGN 090308**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	★
		SNGN 090312			1.2	9.5	—	—	—	—	—	—	—	—	—	★
	Wiper Insert	**SNEN 090308 W**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	★

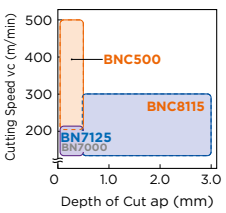
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

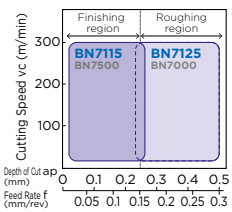
K Grey Cast Iron



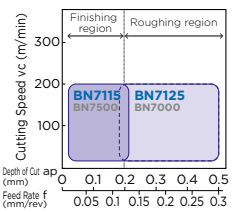
K Ductile Cast Iron



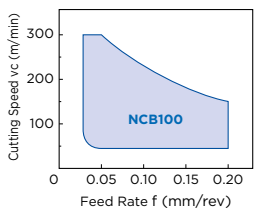
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S Square type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

SNGN1203●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders L126

Solid type / Negative (Without Hole)

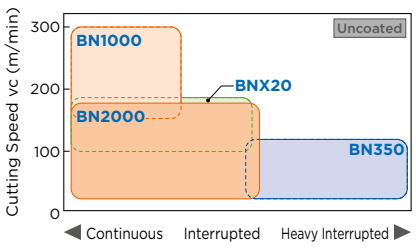
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 120308**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	★	—
		SNGN 120312			1.2	12.7	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**SNGN 120308 LF**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—		—
		SNGN 120312 LF			1.2	12.7	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

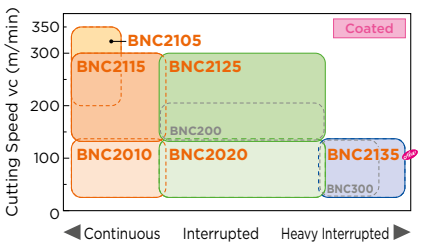
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

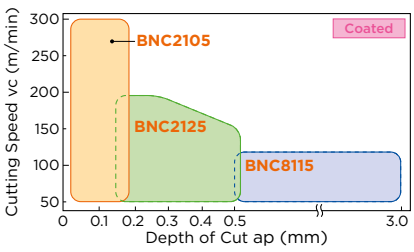
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S Square type

SNGN1203●●

Coated

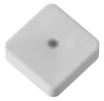
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
		Coated SUMIBORON									
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Applicable External Holders L126

Solid type / Negative (Without Hole)

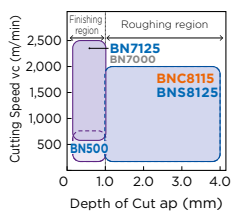
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGN 120308**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	★
		SNGN 120312			1.2	12.7	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

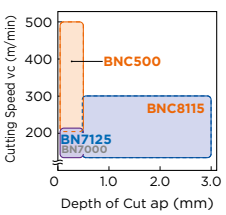
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

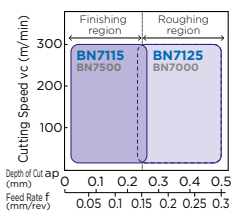
K Grey Cast Iron



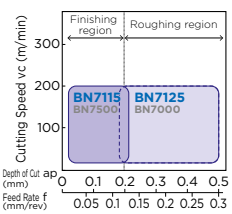
K Ductile Cast Iron



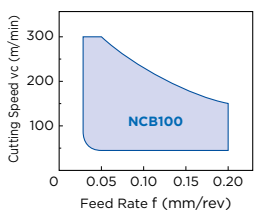
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S Square type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application											
K	Cast Iron						○	●			✱	
S	Exotic Alloy							●			●	●
H	Hardened Steel	○	◔	●	●	✱						
	Sintered Components							●		●		

SNG■1204●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L126

Negative type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**SNGN 120408**	1	1	0.8	4.8		★		★		★					—	—
		SNGN 120412			1.2	4.8		★		★							—	—
	Full-top CBN (Standard)	**SNGN 120408 B**	1	4	0.8	12.7	—		—	—			—		—	—	—	—
		SNGN 120412 B			1.2	12.7	—		—	—			—		—	—	—	—
		SNGN 120416 B			1.6	12.7	—		—	—			—		—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGX 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—		—
		SNGX 120412			1.2	12.7	—	—	—	—	—	—	—	—	—	—	★	—
		SNGX 120416			1.6	12.7	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

Solid type / Negative (Without Hole)

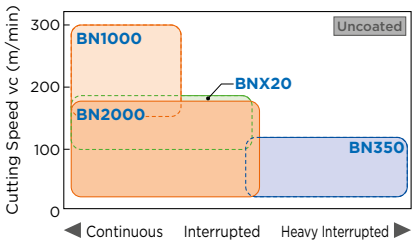
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	★	—
		SNGN 120412			1.2	12.7	—	—	—	—	—	—	—	—	—	—	★	—
		SNGN 120416			1.6	12.7	—	—	—	—	—	—	—	—	—	—	★	—
		SNGN 120420			2.0	12.7	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

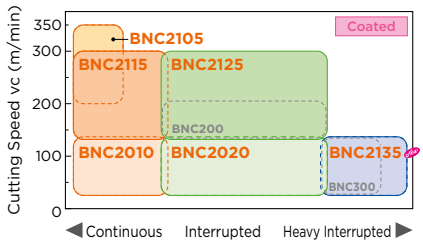
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

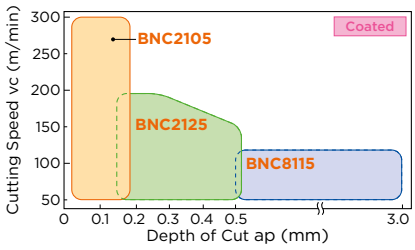
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

S Square type



SNG■1204●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L126

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

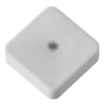
Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGX 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	★
		SNGX 120412			1.2	12.7	—	—	—	—	—	—	—	—	—	★
		SNGX 120416			1.6	12.7	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

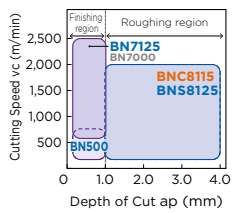
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGN 120408**	1	8	0.8	4.8	—	—	—	—	—	—	—	—	—	★
		SNGN 120412			1.2	4.8	—	—	—	—	—	—	—	—	—	★
		SNGN 120416			1.6	12.7	—	—	—	—	—	—	—	—	—	★
		SNGN 120420			2.0	12.7	—	—	—	—	—	—	—	—	—	★

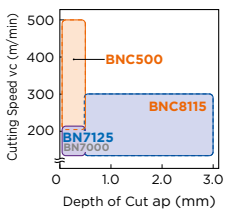
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

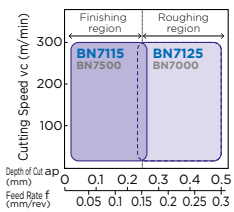
K Grey Cast Iron



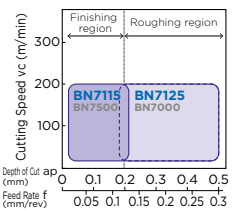
K Ductile Cast Iron



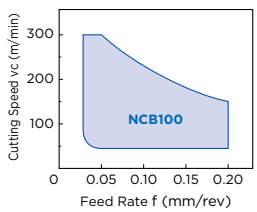
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

S Square type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

SPGN0903●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable Boring Bars E37

One-Use type / 11° Positive (Without Hole)

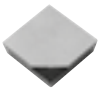
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SPGN 090304 NU**	1	1	0.4	2.3		★		★				▲			—	
		SPGN 090308 NU			0.8	2.3		★		★		★		▲			—	
		SPGN 090304 NU/10VP	10	1	0.4	2.3		★		★							—	—
		SPGN 090308 NU/10VP			0.8	2.3		★		★							—	—
	L Low Resistance T Negative Land	**SPGN 090304 LT NU**	1	1	0.4	2.3	—		—	★	—	—	—	—	—	—	—	—
		SPGN 090308 LT NU			0.8	2.3	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**SPGN 090304 HS NU**	1	1	0.4	2.3	—	—	—	★	—	—					—	—
		SPGN 090308 HS NU			0.8	2.3	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

11° Positive type (Without Hole)

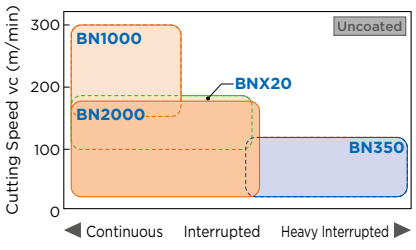
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SPGN 090304**	1	1	0.4	4.8								▲			—	—
		SPGN 090308			0.8	4.8								▲			—	—
		SPGN 090312			1.2	4.8											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

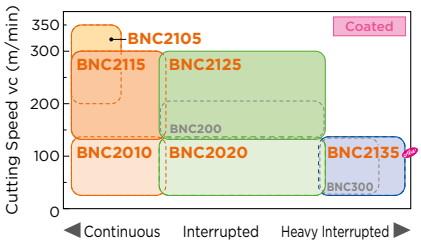
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

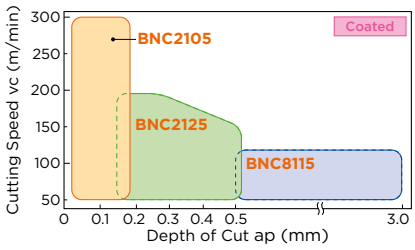
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

S Square type

SPGN1203●● Uncoated

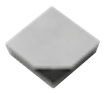
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			
		Uncoated SUMIBORON											BINDERLESS SUMIBORON

Applicable External Holders ☞ C29, C30

11° Positive type (Without Hole)

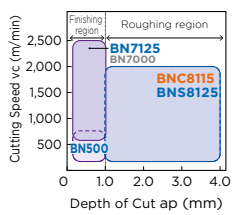
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**SPGN 120308**	1	1	0.8	4.8
		SPGN 120312			1.2	4.8

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

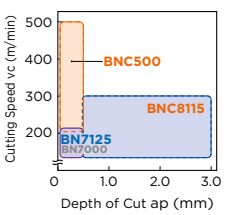
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

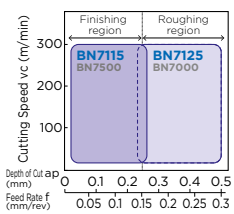
K Grey Cast Iron



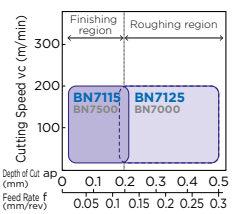
K Ductile Cast Iron



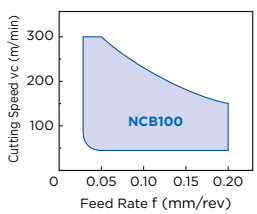
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◉				✖	
S	Exotic Alloy							●				◉	●
H	Hardened Steel	○	◔	●	◉	✖							
	Sintered Components							◉		●			

TN■■1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C31 to C35, D29, D45 — Applicable Boring Bars E15, E49 to E51

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNMA 160401 NU**	1	1	0.1	2.5				★							—	—
		TNMA 160402 NU			0.2	2.3				★							—	—
		TNMA 160404 NU			0.4	2.2	★	★	★	★	★	★		▲			—	—
		TNMA 160408 NU			0.8	1.9	★	★	★	★	★	★		▲			—	—
		TNMA 160412 NU			1.2	1.9	★	★		★		★		▲			—	—
		TNMA 160401 T NU	10	1	0.1	2.5											—	—
		TNMA 160402 T NU			0.2	2.3											—	—
		TNMA 160404 T NU			0.4	2.2	★	★	★	★	★	★					—	—
		TNMA 160408 T NU			0.8	1.9	★	★	★	★	★	★					—	—
		TNMA 160412 T NU			1.2	1.9		★									—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / Negative (With Hole)

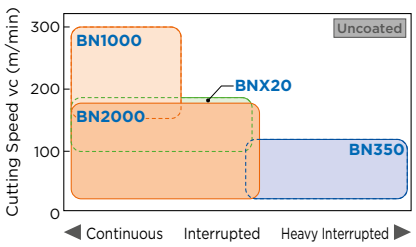
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGA 160404 NU3**	1	3	0.4	2.2		★	★	★	★		★	▲	★	▲	—	
		TNGA 160408 NU3			0.8	1.9		★	★	★	★		★	▲	★	▲	—	
		TNGA 160412 NU3			1.2	1.9		★		★	★		★	▲	★	▲	—	
		TNGA 160404 T NU3	10	3	0.4	2.2		★		★			★	▲	★	▲	—	—
		TNGA 160408 T NU3			0.8	1.9		★		★	★		★	▲			—	—
		TNGA 160412 T NU3			1.2	1.9		★		★							—	—
	Light Cutting Chipbreaker	**TNGM 160404 NLV NU3**	1	3	0.4	2.2	—	—		★	—	—	—	—	—	—	—	—
		TNGM 160408 NLV NU3			0.8	1.9	—	—		★	—	—	—	—	—	—	—	—
		TNGM 160412 NLV NU3			1.2	1.9	—	—		★	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

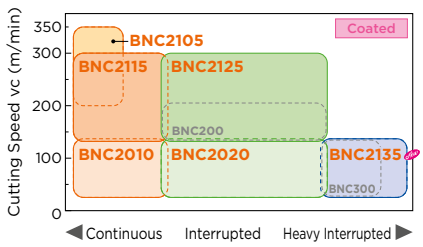
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

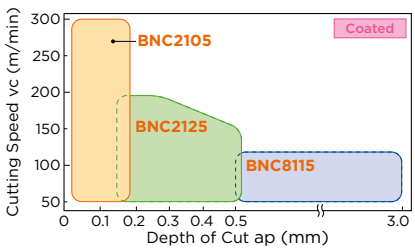
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TN■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders C31 to C35, D29, D45

Applicable Boring Bars E15, E47 to E51

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	L Low Resistance F Sharp Edge	**TNGA 160404 LF NU3**	1	3	0.4	2.2	—	—	—	—	—	—	★	▲	★	▲	—	—
		TNGA 160408 LF NU3			0.8	1.9	—	—	—	—	—	—	★	▲	★	▲	—	—
		TNGA 160412 LF NU3			1.2	1.9	—	—	—	—	—	—					—	—
	L Low Resistance E With Honing	**TNGA 160404 LE NU3**	1	3	0.4	2.2	—	—	—	—	—	—	★	—	★	▲	—	—
		TNGA 160408 LE NU3			0.8	1.9	—	—	—	—	—	—	★	—	★	▲	—	—
	L Low Resistance T Negative Land	**TNGA 160404 LT NU3**	1	3	0.4	2.2	—		—	★	—	—	—	—	—	—	—	—
		TNGA 160408 LT NU3			0.8	1.9	—		—	★	—	—	—	—	—	—	—	—
		TNGA 160412 LT NU3			1.2	1.9	—		—	★	—	—	—	—	—	—	—	—
	L Low Resistance S Negative Land With Honing	**TNGA 160404 LS NU3**	1	3	0.4	2.2	—	—	—	—	—	—	—	—	★	▲	—	—
		TNGA 160408 LS NU3			0.8	1.9	—	—	—	—	—	—	—	—		▲	—	—
	H Strong Edge T Negative Land	**TNGA 160404 HT NU3**	1	3	0.4	2.2	—	—	—	—	★	—	—	—	—	—	—	—
		TNGA 160408 HT NU3			0.8	1.9	—	—	—	—	★	—	—	—	—	—	—	—
		TNGA 160412 HT NU3			1.2	1.9	—	—	—	—	★	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TNGA 160404 HS NU3**	1	3	0.4	2.2	—	—	—	★	—	—	★	▲	★	▲	—	—
		TNGA 160408 HS NU3			0.8	1.9	—	—	—	★	—	—	★	▲		▲	—	—
		TNGA 160412 HS NU3			1.2	1.9	—	—	—	★	—	—					—	—
	U Strong Edge S Negative Land With Honing	**TNGA 160404 US NU3**	1	3	0.4	2.2	—	—	—	—	—	—	—	—	★	—	—	—

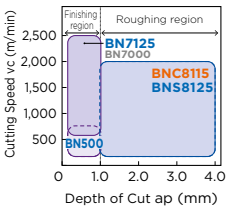
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

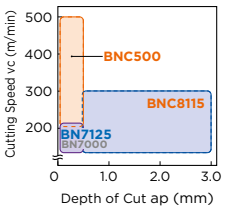
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

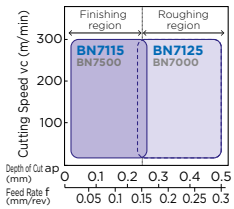
K Grey Cast Iron



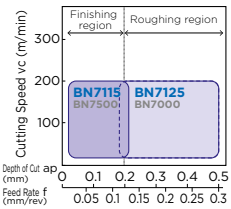
K Ductile Cast Iron



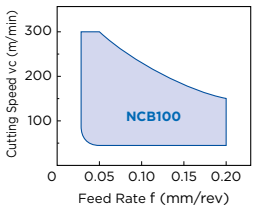
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item

▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◉				✖	
S	Exotic Alloy						●					◉	●
H	Hardened Steel	○	◔	●	◉	✖							
	Sintered Components							◉		●			

TN■■1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C31 to C37, D29, D45 | Applicable Boring Bars E15, E49 to E51

Negative type (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNMA 160402**	1	1	0.2	3.6		★		★							—	—
		TNMA 160404			0.4	3.5		★		★							—	—
		TNMA 160408			0.8	3.2		★		★		★		▲			—	—
		TNMA 160412			1.2	2.9		★		★		★		▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

Solid type / Negative (With Hole)

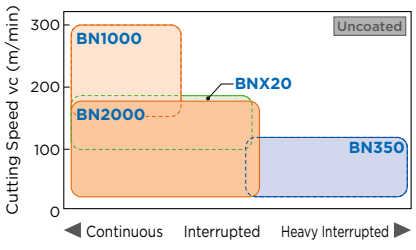
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGA 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	—	★	—
		TNGA 160412			1.2	15.7	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

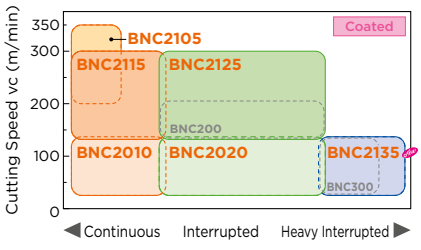
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

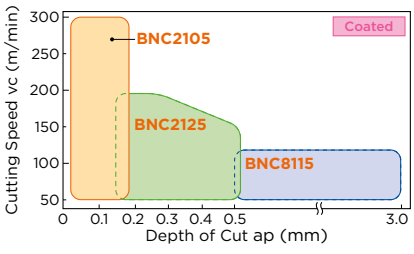
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TNG■1604●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	● ✱
S	Exotic Alloy	
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

Applicable External Holders ☞C31 to C37, D29, D45 Applicable Boring Bars ☞E15, E49 to E51

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TNGA 160404 NC3**	1	3	0.4	2.2			★		★	★	★			—
		TNGA 160408 NC3			0.8	1.9			★		★	★	★			—
		TNGA 160412 NC3			1.2	1.9	★		★		★	★				—
		TNGA 160416 NC3*			1.6	3.3					★	★	★	★		—
		TNGA 160420 NC3*			2.0	3.0					★	★	★	★		—
		TNGA 160424 NC3*			2.4	2.7					★	★	★	★		—
	Standard	**TNGA 160402 NC6**	1	6	0.2	2.3		★	★		★	★				—
		TNGA 160404 NC6			0.4	2.2	★	★	★	★	★	★	★	★	★	—
		TNGA 160408 NC6			0.8	1.9	★	★	★	★	★	★	★	★	★	—
		TNGA 160412 NC6			1.2	1.9		★	★	★	★	★	★	★	★	—
		TNGA 160416 NC6*			1.6	3.3		★	★	★	★	★	★	★		—
		TNGA 160420 NC6*			2.0	3.0		★	★	★	★	★	★	★		—
		TNGA 160424 NC6*			2.4	2.7		★	★	★	★	★	★	★		—
	Finishing Chipbreaker	**TNGG 160404 NFV NC6**	1	6	0.4	2.2		★	★	—	★	★	★	—		—
		TNGG 160408 NFV NC6			0.8	1.9		★	★	—	★	★	★	—		—
		TNGG 160412 NFV NC6			1.2	1.9		★	★	—	★	★	★	—		—
	Light Cutting Chipbreaker	**TNGG 160404 NLV NC6**	1	6	0.4	2.2		★	★	—	★	★	★	—		—
		TNGG 160408 NLV NC6			0.8	1.9		★	★	—	★	★	★	—		—
		TNGG 160412 NLV NC6			1.2	1.9		★	★	—	★	★	★	—		—
	Carburised Layer Removal Chipbreaker	**TNGG 160404 NSV NC6**	1	6	0.4	2.2				—				—		—
		TNGG 160408 NSV NC6			0.8	1.9		★	★	—	★	★	★	—		—
		TNGG 160412 NSV NC6			1.2	1.9		★	★	—	★	★	★	—		—
	L Low Resistance E With Honing	**TNGA 160404 LE NC3**	1	3	0.4	2.2	—	—	—	—	★	—	—	—	—	—
		TNGA 160408 LE NC3			0.8	1.9	—	—	—	—	★	—	—	—	—	—
		TNGA 160412 LE NC3			1.2	1.9	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**TNGA 160402 LT NC3**	1	3	0.2	2.3	—	—	—	—	—	★	—	—	—	—
		TNGA 160404 LT NC3			0.4	2.2	—	—	—	—	—	★	—	—	—	—
		TNGA 160408 LT NC3			0.8	1.9	—	—	—	—	—	★	—	—	—	—
		TNGA 160412 LT NC3			1.2	1.9	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**TNGA 160404 LS NC3**	1	3	0.4	2.2							★		—	—
		TNGA 160408 LS NC3			0.8	1.9							★			
	H Strong Edge S Negative Land With Honing	**TNGA 160404 HS NC3**	1	3	0.4	2.2							★	★		—
		TNGA 160408 HS NC3			0.8	1.9						★	★	★		
		TNGA 160412 HS NC3			1.2	1.9			★		★	★	★	★		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞L32, L33

*For use with the SUMIBORON Special Holders for High-Efficiency Machining shown on page L130.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

TNG■1604●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders ☞C31 to C37, D29, D45
Applicable Boring Bars ☞E15, E49 to E51

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance S Negative Land With Honing	**TNGA 160402 LS NC3**	1	3	0.2	2.3			★		—	—		—	—	
		TNGA 160404 LS NC3			0.4	2.2	★	★	★	★	—	—		★	—	
		TNGA 160408 LS NC3			0.8	1.9	★	★	★	★	—	—		★	—	
		TNGA 160412 LS NC3			1.2	1.9		★	★	★	—	—		★	—	
	L Low Resistance S Negative Land With Honing	**TNGA 160404 LS NC6**	1	6	0.4	2.2	—	—	—		—	—	★		—	
		TNGA 160408 LS NC6			0.8	1.9	—	—	—		—	—	★		—	
		TNGA 160412 LS NC6			1.2	1.9	—	—	—		—	—	★		—	
	H Strong Edge S Negative Land With Honing	**TNGA 160404 HS NC6**	1	6	0.4	2.2		★	★	★	★	★	★	★	★	—
		TNGA 160408 HS NC6			0.8	1.9		★	★	★	★	★	★	★	★	—
		TNGA 160412 HS NC6			1.2	1.9		★	★	★	★	★	★	★	★	—
	E High Efficiency S Negative Land With Honing	**TNGA 160404 ES NC6**	1	6	0.4	2.2						★	—	—	—	—
		TNGA 160408 ES NC6			0.8	1.9						★	—	—	—	—
		TNGA 160412 ES NC6			1.2	1.9						★	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞L32, L33

Solid type / Negative (Without Hole)

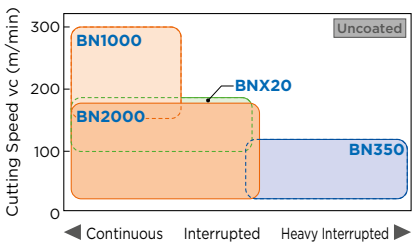
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TNGA 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	★
		TNGA 160412			1.2	15.7	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

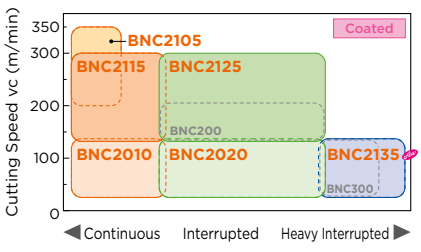
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

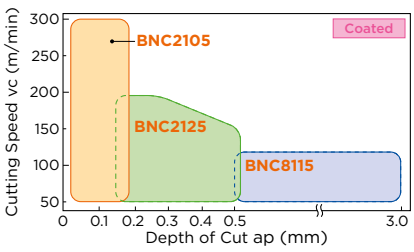
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation | General Machining ● 1st Recommendation ○ 2nd Recommendation | Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

TNMA2204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C32 to C37 | Applicable Boring Bars E49, E51

Recommended Application

K	Cast Iron						○	●			✱	
S	Exotic Alloy							●			●	●
H	Hardened Steel	○	○	●	●	✱						
	Sintered Components							●		●		

Negative type (With Hole)

Uncoated SUMIBORON (BINDERLESS SUMIBORON)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNMA 220408**	1	1	0.8	3.2		★		★							—	—
		TNMA 220412			1.2	2.9				★							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

TNGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L126

Recommended Application

K	Cast Iron						○	●			✱	
S	Exotic Alloy							●			●	●
H	Hardened Steel	○	○	●	●	✱						
	Sintered Components							●		●		

Solid type / Negative (Without Hole)

Uncoated SUMIBORON (BINDERLESS SUMIBORON)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGN 110308**	1	6	0.8	9.8	—	—	—	—	—	—	—	—	—	—	★	—
		TNGN 110312			1.2	9.2	—	—	—	—	—	—	—	—	—	—	★	—
	L Low Resistance F Sharp Edge	**TNGN 110308 LF**	1	6	0.8	9.8	—	—	—	—	—	—	—	—	—	—		—
		TNGN 110312 LF			1.2	9.2	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

TNGN1103●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L126

Recommended Application

K	Cast Iron										●	✱
S	Exotic Alloy											
H	Hardened Steel	○	●	●	✱	○	○					
	Sintered Components											

Solid type / Negative (Without Hole)

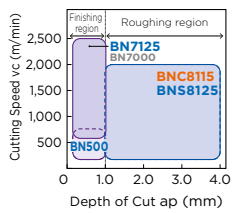
Coated SUMIBORON

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TNGN 110308**	1	6	0.8	9.8	—	—	—	—	—	—	—	—	—	★
		TNGN 110312			1.2	9.2	—	—	—	—	—	—	—	—	—	★

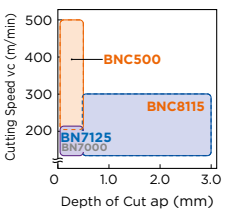
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

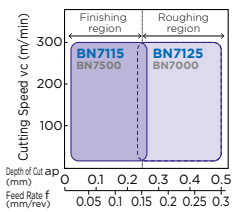
K Grey Cast Iron



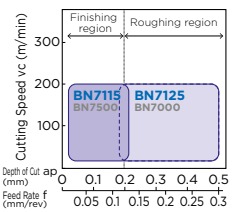
K Ductile Cast Iron



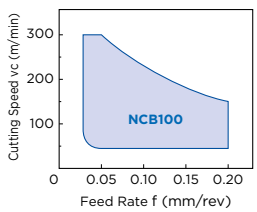
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application												
K Cast Iron						○	●				✱	
S Exotic Alloy							●				●	●
H Hardened Steel	○	◔	●	●	✱							
Sintered Components							●		●			

TNGN1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L126

Uncoated SUMIBORON

BINDERLESS SUMIBORON

Negative type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGN 160404**	1	1	0.4	3.5		★		★							—	—
		TNGN 160408			0.8	3.2		★		★							—	—
		TNGN 160412			1.2	2.9				★							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGN 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	—	★	—
		TNGN 160412			1.2	14.8	—	—	—	—	—	—	—	—	—	—	★	—
		TNGN 160416			1.6	14.2	—	—	—	—	—	—	—	—	—	—	★	—
		TNGN 160420			2.0	13.6	—	—	—	—	—	—	—	—	—	—	★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

TNGN1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L126

Recommended Application												
K Cast Iron										●	✱	
S Exotic Alloy												
H Hardened Steel	○	●	●	✱	○	◔						
Sintered Components												

Coated SUMIBORON

Solid type / Negative (Without Hole)

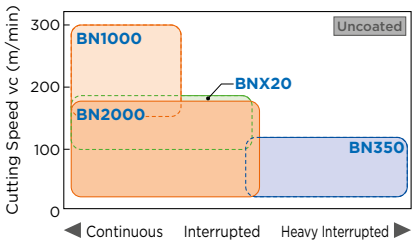
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TNGN 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	★
		TNGN 160412			1.2	14.8	—	—	—	—	—	—	—	—	—	★
		TNGN 160416			1.6	14.2	—	—	—	—	—	—	—	—	—	★
		TNGN 160420			2.0	13.6	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

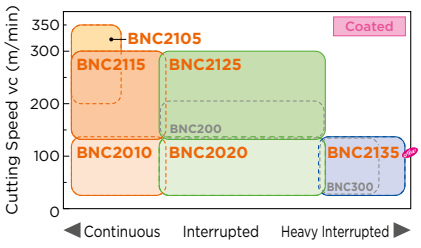
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

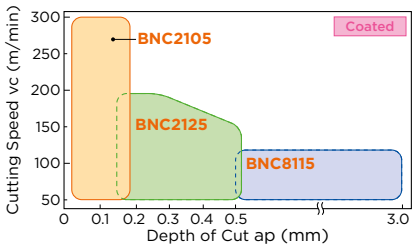
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



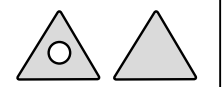
H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TBEW0601●● Uncoated

Dimensions (mm)	Inscribed Circle	3.97	Hole Dia.	2.2
	Thickness	1.59		

Applicable Boring Bars E44, E46

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**TBEW 060102 LF NU**	1	1	0.2	2.1	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**TBEW 060102 LT NU**	1	1	0.2	2.1	—	★	—		—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

TBGN0601●● Uncoated

Dimensions (mm)	Inscribed Circle	3.97	Hole Dia.	-
	Thickness	1.59		

Applicable Boring Bars E82

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

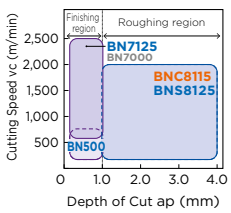
5° Positive type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	**TBGN 060102 B**	1	3	0.2	6.5		★		★							—	—
		TBGN 060104 B			0.4	6.3	★	★		★	★	★	★	▲			—	—
		TBGN 060108 B			0.8	5.7		★		★	★	★	★	▲			—	—
	Full-top CBN (Emphasis on Edge Sharpness)	**TBGN 060102 B STN**	1	3	0.2	6.5	—	★	—	—	—	—	—	—	—	—	—	—
		TBGN 060104 B STN			0.4	6.3	—	★	—	—	—	—	—	—	—	—	—	—
		TBGN 060108 B STN			0.8	5.7	—	★	—	—	—	—	—	—	—	—	—	—

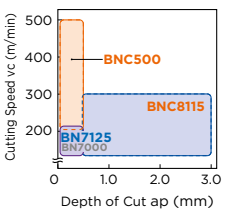
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

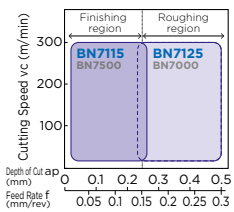
K Grey Cast Iron



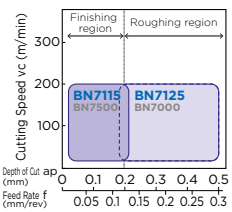
K Ductile Cast Iron



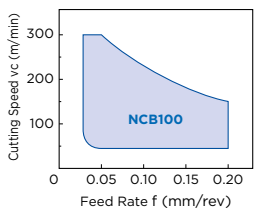
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TCGW●●●●●● Coated

Dimensions (mm)

0902__	Inscribed Circle	5.56	Hole Dia.	2.5
	Thickness	2.38		
1102__	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		
16T3__	Inscribed Circle	9.525	Hole Dia.	4.3
	Thickness	3.97		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

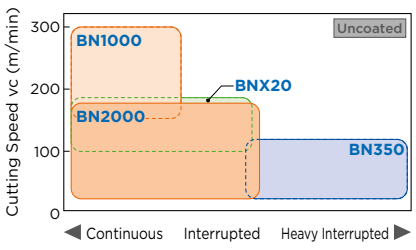
Coated SUMIBORON

One-Use type / 7° Positive (With Hole)

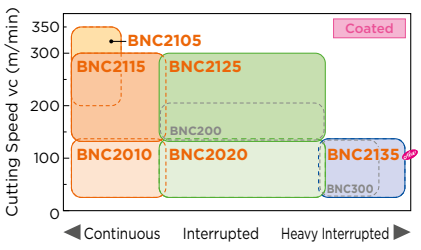
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TCGW 090204 NC**	1	1	0.4	2.2			★			★	★			
		TCGW 090208 NC			0.8	1.9			★			★	★			
	Standard	**TCGW 110202 NC**	1	1	0.2	2.4						★	★			
		TCGW 110204 NC			0.4	2.3	★		★			★	★		★	
		TCGW 110208 NC			0.8	2.0	★	★	★			★	★			
	Standard	**TCGW 16T304 NC3**	1	3	0.4	2.3						★	★			
		TCGW 16T308 NC3			0.8	2.0						★	★			
		TCGW 16T308 NC3 / 10VP	10	3	0.8	2.0						★				

SUMIBORON Application Range Map

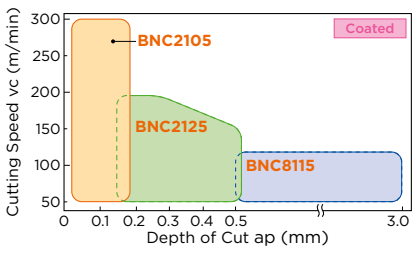
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



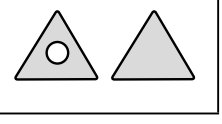
H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TCGW●●●●●● Uncoated

Dimensions (mm)				
0902_ _	Inscribed Circle	5.56	Hole Dia.	2.5
	Thickness	2.38		
1102_ _	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		
16T3_ _	Inscribed Circle	9.525	Hole Dia.	4.3
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

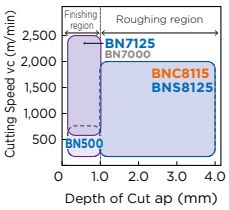
Uncoated SUMIBORON | BINDERLESS SUMIBORON

One-Use type / 7° Positive (With Hole)

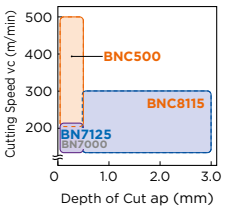
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TCGW 090204 NU**	1	1	0.4	2.2							★	▲				
		TCGW 090208 NU			0.8	1.9							★					
	Standard	**TCGW 110202 NU**	1	1	0.2	2.4	★	★					★					
		TCGW 110204 NU			0.4	2.3	★	★	★	★		★	★	▲				
		TCGW 110208 NU			0.8	2.0	★						★	▲				
	Standard	**TCGW 16T304 NU**	1	1	0.4	2.3		★				★	★	▲				
		TCGW 16T308 NU			0.8	2.0		★					★	▲				

SUMIBORON Application Range Map

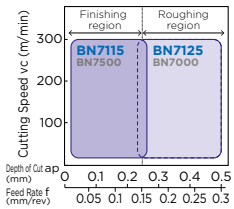
K Grey Cast Iron



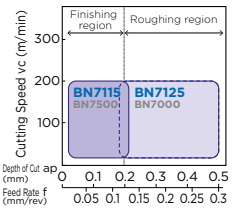
K Ductile Cast Iron



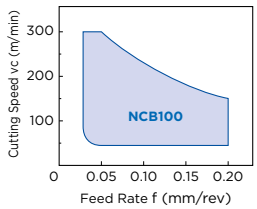
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✱	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	✱							
	Sintered Components							●		●			

TPGW0802●● Uncoated

Dimensions (mm)	Inscribed Circle	4.76	Hole Dia.	2.4
	Thickness	2.38		

Applicable Boring Bars E44 to E47

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 080202 NU**	1	1	0.2	2.4		★	★	★				▲			—	
		TPGW 080204 NU			0.4	2.2	★	★	★	★				▲			—	
		TPGW 080208 NU			0.8	1.9				★				▲			—	
	Standard	**TPGW 080202 T NU**	10	1	0.2	2.4				★							—	—
		TPGW 080204 T NU			0.4	2.2	★		★	★							—	—
		TPGW 080208 T NU			0.8	1.9											—	—
	L Low Resistance F Sharp Edge	**TPGW 080202 LF NU**	1	1	0.2	2.4	—	—	—	—	—	—					—	—
		TPGW 080204 LF NU			0.4	2.2	—	—	—	—	—	—		▲			—	—
		TPGW 080208 LF NU			0.8	1.9	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**TPGW 080202 LT NU**	1	1	0.2	2.4	—		—	★	—	—	—	—	—	—	—	—
		TPGW 080204 LT NU			0.4	2.2	—		—	★	—	—	—	—	—	—	—	—
		TPGW 080208 LT NU			0.8	1.9	—		—		—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TPGW 080202 HS NU**	1	1	0.2	2.4	—	—	—	★	—	—					—	—
		TPGW 080204 HS NU			0.4	2.2	—	—	—	★	—	—					—	—
		TPGW 080208 HS NU			0.8	1.9	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / 11° Positive (With Hole)

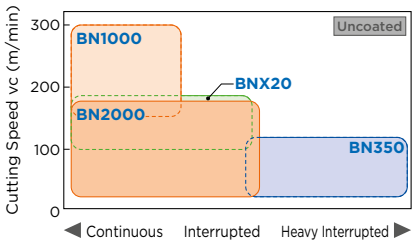
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 080202 NU3**	1	3	0.2	2.4							★					
		TPGW 080204 NU3			0.4	2.2							★					
	L Low Resistance F Sharp Edge	**TPGW 080204 LF NU3**	1	3	0.4	2.2	—	—	—	—	—	—	★					—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

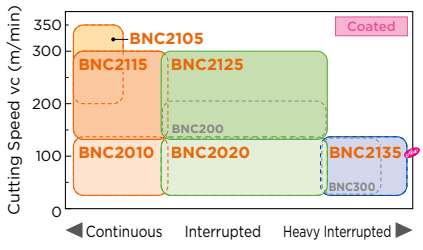
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

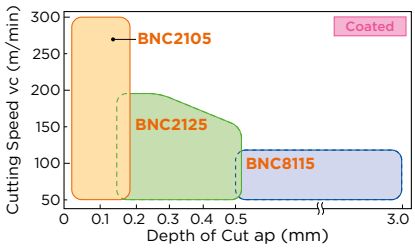
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TPGW0802●● Coated

Dimensions (mm)	Inscribed Circle	4.76	Hole Dia.	2.4
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Applicable Boring Bars E44 to E47

Multi-Cornered One-Use type / 11° Positive (With Hole)

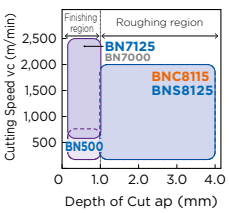
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	**Standard**	**TPGW 080202 NC**	1	1	0.2	2.4						★	★			—
		TPGW 080204 NC			0.4	2.2							★			—
	**Standard**	**TPGW 080202 NC3**	1	3	0.2	2.4		★	★		★	★				—
		TPGW 080204 NC3			0.4	2.2		★	★	★	★	★				—
	H Strong Edge S Negative Land With Honing	**TPGW 080204 HS NC3**	1	3	0.4	2.2				★						—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

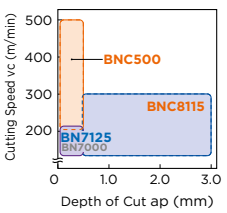
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

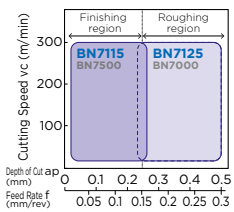
K Grey Cast Iron



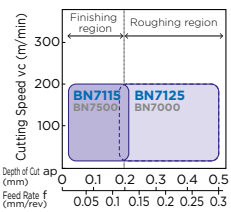
K Ductile Cast Iron



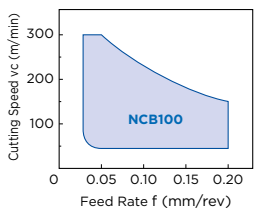
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

TPGW0902●● Uncoated

Dimensions (mm)				
	Inscribed Circle	5.56	Hole Dia.	2.8
	Thickness	2.38		

Applicable Boring Bars E44

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 090202 NU**	1	1	0.2	2.3				★				▲			—	
		TPGW 090204 NU			0.4	2.2			★	★				▲			—	
		TPGW 090208 NU			0.8	1.9				★							—	
	L Low Resistance T Negative Land	**TPGW 090202 LT NU**	1	1	0.2	2.3	—		—	★	—	—	—	—	—	—	—	—
		TPGW 090204 LT NU			0.4	2.2	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TPGW 090202 HS NU**	1	1	0.2	2.3	—	—	—	★	—	—					—	—
		TPGW 090204 HS NU			0.4	2.2	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

Multi-Cornered One-Use type / 11° Positive (With Hole)

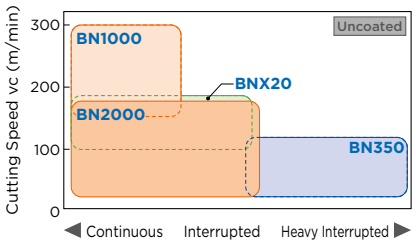
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 090202 NU3**	1	3	0.2	2.3							★				—	
		TPGW 090204 NU3			0.4	2.2							★				—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

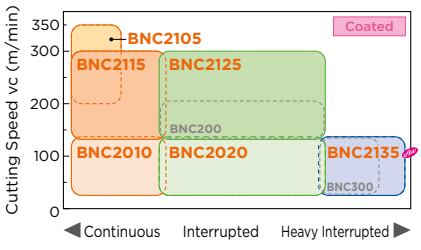
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

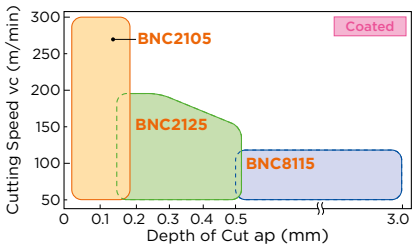
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

T Triangular type



TPGW0902●● Coated

Dimensions (mm)	Inscribed Circle	5.56	Hole Dia.	2.8
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Multi-Cornered One-Use type / 11° Positive (With Hole)

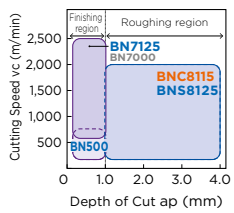
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TPGW 090202 NC3**	1	3	0.2	2.3		★	★		★	★			★	—
		TPGW 090204 NC3			0.4	2.2		★	★		★	★			★	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

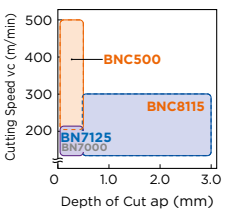
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

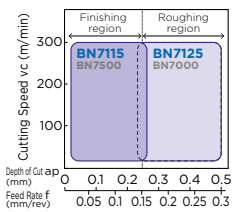
K Grey Cast Iron



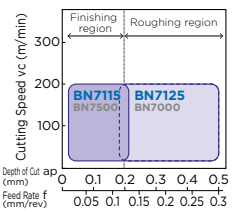
K Ductile Cast Iron



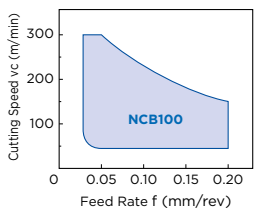
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	●				✖	
	S Exotic Alloy							●				●	●
	H Hardened Steel	○	◔	●	●	✖							
	Sintered Components							●		●			

TPGW1102●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

Applicable Boring Bars E44

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 110202 NU**	1	1	0.2	2.4				★				▲			—	
		TPGW 110204 NU			0.4	2.3	★			★				▲			—	
		TPGW 110208 NU			0.8	2.0											—	
		TPGW 110202 T NU	10	1	0.2	2.4											—	—
		TPGW 110204 T NU			0.4	2.3	★			★							—	—
		TPGW 110208 T NU			0.8	2.0											—	—
	L Low Resistance T Negative Land	**TPGW 110202 LT NU**	1	1	0.2	2.4	—		—	★	—	—	—	—	—	—	—	—
		TPGW 110204 LT NU			0.4	2.3	—		—	★	—	—	—	—	—	—	—	—
		TPGW 110208 LT NU			0.8	2.0	—		—		—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TPGW 110204 HS NU**	1	1	0.4	2.3	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

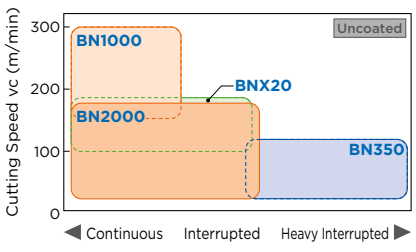
Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 110202 NU3**	1	3	0.2	2.4							★				—	
		TPGW 110204 NU3			0.4	2.3							★	▲		▲	—	
		TPGW 110208 NU3			0.8	2.0							★	▲		▲	—	
	L Low Resistance F Sharp Edge	**TPGW 110204 LF NU3**	1	3	0.4	2.3	—	—	—	—	—	—	★	▲		▲	—	—
	L Low Resistance E With Honing	**TPGW 110204 LE NU3**	1	3	0.4	2.3	—	—	—	—	—	—	★	—		▲	—	—
	L Low Resistance S Negative Land With Honing	**TPGW 110204 LS NU3**	1	3	0.4	2.3	—	—	—	—	—	—	—	—		▲	—	—

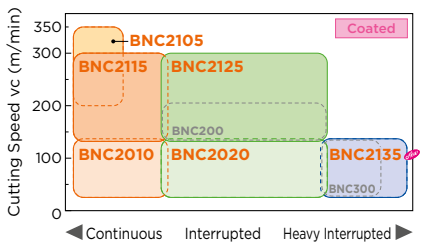
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

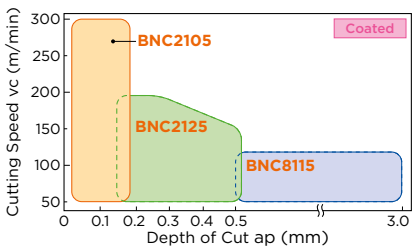
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

T Triangular type



TPG■1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	3.4
	Thickness	3.18		

Applicable Boring Bars ☞ E14, E44 to E47

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱ ✲
S	Exotic Alloy	● ◕
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	TPGW 110302 NU	1	1	0.2	2.4	★	★	★	★		★		▲			—	
		TPGW 110304 NU			0.4	2.3	★	★	★	★	★	★		▲			—	
		TPGW 110308 NU			0.8	2.0	★	★	★	★	★	★		▲			—	
		TPGW 110302 T NU	10	1	0.2	2.4	★	★	★	★							—	—
		TPGW 110304 T NU			0.4	2.3	★	★	★	★	★						—	—
		TPGW 110308 T NU			0.8	2.0	★	★	★	★	★						—	—
	L Low Resistance F Sharp Edge	TPGW 110302 LF NU	1	1	0.2	2.4	—	—	—	—	—	—		▲	—		—	—
		TPGW 110304 LF NU			0.4	2.3	—	—	—	—	—	—		▲	—		—	—
		TPGW 110308 LF NU			0.8	2.0	—	—	—	—	—	—		▲	—		—	—
	L Low Resistance T Negative Land	TPGW 110302 LT NU	1	1	0.2	2.4	—	★	—	★	—	—	—	—	—	—	—	—
		TPGW 110304 LT NU			0.4	2.3	—	★	—	★	—	—	—	—	—	—	—	—
		TPGW 110308 LT NU			0.8	2.0	—	★	—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	TPGW 110302 HS NU	1	1	0.2	2.4	—	—	—	★	—	—					—	—
		TPGW 110304 HS NU			0.4	2.3	—	—	—	★	—	—					—	—
		TPGW 110308 HS NU			0.8	2.0	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞ L32, L33

Multi-Cornered One-Use type / 11° Positive (With Hole)

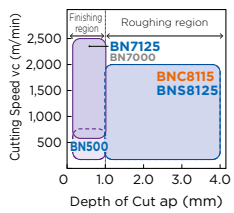
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	TPGW 110302 NU3	1	3	0.2	2.4							★				—	
		TPGW 110304 NU3			0.4	2.3							★	▲	★	▲	—	
		TPGW 110308 NU3			0.8	2.0							★	▲	★	▲	—	
	Finishing Chipbreaker	TPGT 110304 NFV NU3	1	3	0.4	2.3	—	—		★	—	—	—	—	—	—	—	—
		TPGT 110308 NFV NU3			0.8	2.0	—	—		★	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

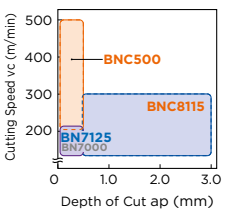
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

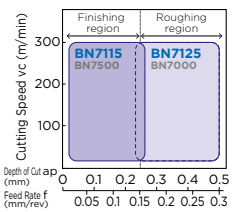
K Grey Cast Iron



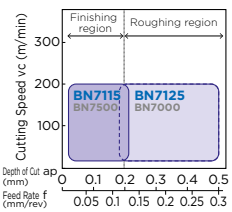
K Ductile Cast Iron



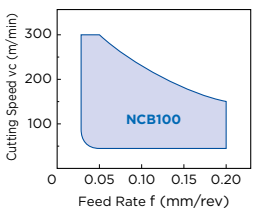
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TPG■1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	3.4
	Thickness	3.18		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable Boring Bars E14, E44 to E47

Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	L Low Resistance F Sharp Edge	**TPGW 110302 LF NU3**	1	3	0.2	2.4	—	—	—	—	—	—	★	▲	★	▲	—	—
		TPGW 110304 LF NU3			0.4	2.3	—	—	—	—	—	—	★	▲	★	▲	—	—
		TPGW 110308 LF NU3			0.8	2.0	—	—	—	—	—	—	★	▲	★	▲	—	—
	L Low Resistance E With Honing	**TPGW 110302 LE NU3**	1	3	0.2	2.4	—	—	—	—	—	—	★	—			—	—
		TPGW 110304 LE NU3			0.4	2.3	—	—	—	—	—	—	★	—	★	▲	—	—
		TPGW 110308 LE NU3			0.8	2.0	—	—	—	—	—	—	★	—			—	—
	L Low Resistance S Negative Land With Honing	**TPGW 110304 LS NU3**	1	3	0.4	2.3	—	—	—	—	—	—	—	—		▲	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

11° Positive type (With Hole)

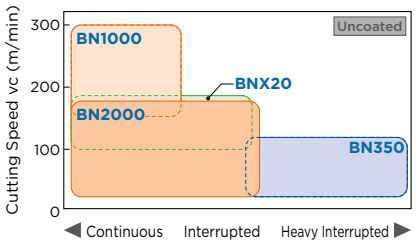
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 110304**	1	1	0.4	3.5		★		★				▲			—	—
		TPGW 110308			0.8	3.2		★		★							—	—
	H Strong Edge S Negative Land With Honing	**TPGW 110304 HS**	1	1	0.4	3.5	—	—	—	★	—	—					—	—
		TPGW 110308 HS			0.8	3.2	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

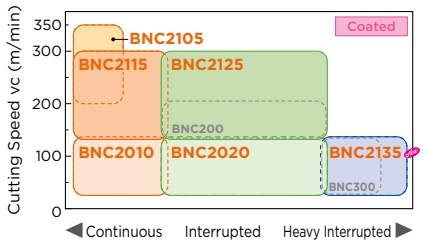
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

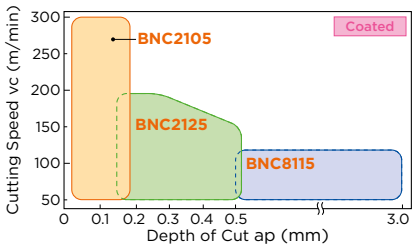
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TPG■1103●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	3.4
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application										
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Applicable Boring Bars E14, E44 to E47

Multi-Cornered One-Use type / 11° Positive (With Hole)

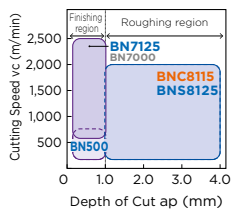
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TPGW 110304 NC**	1	1	0.4	2.3						★	★			—
		TPGW 110308 NC			0.8	2.0			★			★	★			—
	Standard	**TPGW 110302 NC3**	1	3	0.2	2.4		★	★		★	★				—
		TPGW 110304 NC3			0.4	2.3	★	★	★	★	★	★	★	★	★	—
		TPGW 110308 NC3			0.8	2.0	★	★	★	★	★	★	★	★	★	—
	Finishing Chipbreaker	**TPGT 110304 NFV NC3**	1	3	0.4	2.3		★	★	—	★	★	★	—		—
		TPGT 110308 NFV NC3			0.8	2.0		★	★	—	★	★	★	—		—
	L Low Resistance E With Honing	**TPGW 110302 LE NC3**	1	3	0.2	2.4	—	—	—	—	★	—	—	—	—	—
		TPGW 110304 LE NC3			0.4	2.3	—	—	—	—	★	—	—	—	—	—
		TPGW 110308 LE NC3			0.8	2.0	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**TPGW 110302 LT NC3**	1	3	0.2	2.4	—	—	—	—	—	★	—	—	—	—
		TPGW 110304 LT NC3			0.4	2.3	—	—	—	—	—	★	—	—	—	—
		TPGW 110308 LT NC3			0.8	2.0	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**TPGW 110302 LS NC3**	1	3	0.2	2.4		★	★		—	—			—	—
		TPGW 110304 LS NC3			0.4	2.3	★	★	★	★	—	—	★	★	—	—
		TPGW 110308 LS NC3			0.8	2.0	★	★	★	★	—	—	★	★	—	—
	H Strong Edge S Negative Land With Honing	**TPGW 110304 HS NC3**	1	3	0.4	2.3				★				★		—
		TPGW 110308 HS NC3			0.8	2.0				★				★		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

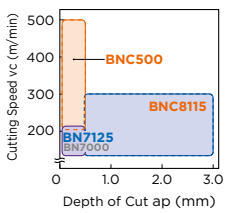
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

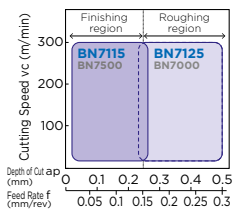
K Grey Cast Iron



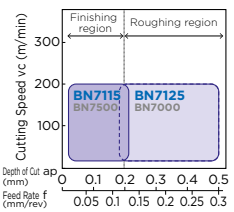
K Ductile Cast Iron



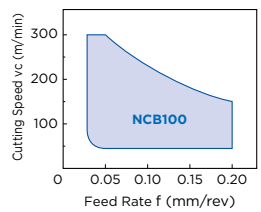
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

TPGW1603●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.18		

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✖	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	✖							
	Sintered Components							●		●			

Applicable Boring Bars E44

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 160302 NU**	1	1	0.2	2.4				★							—	
		TPGW 160304 NU			0.4	2.3				★							—	
		TPGW 160308 NU			0.8	2.0				★							—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

TPGW1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✖	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	✖							
	Sintered Components							●		●			

Applicable Boring Bars E14, E44 to E46

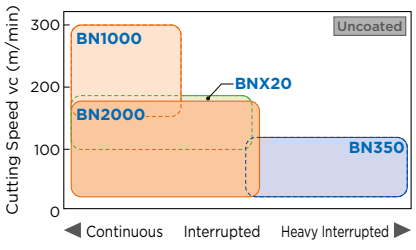
One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 160402 NU**	1	1	0.2	2.4											—	
		TPGW 160404 NU			0.4	2.3	★	★	★	★	★	★		▲			—	
		TPGW 160408 NU			0.8	2.0	★	★	★	★	★	★		▲			—	
	Standard	**TPGW 160402 T NU**	10	1	0.2	2.4											—	—
		TPGW 160404 T NU			0.4	2.3	★	★	★	★	★	★					—	—
		TPGW 160408 T NU			0.8	2.0	★	★	★	★	★						—	—

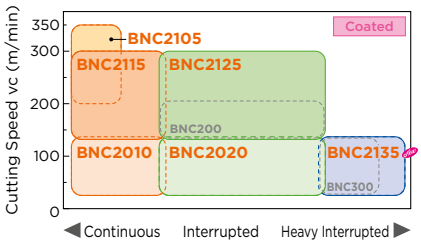
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

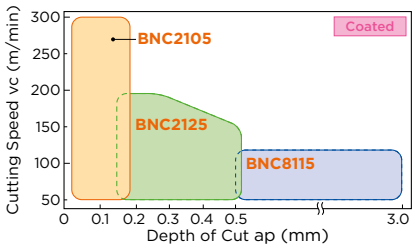
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TPGW1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable Boring Bars ☞ E14, E44 to E46

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON	
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**TPGW 160402 LF NU**	1	1	0.2	2.4	—	—	—	—	—	—					—	—
		TPGW 160404 LF NU			0.4	2.3	—	—	—	—	—	—		▲			—	—
		TPGW 160408 LF NU			0.8	2.0	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**TPGW 160402 LT NU**	1	1	0.2	2.4	—		—		—	—	—	—	—	—	—	—
		TPGW 160404 LT NU			0.4	2.3	—	★	—	★	—	—	—	—	—	—	—	—
		TPGW 160408 LT NU			0.8	2.0	—	★	—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TPGW 160404 HS NU**	1	1	0.4	2.3	—	—	—	★	—	—					—	—
		TPGW 160408 HS NU			0.8	2.0	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

Multi-Cornered One-use type / 11° Positive (With Hole)

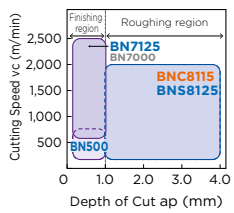
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 160404 NU3**	1	3	0.4	2.3							★				—	
		TPGW 160408 NU3			0.8	2.0							★				—	
	L Low Resistance F Sharp Edge	**TPGW 160404 LF NU3**	1	3	0.4	2.3	—	—	—	—	—	—	★				—	—
		TPGW 160408 LF NU3			0.8	2.0	—	—	—	—	—	—	★				—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

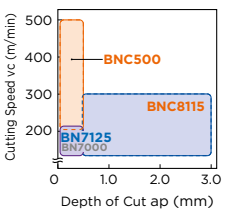
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

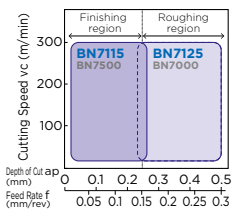
K Grey Cast Iron



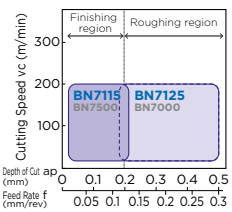
K Ductile Cast Iron



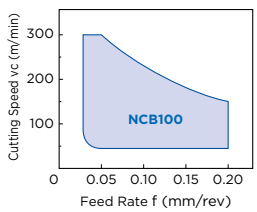
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	●			✖	
S	Exotic Alloy							●			●	●
H	Hardened Steel	○	○	●	●	✖						
	Sintered Components							●		●		

TPGW1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable Boring Bars E14, E44 to E46

11° Positive type (With Hole)

Uncoated SUMIBORON

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 160404**	1	1	0.4	3.5		★		★							—	—
		TPGW 160408			0.8	3.2		★		★							—	—
		TPGW 160412			1.2	2.9											—	—
	H Strong Edge S Negative Land With Honing	**TPGW 160404 HS**	1	1	0.4	3.5	—	—	—	★	—	—					—	—
		TPGW 160408 HS			0.8	3.2	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

TPGW1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable Boring Bars E14, E44 to E46

Recommended Application												
K	Cast Iron									●	✖	
S	Exotic Alloy											
H	Hardened Steel	○	●	●	✖	○	○					
	Sintered Components											

Multi-Cornered One-Use type / 11° Positive (With Hole)

Coated SUMIBORON

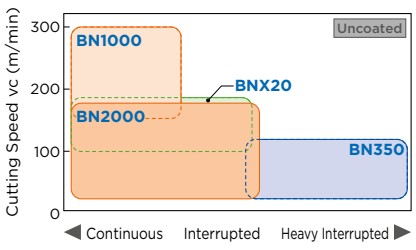
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TPGW 160402 NC3**	1	3	0.2	2.4										—
		TPGW 160404 NC3			0.4	2.3	★	★	★		★	★	★		★	—
		TPGW 160408 NC3			0.8	2.0	★	★	★		★	★	★		★	—
	L Low Resistance S Negative Land With Honing	**TPGW 160404 LS NC3**	1	3	0.4	2.3					—	—	★		—	—
		TPGW 160408 LS NC3			0.8	2.0					—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**TPGW 160404 HS NC3**	1	3	0.4	2.3			★		★	★	★			—
		TPGW 160408 HS NC3			0.8	2.0			★		★	★	★			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

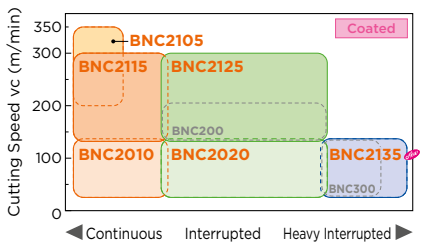
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

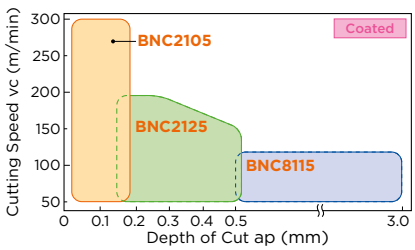
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

T Triangular type

TPGN0902●● Uncoated

Dimensions (mm)	Inscribed Circle	5.56	Hole Dia.	-
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application													
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

11° Positive type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 090204**	1	1	0.4	3.5		★		★		★					—	—
		TPGN 090208			0.8	3.2											—	—
	H Strong Edge S Negative Land With Honing	**TPGN 090204 HS**	1	1	0.4	3.5	—	—	—	★	—	—					—	—

Uncoated SUMIBORON / BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

TPGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

Applicable Boring Bars E48

Recommended Application													
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 110302 NU**	1	1	0.2	2.4				★							—	
		TPGN 110304 NU			0.4	2.3		★		★	★	★		▲			—	
		TPGN 110308 NU			0.8	2.0		★	★	★	★	★		▲			—	
		TPGN 110312 NU			1.2	2.0											—	
		TPGN 110302 T NU	10	1	0.2	2.4											—	—
		TPGN 110304 T NU			0.4	2.3		★		★							—	—
		TPGN 110308 T NU			0.8	2.0		★		★							—	—
		TPGN 110312 T NU			1.2	2.0											—	—

Uncoated SUMIBORON / BINDERLESS SUMIBORON

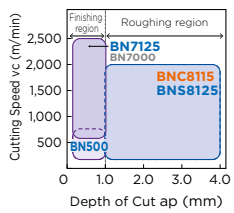
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

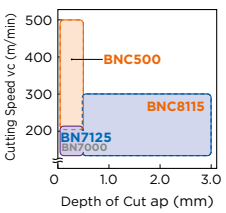
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

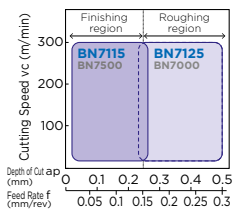
K Grey Cast Iron



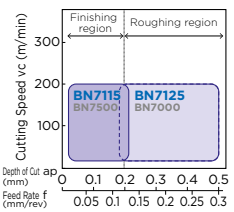
K Ductile Cast Iron



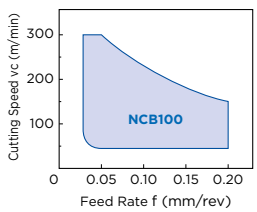
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TPGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting: 1st Recommendation ● 2nd Recommendation ○ / General Machining: 1st Recommendation ● 2nd Recommendation ○ / Interrupted Cutting: 1st Recommendation ✖ 2nd Recommendation ✖

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✖	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	○	●	●	✖							
	Sintered Components							●		●			

Applicable Boring Bars E48

One-Use type / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance T Negative Land	**TPGN 110302 LT NU**	1	1	0.2	2.4	—		—	★	—	—	—	—	—	—	—	—
		TPGN 110304 LT NU			0.4	2.3	—		—	★	—	—	—	—	—	—	—	—
		TPGN 110308 LT NU			0.8	2.0	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TPGN 110304 HS NU**	1	1	0.4	2.3	—	—	—	★	—	—					—	—
		TPGN 110308 HS NU			0.8	2.0	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

11° Positive type (Without Hole)

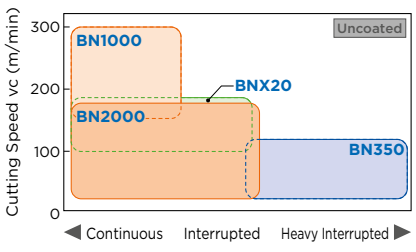
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 110304**	1	1	0.4	3.5		★		★				▲			—	—
		TPGN 110308			0.8	3.2				★							—	—
	H Strong Edge S Negative Land With Honing	**TPGN 110304 HS**	1	1	0.4	3.5	—	—	—	★	—	—					—	—
		TPGN 110308 HS			0.8	3.2	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

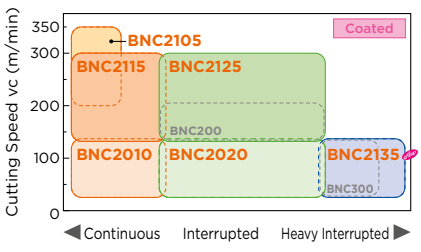
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

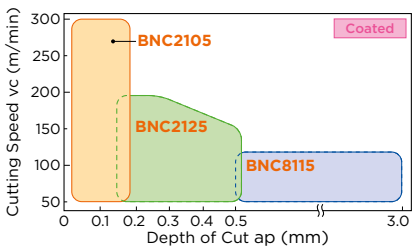
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



TPGN1603●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✖
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✖
	Sintered Components	◕ ●

Applicable External Holders C38, C39 | Applicable Boring Bars E48

One-Use type / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 160302 NU**	1	1	0.2	2.4				★							—	
		TPGN 160304 NU			0.4	2.3		★	★	★	★			▲			—	
		TPGN 160308 NU			0.8	2.0		★		★	★	★		▲			—	
		TPGN 160302 T NU	10	1	0.2	2.4											—	—
		TPGN 160304 T NU			0.4	2.3		★		★							—	—
		TPGN 160308 T NU			0.8	2.0		★		★							—	—
	L Low Resistance T Negative Land	**TPGN 160304 LT NU**	1	1	0.4	2.3	—		—	★	—	—	—	—	—	—	—	—
		TPGN 160308 LT NU			0.8	2.0	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**TPGN 160304 HS NU**	1	1	0.4	2.3	—	—	—	★	—	—					—	—
		TPGN 160308 HS NU			0.8	2.0	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

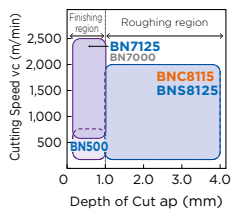
11° Positive type (Without Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 160304**	1	1	0.4	3.5		★		★		★		▲			—	—
		TPGN 160308			0.8	3.2		★		★							—	—
		TPGN 160312			1.2	2.9											—	—
	H Strong Edge S Negative Land With Honing	**TPGN 160304 HS**	1	1	0.4	3.5	—	—	—	★	—	—					—	—
		TPGN 160308 HS			0.8	3.2	—	—	—	★	—	—					—	—

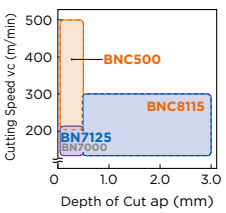
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

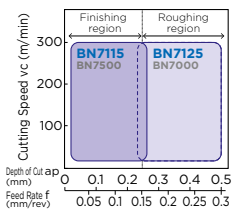
K Grey Cast Iron



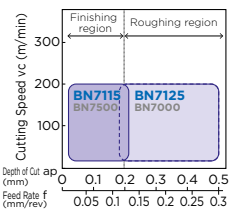
K Ductile Cast Iron



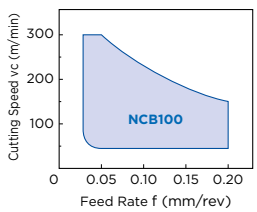
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

TPGN2204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞C38, C39

11° Positive type (Without Hole)

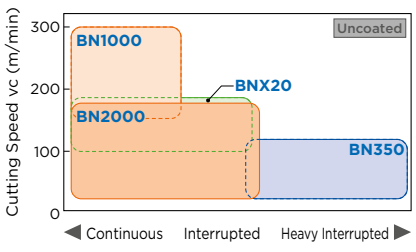
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 220408**	1	1	0.8	3.2		★		★							—	—
	H Strong Edge S Negative Land With Honing	**TPGN 220408 HS**	1	1	0.8	3.2	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

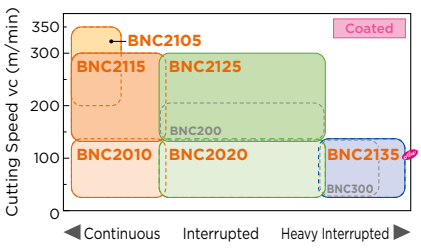
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

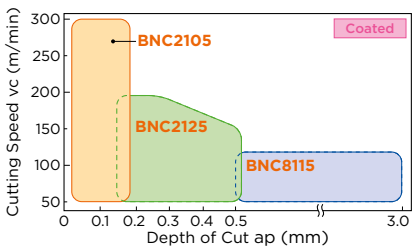
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

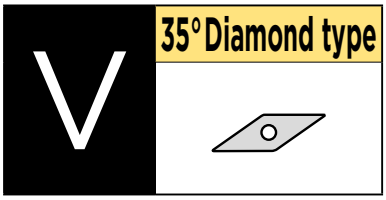


H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



VN■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C40, C41

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
	K	Cast Iron
	S	Exotic Alloy
	H	Hardened Steel
		Sintered Components

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VNMA 160404**	1	1	0.4	5.0		★									—	—
		VNMA 160401 NU			0.1	3.5				★							—	—
		VNMA 160402 NU			0.2	3.3				★							—	—
		VNMA 160404 NU			0.4	2.8	★	★	★	★	★	★		▲			—	—
		VNMA 160408 NU			0.8	1.9	★	★	★	★	★	★		▲			—	—
		VNMA 160412 NU			1.2	1.7				★							—	—
		VNMA 160401 T NU	10	1	0.1	3.5											—	—
		VNMA 160402 T NU			0.2	3.3											—	—
		VNMA 160404 T NU			0.4	2.8	★	★	★	★	★						—	—
		VNMA 160408 T NU			0.8	1.9	★	★	★	★	★						—	—
		VNMA 160412 T NU			1.2	1.7											—	—
	Standard	**VNGA 160404 NU**	1	1	0.4	2.5	—	—	—	—	—	—	—	—	—	—	—	★
		VNGA 160408 NU			0.8	1.6	—	—	—	—	—	—	—	—	—	—	—	★

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / Negative (With Hole)

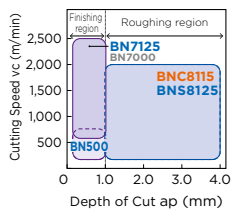
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VNGA 160404 NU2**	1	2	0.4	2.8		★	★	★	★		★	▲	★	▲	—	
		VNGA 160408 NU2			0.8	1.9		★	★	★	★		★	▲	★	▲	—	
		VNGA 160404 T NU2	10	2	0.4	2.8		★		★							—	—
		VNGA 160408 T NU2			0.8	1.9		★		★							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

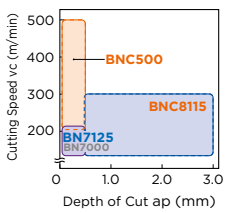
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

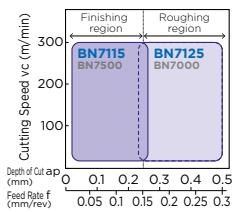
K Grey Cast Iron



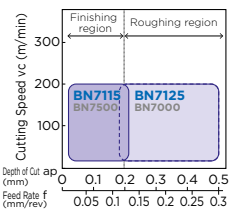
K Ductile Cast Iron



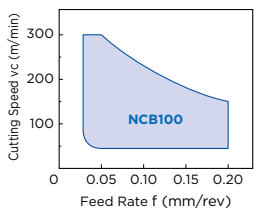
General Sintered Alloy



High-density Sintered Alloy

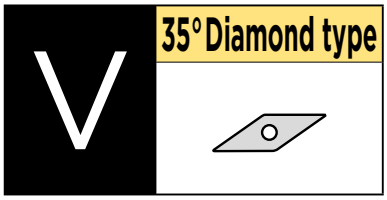


S Titanium Alloy



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	●				●	
	S Exotic Alloy							●				●	●
	H Hardened Steel	○	○	●	●	●							
	Sintered Components							●		●			

VN■■1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders ☞C40, C41

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Light Cutting Chipbreaker	**VNGM 160404 NLV NU2**	1	2	0.4	2.8	—	—		★	—	—	—	—	—	—	—	—
		VNGM 160408 NLV NU2			0.8	1.9	—	—		★	—	—	—	—	—	—	—	—
	L Low Resistance T Negative Land	**VNGA 160404 LT NU2**	1	2	0.4	2.8	—		—	★	—	—	—	—	—	—	—	—
		VNGA 160408 LT NU2			0.8	1.9	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge T Negative Land	**VNGA 160404 HT NU2**	1	2	0.4	2.8	—	—	—	—	★	—	—	—	—	—	—	—
		VNGA 160408 HT NU2			0.8	1.9	—	—	—	—	★	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**VNGA 160404 HS NU2**	1	2	0.4	2.8	—	—	—	★	—	—					—	—
		VNGA 160408 HS NU2			0.8	1.9	—	—	—	★	—	—	★	▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞L32, L33

Negative type (With Hole)

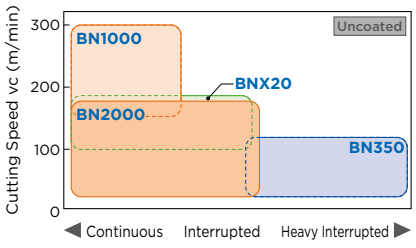
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VNMA 160404**	1	1	0.4	5.0		★		★							—	—
		VNMA 160408			0.8	4.1		★		★				▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

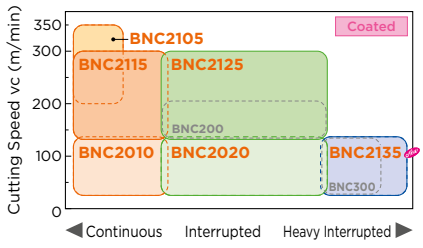
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

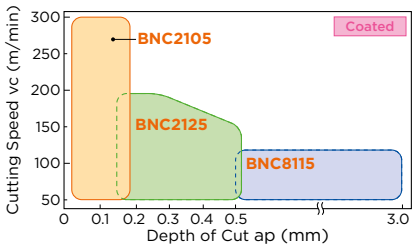
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

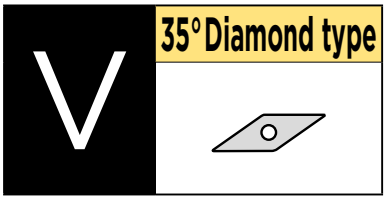


H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



VNG■1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C40, C41

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Multi-Cornered One-Use type / Negative (With Hole)

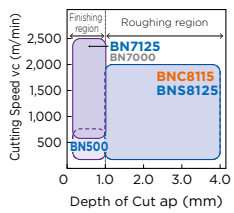
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**VNGA 160404 NC2**	1	2	0.4	2.8			★		★	★	★			—
		VNGA 160408 NC2			0.8	1.9			★		★	★	★			—
		VNGA 160412 NC2			1.2	1.7			★							—
	Standard	**VNGA 160402 NC4**	1	4	0.2	3.3		★	★		★	★				—
		VNGA 160404 NC4			0.4	2.8	★	★	★	★	★	★	★	★	★	—
		VNGA 160408 NC4			0.8	1.9	★	★	★	★	★	★	★	★	★	—
		VNGA 160412 NC4			1.2	1.7		★	★			★	★			—
	Finishing Chipbreaker	**VNGG 160404 NFV NC4**	1	4	0.4	2.8			★	—	★	★	★	—		—
		VNGG 160408 NFV NC4			0.8	1.9			★	—	★	★	★	—		—
		VNGG 160408 NFV NC4/10VP	10	4	0.8	1.9							★			
	Light Cutting Chipbreaker	**VNGG 160404 NLV NC4**	1	4	0.4	2.8			★	—	★	★	★	—		—
		VNGG 160408 NLV NC4			0.8	1.9			★	—	★	★	★	—		—
		VNGG 160404 NLV NC4/10VP	10	4	0.4	2.8				—		★		—		—
		VNGG 160408 NLV NC4/10VP			0.8	1.9				—		★	★	—		—
	L Low Resistance T Negative Land	**VNGA 160402 LT NC2**	1	2	0.2	3.3	—	—	—	—	—	★	—	—	—	—
		VNGA 160404 LT NC2			0.4	2.8	—	—	—	—	—	★	—	—	—	—
		VNGA 160408 LT NC2			0.8	1.9	—	—	—	—	—	★	—	—	—	—
		VNGA 160412 LT NC2			1.2	1.7	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**VNGA 160402 LS NC2**	1	2	0.2	3.3			★		—	—			—	—
		VNGA 160404 LS NC2			0.4	2.8	★	★	★		—	—			—	—
		VNGA 160408 LS NC2			0.8	1.9	★	★	★		—	—			—	—
		VNGA 160412 LS NC2			1.2	1.7		★	★		—	—			—	—
	L Low Resistance S Negative Land With Honing	**VNGA 160404 LS NC4**	1	4	0.4	2.8	—	—	—		—	—	★		—	—
		VNGA 160408 LS NC4			0.8	1.9	—	—	—		—	—	★		—	—
		VNGA 160412 LS NC4			1.2	1.7	—	—	—		—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**VNGA 160404 HS NC4**	1	4	0.4	2.8	★	★	★	★	★	★	★	★	★	—
		VNGA 160408 HS NC4			0.8	1.9	★	★	★	★	★	★	★	★	★	—
		VNGA 160412 HS NC4			1.2	1.7		★	★			★	★			—
	E High Efficiency S Negative Land With Honing	**VNGA 160404 ES NC4**	1	4	0.4	2.8						★	—	—	—	—
		VNGA 160408 ES NC4			0.8	1.9						★	—	—	—	—
		VNGA 160412 ES NC4			1.2	1.7						★	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

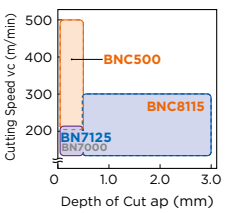
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

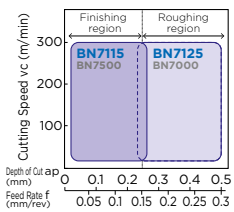
K Grey Cast Iron



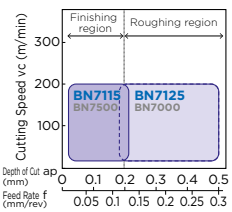
K Ductile Cast Iron



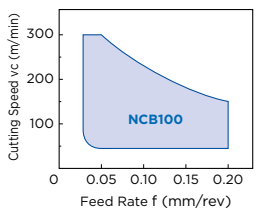
General Sintered Alloy



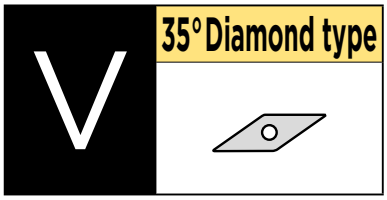
High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

VBGW1102●● Uncoated

Dimensions (mm)	Inscribed Circle	6,35	Hole Dia.	2,8
	Thickness	2,38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◕				✖	
S Exotic Alloy						●					◕	●
H Hardened Steel	○	◔	●	◕	✖							
Sintered Components							◕		●			

Uncoated SUMIBORON | BINDERLESS SUMIBORON

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VBGW110202 NU**	1	1	0.2	3.2		★									—	—
		VBGW110204 NU			0.4	2.8		★		★							—	—
		VBGW110208 NU			0.8	1.9		★									—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

VBGW1102●● Coated

Dimensions (mm)	Inscribed Circle	6,35	Hole Dia.	2,8
	Thickness	2,38		

Applicable Boring Bars E52, E54, E55, E57, E58, E60, E61

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✖
S Exotic Alloy										
H Hardened Steel	○	●	◕	✖	○	◔				
Sintered Components										

Coated SUMIBORON

Multi-Cornered One-Use type / 5° Positive (With Hole)

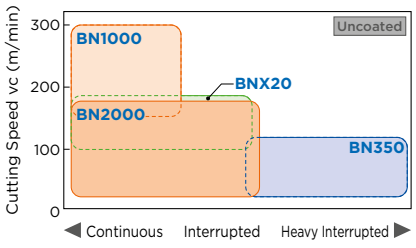
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**VBGW 110202 NC**	1	1	0.2	3.2			★			★	★		—	
		VBGW 110204 NC			0.4	2.8			★			★	★		—	
		VBGW 110208 NC			0.8	1.9			★			★	★		—	
	Standard	**VBGW 110202 NC2**	1	2	0.2	3.2	★								—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

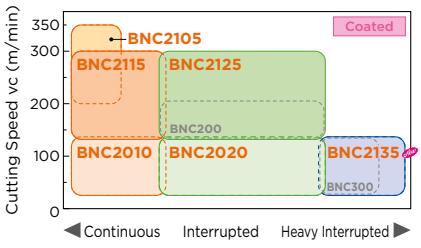
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

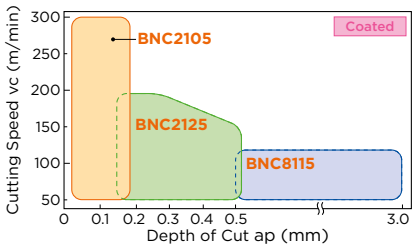
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

VBGW1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ● 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125 (BINDERLESS SUMIBORON)	NCB100 (BINDERLESS SUMIBORON)
	Standard	**VBGW 110302 NU**	1	1	0.2	3.2			★	★							—	
		VBGW 110304 NU			0.4	2.8*1			★	★				▲			—	★
		VBGW 110308 NU			0.8	1.9*2				★				▲			—	★
	L Low Resistance T Negative Land	**VBGW 110302 LT NU**	1	1	0.2	3.2	—		—	★	—	—	—	—	—	—	—	—
		VBGW 110304 LT NU			0.4	2.8	—		—	★	—	—	—	—	—	—	—	—
		VBGW 110308 LT NU			0.8	1.9	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**VBGW 110302 HS NU**	1	1	0.2	3.2	—	—	—	★	—	—					—	—
		VBGW 110304 HS NU			0.4	2.8	—	—	—	★	—	—					—	—
		VBGW 110308 HS NU			0.8	1.9	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33
*Depth of cut for one-use types is 0.5mm or less. • *1: NCB100 cutting edge length is 2.5. • *2: NCB100 cutting edge length is 1.6.

Multi-Cornered One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VBGW 110302 NU2**	1	2	0.2	3.2							★				—	
		VBGW 110304 NU2			0.4	2.8							★	▲	★		—	
		VBGW 110308 NU2			0.8	1.9								▲			—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

VBGW1103●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	3.18		

Applicable Boring Bars ☞E52, E54, E55, E57, E58, E60, E61

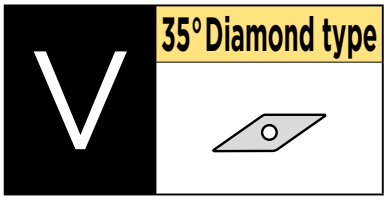
(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ● 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Multi-Cornered One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**VBGW 110302 NC2**	1	2	0.2	3.2		★	★		★	★				—
		VBGW 110304 NC2			0.4	2.8		★	★	★	★	★			★	—
		VBGW 110308 NC2			0.8	1.9		★	★	★	★	★			★	—
	L Low Resistance T Negative Land	**VBGW 110302 LT NC2**	1	2	0.2	3.2	—	—	—	—	—	★	—	—	—	—
		VBGW 110304 LT NC2			0.4	2.8	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**VBGW 110302 LS NC2**	1	2	0.2	3.2		★	★		—	—			—	—
		VBGW 110304 LS NC2			0.4	2.8		★	★		—	—			—	—
		VBGW 110308 LS NC2			0.8	1.9		★	★		—	—			—	—
	H Strong Edge S Negative Land With Honing	**VBGW 110304 HS NC2**	1	2	0.4	2.8				★						

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative / Positive	T01225	S01225	S01225	T01225 / T01235	S01225	S01225	S01225	S01225

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application	Uncoated SUMIBORON										BINDERLESS SUMIBORON
	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◕				✖	
S Exotic Alloy							●				◕	●
H Hardened Steel	○	◔	●	◕	✖							
Sintered Components							◕		●			

VBGW1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable Boring Bars E14, E52, E54, E57, E60

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VBGW 160402 NU**	1	1	0.2	3.8		★	★	★							—	
		VBGW 160404 NU			0.4	3.3*1	★	★	★	★	★		★	▲			—	★
		VBGW 160408 NU			0.8	2.4*2		★	★	★	★		★	▲			—	★
	L Low Resistance T Negative Land	**VBGW 160402 LT NU**	1	1	0.2	3.8	—		—	★	—	—	—	—	—	—	—	—
		VBGW 160404 LT NU			0.4	3.3	—		—	★	—	—	—	—	—	—	—	—
		VBGW 160408 LT NU			0.8	2.4	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**VBGW 160404 HS NU**	1	1	0.4	3.3	—	—	—	★	—	—					—	—
		VBGW 160408 HS NU			0.8	2.4	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.
*1: NCB100 cutting edge length is 2.5.
*2: NCB100 cutting edge length is 1.6.

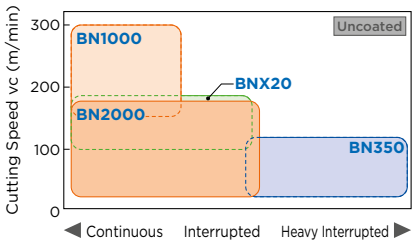
Multi-Cornered One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VBGW 160404 NU2**	1	2	0.4	3.3	★	★	★	★			★	▲	★		—	
		VBGW 160408 NU2			0.8	2.4	★	★	★	★			★	▲	★		—	
		VBGW 160408 NU2/10VP	10	2	0.8	2.4				★								
	L Low Resistance E With Honing	**VBGW 160408 LE NU2**	1	2	0.8	2.4									★		—	—

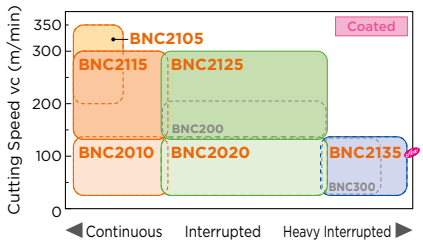
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

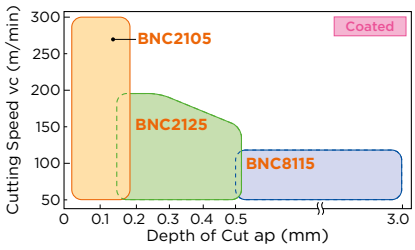
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



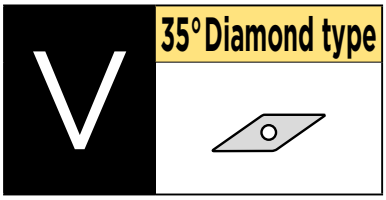
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available



VBGW1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable Boring Bars E14, E52, E54, E57, E60

Multi-Cornered One-Use type / 5° Positive (With Hole)

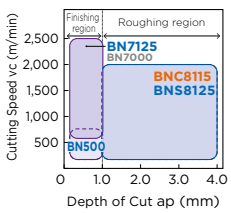
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**VBGW 160402 NC2**	1	2	0.2	3.8		★	★		★	★				—
		VBGW 160404 NC2			0.4	3.3	★	★	★	★	★	★	★	★	★	—
		VBGW 160408 NC2			0.8	2.4	★	★	★	★	★	★	★	★	★	—
		VBGW 160412 NC2			1.2	2.2						★				—
		VBGW 160404 NC2/10VP	10	2	0.4	3.3						★				
		VBGW 160408 NC2/10VP			0.8	2.4						★				
	L Low Resistance E With Honing	**VBGW 160402 LE NC2**	1	2	0.2	3.8	—	—	—	—	★	—	—	—	—	—
		VBGW 160404 LE NC2			0.4	3.3	—	—	—	—	★	—	—	—	—	—
		VBGW 160408 LE NC2			0.8	2.4	—	—	—	—	★	—	—	—	—	—
	L Low Resistance T Negative Land	**VBGW 160402 LT NC2**	1	2	0.2	3.8	—	—	—	—	—	★	—	—	—	—
		VBGW 160404 LT NC2			0.4	3.3	—	—	—	—	—	★	—	—	—	—
		VBGW 160408 LT NC2			0.8	2.4	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**VBGW 160402 LS NC2**	1	2	0.2	3.8		★	★		—	—			—	—
		VBGW 160404 LS NC2			0.4	3.3	★	★	★		—	—	★		—	—
		VBGW 160408 LS NC2			0.8	2.4	★	★	★		—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**VBGW 160404 HS NC2**	1	2	0.4	3.3			★	★			★	★		—
		VBGW 160408 HS NC2			0.8	2.4			★	★		★	★	★		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

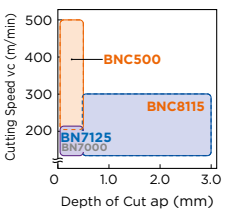
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

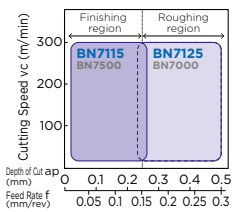
K Grey Cast Iron



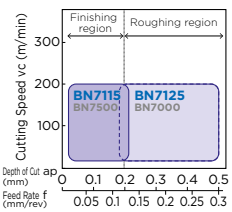
K Ductile Cast Iron



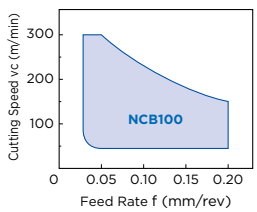
General Sintered Alloy



High-density Sintered Alloy

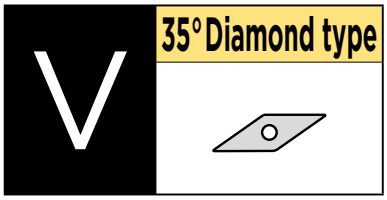


S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application	Uncoated SUMIBORON										BINDERLESS SUMIBORON
	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◕				✱	
S Exotic Alloy							●				◕	●
H Hardened Steel	○	◔	●	◕	✱							
Sintered Components							◕		●			

VCGW0802●● Uncoated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.3
	Thickness	2.38		

Applicable Boring Bars ☞E53, E56, E59, E62

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VCGW 080202 NU**	1	1	0.2	3.2				★							—	
		VCGW 080204 NU			0.4	2.8				★							—	
		VCGW 080208 NU			0.8	2.0				★							—	
	L Low Resistance T Negative Land	**VCGW 080202 LT NU**	1	1	0.2	3.3	—		—	★	—	—	—	—	—	—	—	—
		VCGW 080204 LT NU			0.4	2.8	—		—	★	—	—	—	—	—	—	—	—
		VCGW 080208 LT NU			0.8	2.0	—		—	★	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**VCGW 080204 HS NU**	1	1	0.4	2.8	—	—	—	★	—	—					—	—
		VCGW 080208 HS NU			0.8	2.0	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞L32, L33

VCGW0802●● Coated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.3
	Thickness	2.38		

Applicable Boring Bars ☞E53, E56, E59, E62

Recommended Application	Coated SUMIBORON									
	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Multi-Cornered One-Use type / 5° Positive (With Hole)

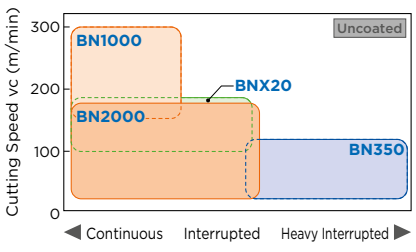
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**VCGW 080202 NC2**	1	2	0.2	3.2					★	★				—
		VCGW 080204 NC2			0.4	2.8					★	★				—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

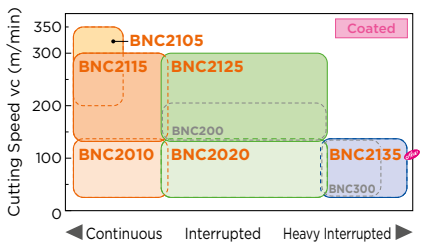
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

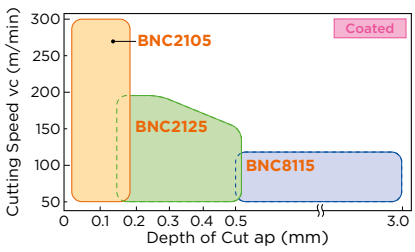
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

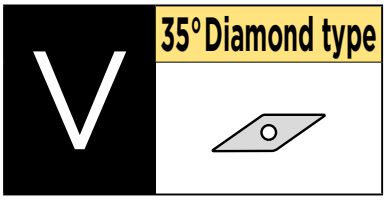


H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



VCGW1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders C42, C43, D28, D44 | Applicable Boring Bars E56, E59, E62

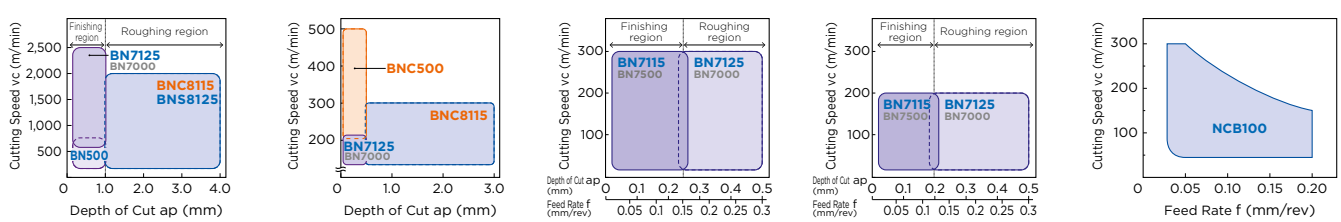
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	**VCGW 110301 NU**	1	1	0.1	3.4										▲	—	★
		VCGW 110302 NU			0.2	3.2			★	★						▲	—	★
		VCGW 110304 NU			0.4	2.8			★	★							—	
	H Strong Edge S Negative Land With Honing	**VCGW 110302 HS NU**	1	1	0.2	3.2	—	—	—	★	—	—					—	—
		VCGW 110304 HS NU			0.4	2.8	—	—	—	★	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

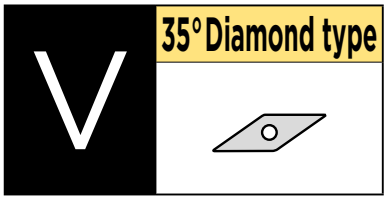
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◕			✖	
S	Exotic Alloy						●				◕	●
H	Hardened Steel	○	◔	●	◕	✖						
	Sintered Components							◕		●		

VC■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable External Holders C42, C43
Applicable Boring Bars E56, E59

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VCGW 160404 NU**	1	1	0.4	3.2*1								▲			—	★
		VCGW 160408 NU	1		0.8	2.3*2											—	★

Uncoated SUMIBORON | BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.
*1: NCB100 cutting edge length is 2.5.
*2: NCB100 cutting edge length is 1.6.

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VCGW 160404 NU2**	1	2	0.4	3.2							★				—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

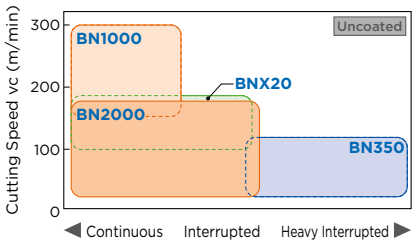
7° Positive type (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VCMW 160404**	1	1	0.4	5.2		★									—	—
		VCMW 160408			0.8	4.3		★				★					—	—

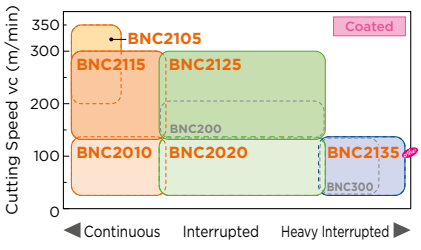
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

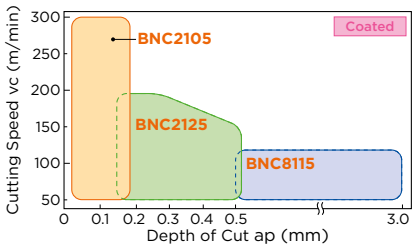
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel

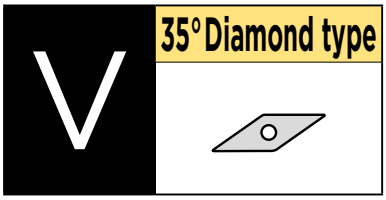


H Bearing Steel (100Cr6, etc.)



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available



VCGW1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	Coated SUMIBORON									
	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Applicable External Holders C42, C43
Applicable Boring Bars E56, E59

Multi-Cornered One-Use type / 7° Positive (With Hole)

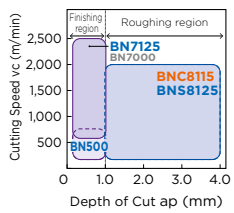
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	**BNC2135**	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	**Standard**	**VCGW 160404 NC2**	1	2	0.4	3.2	★	★	★		★	★	★			—
		VCGW 160408 NC2			0.8	2.3	★	★	★		★	★	★			—
	L Low Resistance S Negative Land With Honing	**VCGW 160404 LS NC2**	1	2	0.4	3.2	★	★	★		—	—	★		—	—
		VCGW 160408 LS NC2			0.8	2.3	★	★	★		—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**VCGW 160404 HS NC2**	1	2	0.4	3.2			★		★	★	★			—
		VCGW 160408 HS NC2			0.8	2.3			★		★	★	★			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

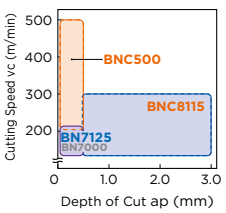
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

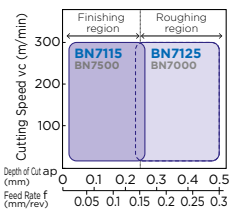
K Grey Cast Iron



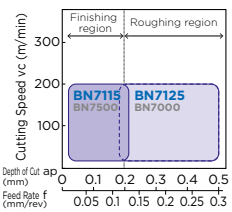
K Ductile Cast Iron



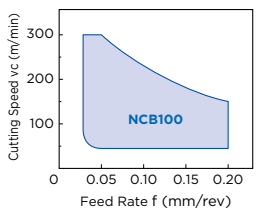
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIBORON Inserts

W Trigon type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

WNMA0804●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ⊛ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON	
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

Applicable External Holders ☞ C44, C45 Applicable Boring Bars ☞ E66, E67

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**WNMA 080404 NU**	1	1	0.4	2.5				★							—	—
		WNMA 080408 NU			0.8	2.4				★							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞ L32, L33

Negative type (With Hole)

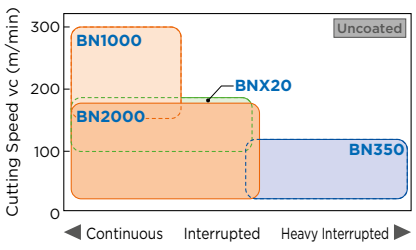
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**WNMA 080404**	1	1	0.4	4.5		★									—	—
		WNMA 080408			0.8	4.4		★									—	—
		WNMA 080412			1.2	4.3											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

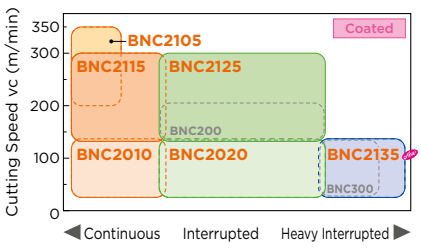
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

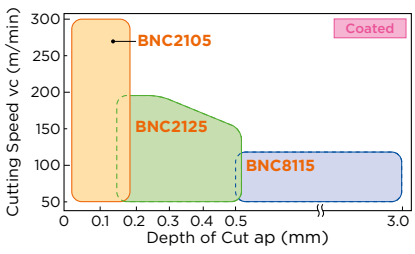
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

W Trigon type



WNGA0804●●

Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders C44, C45
Applicable Boring Bars E66, E67

Multi-Cornered One-Use type / Negative (With Hole)

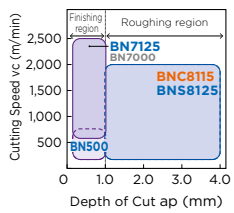
Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**WNGA 080404 NC6**	1	6	0.4	2.4		★	★		★	★	★			—
		WNGA 080408 NC6			0.8	2.3	★	★	★		★	★	★			—
		WNGA 080412 NC6			1.2	2.2		★	★		★	★	★			—
	Low Feed Wiper Insert	**WNGA 080408 NC WG6**	1	6	0.8	2.2		★	★		★	★	★			—
	High Feed Wiper Insert	**WNGA 080408 NC WH6**	1	6	0.8	2.3		★	★		★	★	★			—
	L Low Resistance T Negative Land	**WNGA 080408 LT NC3**	1	3	0.8	2.3	—	—	—	—	—	★	—	—	—	—
	L Low Resistance S Negative Land With Honing	**WNGA 080408 LS NC3**	1	3	0.8	2.3	★	★	★		—	—			—	—
	L Low Resistance S Negative Land With Honing	**WNGA 080408 LS NC6**	1	6	0.8	2.3	—	—	—		—	—	★		—	—
	H Strong Edge S Negative Land With Honing	**WNGA 080408 HS NC6**	1	6	0.8	2.3		★	★		★	★	★			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

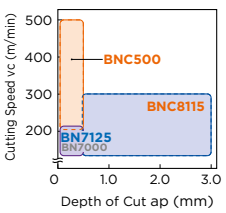
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

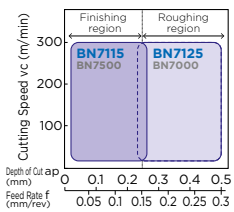
K Grey Cast Iron



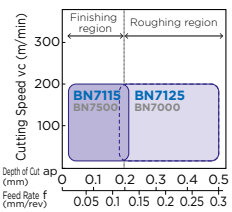
K Ductile Cast Iron



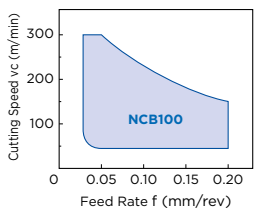
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

W Trigon type



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

WBEW0601●● Uncoated

Dimensions (mm)	Inscribed Circle	3.97	Hole Dia.	2.2
	Thickness	1.59		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable Boring Bars E64

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**WBEW 060102 LLF NU**	1	1	0.2	1.3	—	—	—	—	—	—	★	▲			—	—
		WBEW 060104 LLF NU			0.4	1.2	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**WBEW 060102 LLT NU**	1	1	0.2	1.3	—	★	—	—	—	—	—	—	—	—	—	—
		WBEW 060104 LLT NU			0.4	1.2	—	★	—	—	—	—	—	—	—	—	—	—

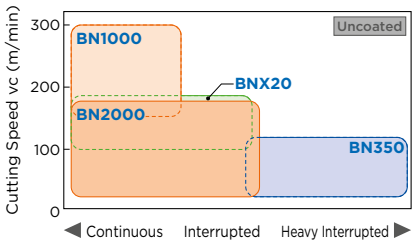
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

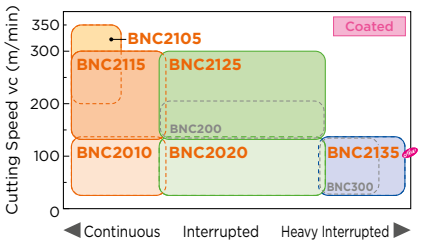
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

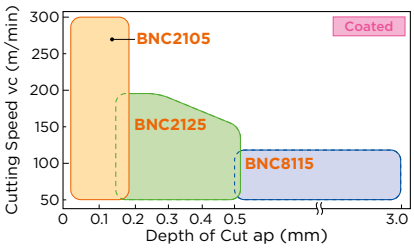
H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Induction Hardened Steel (C45/C55, etc.), Carburised Steel



H Bearing Steel (100Cr6, etc.)



★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

W Trigon type



WBEW0802●● Uncoated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.2
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable Boring Bars E64

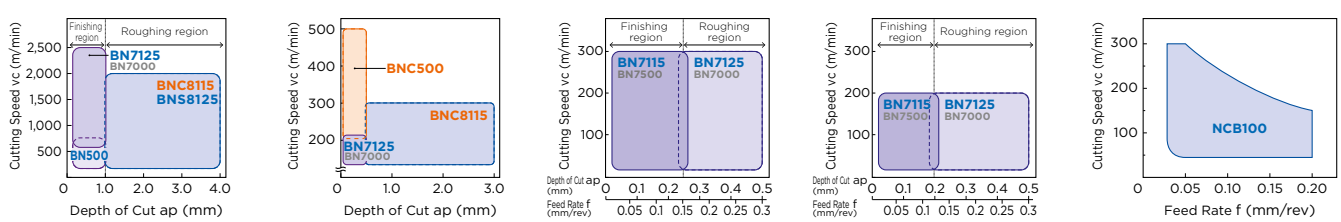
One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	L Low Resistance F Sharp Edge	**WBEW 080202 LLF NU**	1	1	0.2	1.7	—	—	—	—	—	—					—	—
		WBEW 080204 LLF			0.4	1.6	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**WBEW 080202 LLT NU**	1	1	0.2	1.7	—	★	—	—	—	—	—	—	—	—	—	—
		WBEW 080204 LLT NU			0.4	1.6	—	★	—	—	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

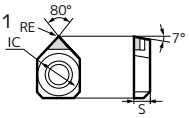


★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Turning Inserts

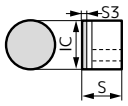
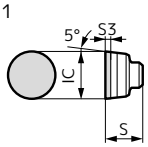
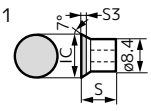
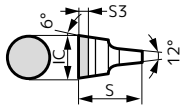
Dimensions (mm)

Shape		ISO Cat. No.	BN1000	BN2000	BNX20	BN350	BNX10	BN500	BN7125	BN7000	Inscribed Circle IC	Thickness S	Corner Radius RE	Hole Dia.	Applicable Holder	Fig
	Fig 1 	**ZNEX 040102 NU**	★	★					★	▲	4.76	1.59	0.2	2.3	SUMIBORON Small Diameter Boring Bars (BNZ series) → L137	1
		ZNEX 040104 NU	★	★					★	▲	4.76	1.59	0.4	2.3		1
		ZNEX 040102 T NU		★							4.76	1.59	0.2	2.3		1
		ZNEX 040104 T NU		★							4.76	1.59	0.4	2.3		1

*Use NS type (NS-ZNEX) for BNX25.
*T-NU-ZNEX is a 10-piece pack.

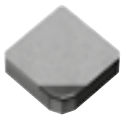
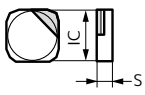
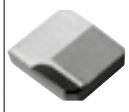
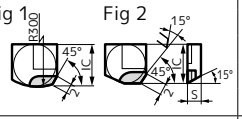
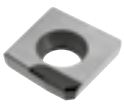
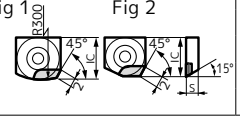
Round Inserts

Dimensions (mm)

Shape		ISO Cat. No.	BN1000	BN2000	BNX20	BN350	BNX10	BN500	BN7125	BN7000	Inscribed Circle IC	Thickness S	Thickness of CBN S3	Applicable Holder	Fig
	Fig 1 	**RNGA 0906 M0**		★	★						9.00	6.35	0.80	SUMIBORON Round Insert Holders (PRGN type) → L140	1
	Fig 1 	**RBG 08 B**							★	▲	8.00	6.50	0.80	SUMIBORON Tool Holder for Roll Turning (BNRN series) → L141	1
		RBG 10 B							★	▲	10.00	9.00	0.80		1
		RBG 12 B							★	▲	12.00	11.00	0.80		1
		RBG 16 B							★	▲	16.00	13.00	0.80		1
		RBG 20 B							★	▲	20.00	15.00	0.80		1
		RBG 26 B							★	▲	26.00	15.00	0.80		1
	Fig 1 	**RCGA 0906M0**		★							9.00	6.35	0.80	SUMIBORON Round Insert Holders (PRGC type / PRDC type) →L140	1
	Fig 1 	**RTGN 0508M0**			★						5.00	7.50	0.80	SUMIBORON Small Diameter Round Insert Holders (TRGT series) → L139	1
		RTGN 0608M0			★						6.00	7.50	0.80		1
		RTGN 0711M0			★						7.00	11.0	0.80		1
		RTGN 0811M0			★						8.00	11.0	0.80		1
		RTGN 0914M0			★						9.00	14.0	0.80		1
		RTGN 1014M0			★						10.00	14.0	0.80		1
		RTGN 1214M0			★						12.00	14.0	0.80		1

Milling Inserts

Dimensions (mm)

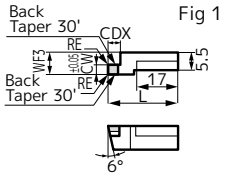
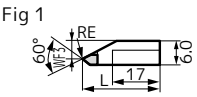
Shape		ISO Cat. No.	BN1000	BN2000	BN7125	BN7000	Inscribed Circle IC	Thickness S	Applicable Holder	Fig
	Fig 1 	**CSN 43 MT**		★			12.70	4.76	SEC-ACE MILL (DNF series) → H45	1
	Fig 1 Fig 2 	**SNEN 1504 ADT R**			★	▲	15.875	4.76	BN Finish Mill (FM series. FMF series) → L146	1
		SNEN 1504 ADT L					15.875	4.76		1
		SNEN 1504 ADT RS			★	▲	15.875	4.76		2
		SNEN 1504 ADT LS					15.875	4.76		2
	Fig 1 Fig 2 	**SNEW 1203 ADT R**			★	▲	12.70	3.18	BN Finish Mill EASY (FMU series) → L145	1
		SNEW 1203 ADT RS			★	▲	12.70	3.18		2

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

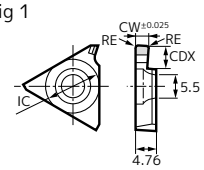
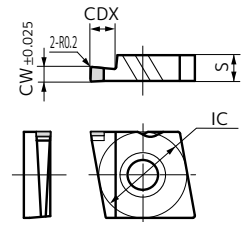
Grooving/Threading Tool Inserts

Dimensions (mm)

Shape (Right-Hand)		ISO Cat. No.	BN2000 R	BN2000 L	BNX20 R	BNX20 L	BN350 R	BN350 L	Groove width CW	Groove depth CDX	Corner Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
	 Fig 1	**BNGNT 0200 R/L**	★		★		★		2.0	4.0	0.2	25	6.0		1
		BNGNT 0250 R/L	★				★		2.5	4.0	0.2	25	6.0		1
		BNGNT 0300 R/L	★				★		3.0	5.0	0.4	25	6.0	SUMIBORON	1
		BNGNT 0400 R/L	★		★		★		4.0	6.0	0.4	26	6.0	Grooving Tool	1
		BNGNT 0500 R/L	★			★	★		5.0	6.0	0.4	26	6.0	(BNGG series)	1
		BNGNT 0600 R/L	★				★		6.0	7.0	0.4	27	6.0	→ L143	1
	 Fig 1	**BNTT 1020 R/L**	★		★				Pitch = 1.0 to 2.0		0.14	25	4.0	SUMIBORON	1
		BNTT 1530 R/L	★		★				Pitch = 1.5 to 3.0		0.20	25	4.0	Grooving Tool (BNGG series) → L143	1

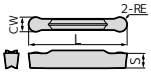
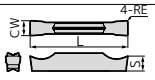
Inserts for Grooving Tool Holders

Dimensions (mm)

Shape		ISO Cat. No.	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Inscribed Circle IC	Width of Cut CW	Corner Radius RE	Groove depth CDX	Hole Dia.	Applicable Holder	Fig
	 Fig 1	**TGA 4125 R/L**	★		—	—	12.70	1.25	0.2	2.0	5.5		1
		TGA 4150 R/L	★		—	—	12.70	1.50	0.2	3.5	5.5	SEC-	1
		TGA 4200 R/L	★		—	—	12.70	2.00	0.2	3.5	5.5	Grooving Tool	1
		TGA 4250 R/L	★		—	—	12.70	2.50	0.2	4.0	5.5	(GWC series.	1
		TGA 4300 R/L	★		—	—	12.70	3.00	0.2	4.0	5.5	GWCS type.	1
		TGA 4350 R/L	★		—	—	12.70	3.50	0.2	5.0	5.5	GWCI type)	1
		TGA 4400 R/L	★		—	—	12.70	4.00	0.2	5.0	5.5	→F4 to F5	1
	 Fig 1	**CGA 1504150 R/L**	★	★	★	★	15.875	1.5	0.2	3.5	5.5		1
		CGA 1504200 R/L	★	★	★	★	15.875	2.0	0.2	3.5	5.5		1
		CGA 1504250 R/L	★	★	★	★	15.875	2.5	0.2	4.0	5.5		1
		CGA 1504300 R/L	★	★	★	★	15.875	3.0	0.2	4.0	5.5	SUMIBORON	1
		CGA 1504350 R/L	★	★	★	★	15.875	3.5	0.2	5.0	5.5	Grooving Tool	1
		CGA 1504400 R/L	★	★	★	★	15.875	4.0	0.2	5.0	5.5	(GWB series)	1
		CGA 1504450 R/L	★	★	★	★	15.875	4.5	0.2	5.0	5.5	→ L142	1
		CGA 1506500 R/L	★	★	★	★	15.875	5.0	0.2	5.0	5.5		1
		CGA 1506550 R/L	★	★	★	★	15.875	5.5	0.2	5.0	5.5		1
		CGA 1506600 R/L	★	★	★	★	15.875	6.0	0.2	5.0	5.5		1

Grooving Inserts

Dimensions (mm)

Shape		ISO Cat. No.	BN7500	No. Cutt. Edges	Width of Cut	Tolerance	Overall Length	Thickness	Nose Radius	Fig
	 Fig 1	**GCMN 2010 P**	▲	1	2.0	±0.03	21.7	3.6	1.0	1
		GCMN 3015 P	▲	1	3.0	±0.03	22.4	3.8	1.5	1
		GCMN 4020 P	▲	1	4.0	±0.03	28.0	4.0	2.0	1
		**GCMN 3015 PLF**	▲	1	3.0	±0.03	22.4	3.8	1.5	1
		GCMN 4020 PLF	▲	1	4.0	±0.03	28.0	4.0	2.0	1
	 Fig 1	**GCMN 30040 N**	▲	1	3.0	±0.03	21.1	3.8	0.4	1
		GCMN 40040 N	▲	1	4.0	±0.03	26.4	4.0	0.4	1

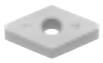
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Aerospace grades



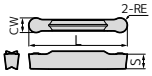
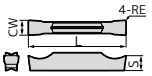
Tooling Solutions for
AEROSPACE

Multi-Cornered One-Use type

Shape	Cutting Edge Specification	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON BN7500	IT105	BN7115
	Standard	**DNGA 150408 NU2**	1	2	0.8	2.0		★	
		DNGA 150412 NU2			1.2	1.9		★	
		DNGA 150416 NU2			1.6	3.4		★	
		DNGA 150408 NU2	1	2	0.8	2.0		★	
		DNGA 150608 NU2	1	2	0.8	2.4		★	
		DNGA 150612 NU2			1.2	2.0		★	
		DNGA 150616 NU2			1.6	1.9		★	
	Standard	**CNGA 120408 NU2**	1	2	0.8	2.3	▲	★	★
		CNGA 120412 NU2			1.2	2.2	▲	★	★
		CNGA 120416 NU2			1.6	1.9		★	
	Standard	**VNGA 160408 NU2**	1	2	0.8	1.9	▲	★	★
		VNGA 160412 NU2			1.2	1.7		★	
	Standard	**VBGW 160404 NU2**	1	2	0.4	3.3		★	★
		VBGW 160408 NU2			0.8	2.4		★	★

Grooving Inserts

Dimensions (mm)

Shape		ISO Cat. No.	BN7500	IT105	No. Cutt. Edges	Width of Cut	Tolerance	Overall Length	Thickness	Nose Radius	Fig
	Fig 1 	**GCMN 2010 P**	▲	★	1	2.0	±0.03	21.7	3.6	1.0	1
		GCMN 3015 P	▲	★	1	3.0	±0.03	22.4	3.8	1.5	1
		GCMN 4020 P	▲	★	1	4.0	±0.03	28.0	4.0	2.0	1
		GCMN 5025 P		★	1	5.0	±0.03	28.0	4.1	2.5	1
		GCMN 6030 P		★	1	6.0	±0.03	28.0	4.5	3.0	1
		**GCMN 3015 PLF**	▲	★	1	3.0	±0.03	22.4	3.8	1.5	1
		GCMN 4020 PLF	▲	★	1	4.0	±0.03	28.0	4.0	2.0	1
	Fig 1 	**GCMN 30040 N**	▲	★	1	3.0	±0.03	21.1	3.8	0.4	1
		GCMN 40040 N	▲	★	1	4.0	±0.03	26.4	4.0	0.4	1

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Solid SUMIBORON

Indexable Inserts (Solid CBN type)

Refer to pages L124 to L127 for solid SUMIBORON dedicated holders.

Applications K Cast Iron H Hardened Steel

Shape	ISO Cat. No.	BNC8115	BNS8125	Dimensions (mm) Inscribed Circle	Thickness	Corner Radius	Hole	Applicable Holder
80° Diamond type	CNGN 090308	★	★	9.525	3.18	0.8	No	External Dia. L127
	CNGN 090308 LF			9.525	3.18	0.8	No	
	CNGN 090312	★	★	9.525	3.18	1.2	No	
	CNGN 090312 LF			9.525	3.18	1.2	No	
	CNGN 120408	★	★	12.70	4.76	0.8	No	External Dia. L127
	CNGN 120412	★	★	12.70	4.76	1.2	No	
	CNGN 120416	★	★	12.70	4.76	1.6	No	
	CNGA 120408	★	★	12.70	4.76	0.8	Yes	External Dia. C10 to C12
	CNGA 120412	★	★	12.70	4.76	1.2	Yes	Internal Dia. E15 . E25 to E27
	CNGX 120408			12.70	4.76	0.8	Dimple	External Dia. L129
	CNGX 120412	★	★	12.70	4.76	1.2	Dimple	
	CNGX 120416	★	★	12.70	4.76	1.6	Dimple	
55° Diamond type	DNGN 110308	★	★	9.525	3.18	0.8	No	External Dia. L127
	DNGN 110308 LF			9.525	3.18	0.8	No	
	DNGN 110312	★	★	9.525	3.18	1.2	No	
	DNGN 110312 LF			9.525	3.18	1.2	No	
Round type	RNGN 090300	★	★	9.525	3.18	—	No	External Dia. L128
	RNGN 090300 LF			9.525	3.18	—	No	
	RNGN 120300	★	★	12.70	3.18	—	No	External Dia. L128
	RNGN 120300 LF			12.70	3.18	—	No	
	RNGN 120400	★	★	12.70	4.76	—	No	
Square type	SNGN 090308	★	★	9.525	3.18	0.8	No	External Dia. L126
	SNGN 090308 LF			9.525	3.18	0.8	No	
	SNEN 090308 W	★	★	9.525	3.18	0.8	No	Milling Cutters H251 L165
	SNEN 090308 LFW			9.525	3.18	0.8	No	
	SNGN 090312	★	★	9.525	3.18	1.2	No	
	SNGN 090312 LF			9.525	3.18	1.2	No	
	SNGN 120308	★	★	12.70	3.18	0.8	No	External Dia. L126
	SNGN 120308 LF			12.70	3.18	0.8	No	
	SNGN 120312	★	★	12.70	3.18	1.2	No	
	SNGN 120312 LF			12.70	3.18	1.2	No	
	SNGN 120408	★	★	12.70	4.76	0.8	No	External Dia. L126
	SNGN 120412	★	★	12.70	4.76	1.2	No	
	SNGN 120416	★	★	12.70	4.76	1.6	No	
	SNGN 120420	★	★	12.70	4.76	2.0	No	
	SNGA 120408	★	★	12.70	4.76	0.8	Yes	External Dia. C22 to C28
	SNGA 120412	★	★	12.70	4.76	1.2	Yes	Internal Dia. E39 to E41
	SNGX 120408			12.70	4.76	0.8	Dimple	External Dia. L129
	SNGX 120412	★	★	12.70	4.76	1.2	Dimple	
	SNGX 120416	★	★	12.70	4.76	1.6	Dimple	
Triangular type	TNGN 110308	★	★	6.35	3.18	0.8	No	External Dia. L126
	TNGN 110308 LF			6.35	3.18	0.8	No	
	TNGN 110312	★	★	6.35	3.18	1.2	No	
	TNGN 110312 LF			6.35	3.18	1.2	No	
	TNGN 160408	★	★	9.525	4.76	0.8	No	External Dia. L126
	TNGN 160412	★	★	9.525	4.76	1.2	No	
	TNGN 160416	★	★	9.525	4.76	1.6	No	
	TNGN 160420	★	★	9.525	4.76	2.0	No	
	TNGA 160408	★	★	9.525	4.76	0.8	Yes	External Dia. C31 to C37
	TNGA 160412	★	★	9.525	4.76	1.2	Yes	External Dia. D45 D29
								Internal Dia. E15 . E49 to E51

*Part number suffix: LF: Sharp edged W: Wiper type LFW: Wiper sharp edged

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

Tool Holders for Solid SUMIBORON



General Turning
Clamp-on

CSBN/FN11
External Turning

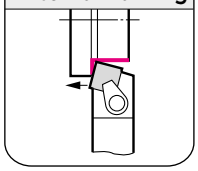


Fig 1

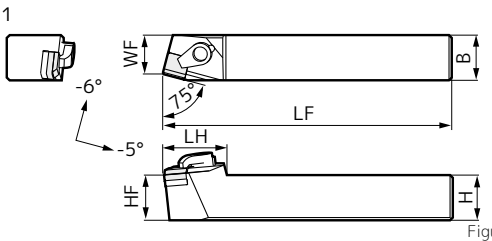


Fig 2

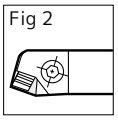
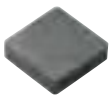


Figure shows right-handed (R) tool.

Insert L124



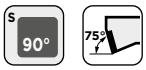
(1) SNGN0903OO
(2) SNGN1203OO
(3) SNGN1204OO

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Bolt	Shim	Shim Retainer	Spring	Wrench
CSBN R/L 2525-32	★		25	25	160	21.5	25	30	SNGN0903OO	1	CCM8UL	CBS13	WB8-22T	—	SSN0903	SPP3	—	LT27
CSBN R/L 2525-42	★		25	25	160	21.5	25	35	SNGN1203OO	1		CBS14			SSND423			
FN11 R/L 44A	★	★	25	25	160	21.5	25	33	SNGN1204OO	2	DCR/L1	CBD4R/L	—	BH0830R/L			DSP5	LH040



Facing
Clamp-on

CSKN
Facing

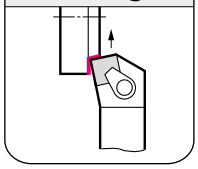


Fig 1

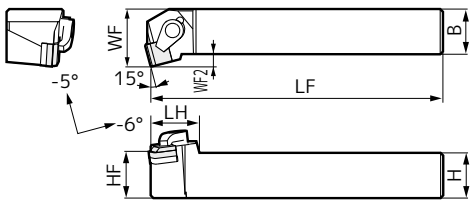
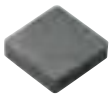


Figure shows right-handed (R) tool.

Insert L124



(1) SNGN0903OO
(2) SNGN1203OO

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Shim	Shim Retainer	Wrench
CSKN R/L 2525-32	★		25	25	160	32	25	25	7	SNGN0903OO	1	CCM8UL	CBS13	WB8-22T	SSN0903	SPP3	LT27
CSKN R/L 2525-42	★		25	25	160	32	25	25	7	SNGN1203OO	1		CBS14		SSND423		



General Turning
Clamp-on

CTGN/FN21
External Turning

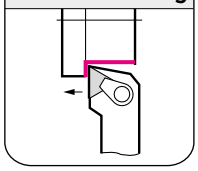


Fig 1

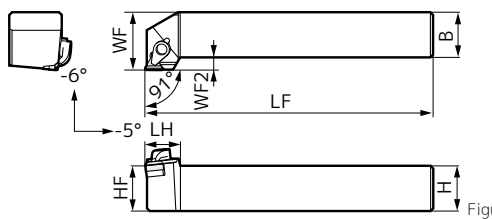


Fig 2

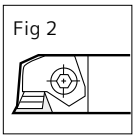


Figure shows right-handed (R) tool.

Insert L124



(1) TNGN1103OO
(2) TNGN1604OO

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Bolt	Shim	Shim Retainer	Spring	Wrench
CTGN R/L 2525-22	★		25	25	160	32	25	20	7	TNGN1103OO	1	CCM6UL	CBT12	WB6-16T	—	STN1103	SPP3	—	LT20
FN21 R/L 44A	★	★	25	25	160	25	25	32	—	TNGN1604OO	2	DCR/L2	CBD4R/L	—	BH0830R/L	STND323		DSP5	LH040

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Tool Holders for Solid SUMIBORON



General Turning and Facing
Clamp-on

CCLN/FCLN

External Turning/Facing

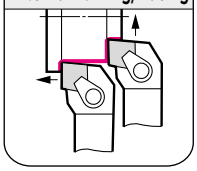


Fig 1

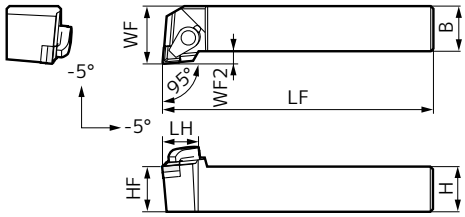


Fig 2

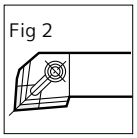
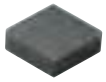


Figure shows right-handed (R) tool.

Insert L124



(1) CNGN0903OO
(2) CNGN1204OO

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Offset	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Shim	Shim Retainer	Wrench
	R	L	H	B	LF	WF	HF	LH	WF2								
CCLN R/L 2525-32	★		25	25	150	32	25	25	7	CNGN0903OO	1	CCM8UL	CBC0903	WB8-22T	SCN0903	SPP3	LT27
FCLN R/L 2525-43	★	★	25	25	150	32	25	30	7	CNGN1204OO	2	CCM8-LONG	CBC4	WB8-30	SCND433		LH040



General Turning and Profiling
Clamp-on

CDJN

External Turning/Profiling

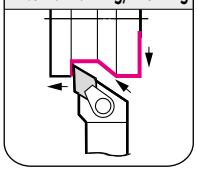


Fig 1

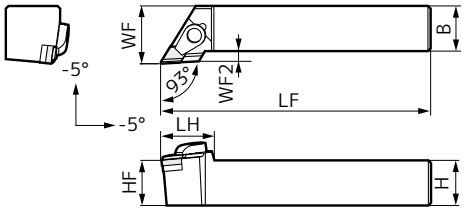


Figure shows right-handed (R) tool.

Insert L124



(1) DNGN1103OO

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Offset	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Shim	Shim Retainer	Wrench
	R	L	H	B	LF	WF	HF	LH	WF2								
CDJN R/L 2525-32	★		25	25	150	32	25	30	7	DNGN1103OO	1	CCM8UL	CBD1103	WB8-22T	SDN1103	SPP3	LT27

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Tool Holders for Solid SUMIBORON

General Turning and Profiling
Clamp-on

CRDN
External Turning/Profiling

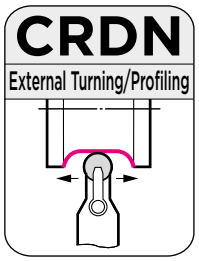
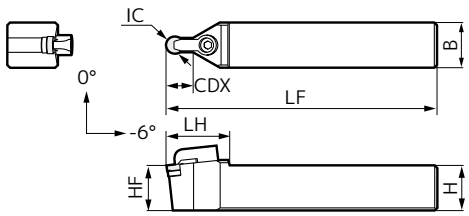


Fig 1



Insert L124



(1) RNGN090300
(2) RNGN120300
(3) RNGN120400

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Depth of Cut CDX	Applicable Insert	Fig	Clamp Plate	Double Screw	Shim	Shim Retainer	Wrench
CRDN N 2525-32	★	9.525	25	25	150	25	35	15	RNGN090300	1	CCM8-LONG	WB8-22T	SRND32	SPP3	LT27
CRDN N 2525-42	★	12.7	25	25	150	25	35	20	RNGN120300	1			SRND42		
CRDN N 2525-43	★	12.7	25	25	150	25	35	20	RNGN120400	1					

General Turning and Facing
Clamp-on

CRSN
External Turning/Facing

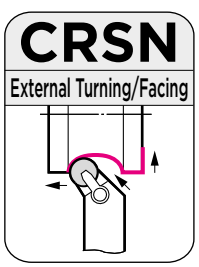
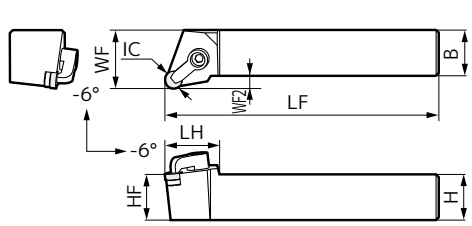


Fig 1



Insert L124



(1) RNGN090300
(2) RNGN120300
(3) RNGN120400

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Double Screw	Shim	Shim Retainer	Wrench
CRSN R/L 2525-32	★		9.525	25	25	150	32	25	30	7	RNGN090300	1	CCM8-LONG	WB8-22T	SRND32	SPP3	LT27
CRSN R/L 2525-42	★		12.7	25	25	150	32	25	30	7	RNGN120300	1			SRND42		
CRSN R/L 2525-43	★		12.7	25	25	150	32	25	30	7	RNGN120400	1					

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Tool Holders for Solid SUMIBORON



General Turning
Dimple Lock

XSBN
External Turning

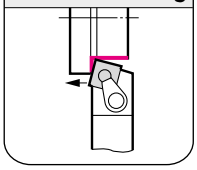


Fig 1

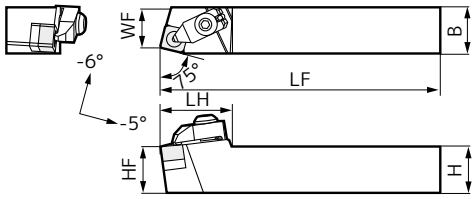


Figure shows right-handed (R) tool.

Insert L124

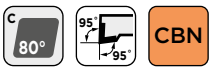


Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Plate	Bolt	Shim	Shim Retainer	Spring	Wrench
XSBN R/L 2525-43	★		25	25	150	21.5	25	38	SNGX1204OO	1	DSLX8	BH0825	SSND433	SPP3	GSP10	LH050



General Turning and Facing
Dimple Lock

XCLN
External Turning/Facing

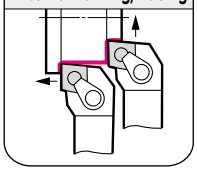


Fig 1

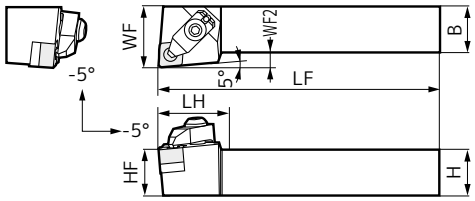
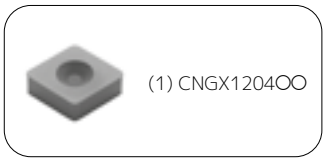


Figure shows right-handed (R) tool.

Insert L124



Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Bolt	Shim	Shim Retainer	Spring	Wrench
XCLN R/L 2525-43	★		25	25	150	32	25	33	7	CNGX1204OO	1	DSLX8	BH0825	SCND433	SPP3	GSP10	LH050

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

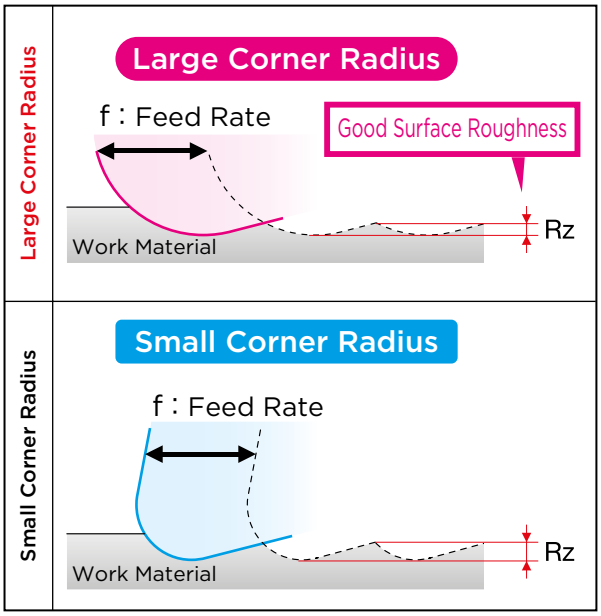
Inserts & Special Holders for High-efficiency Machining



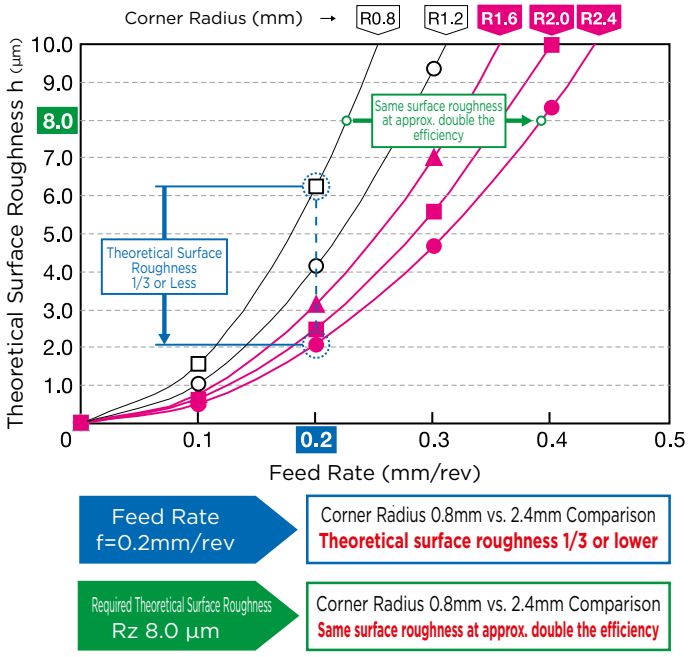
■ Features

- Improved finished surface roughness with high-feed cutting
- Ideal for profiling when surface roughness is required

● Effect of different corner radii



● Comparison of theoretical surface roughness

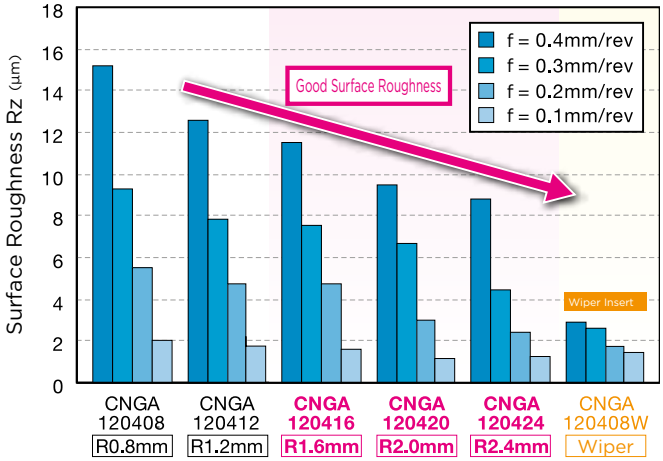


Feed Rate f=0.2mm/rev
Corner Radius 0.8mm vs. 2.4mm Comparison
Theoretical surface roughness 1/3 or lower

Required Theoretical Surface Roughness Rz 8.0 μm
Corner Radius 0.8mm vs. 2.4mm Comparison
Same surface roughness at approx. double the efficiency

* Actual value of surface roughness is approximately 1.5 to 3 times higher (for steel)
* Theoretical surface roughness is calculated using the following formula: [h = (f^2 / 8r) x 10^3].

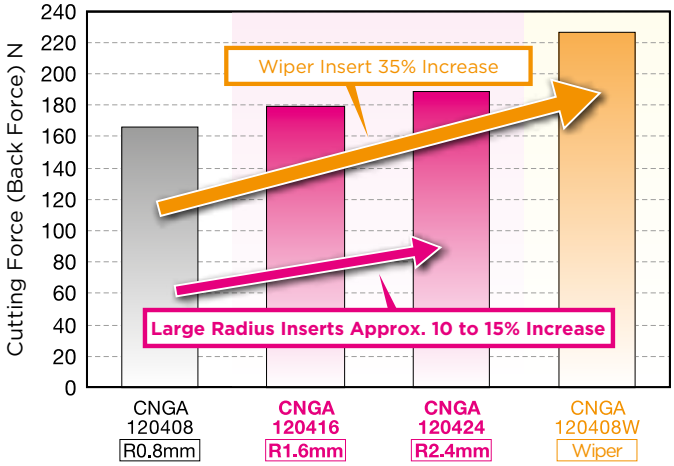
● Machined surface roughness comparison with different corner radii



Inserts with a larger corner radius also give better surface roughness during actual machining

Work Material: 15CrMo5 (60HRC)
Cutting Conditions: vc = 100m/min, ap = 0.1mm, Dry

● Cutting force comparison with different corner radii



Low cutting force compared to wiper insert enables high-feed cutting

Work Material: 15CrMo5 (60HRC)
Cutting Conditions: vc = 150m/min, f = 0.3mm/rev, ap = 0.1mm, Dry

Inserts & Special Holders for High-efficiency Machining

C 80° | 95° | 95° | CBN

DCLN
External Turning and Facing

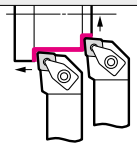


Fig 1

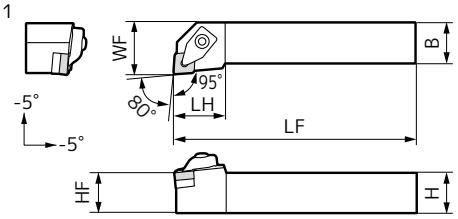


Figure shows right-handed (R) tool.

Insert L147



(1) 2NC-CNGA120416 (4) 4NC-CNGA120416
(2) 2NC-CNGA120420 (5) 4NC-CNGA120420
(3) 2NC-CNGA120424 (6) 4NC-CNGA120424

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig	Clamp Set		Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	LH				N·m					
DCLN R/L 2525M12 R24	★	★	25	25	150	32	25	32		1							
DCLN R/L 3225P12 R24	★		32	25	170	32	32	32	ONC-CNGA1204OO	1	SCP-2	5.0	CNS1204-R24	BFTX0409N	TRX15 (*1)	LH040	LH025
DCLN R/L 3232P12 R24	★		32	32	170	40	32	32		1							

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

D 55° | 93° | CBN

DDJN
External/Profiling

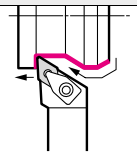


Fig 1

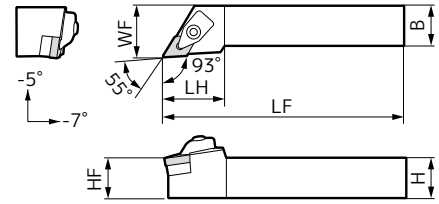


Figure shows right-handed (R) tool.

Insert L147



(1) 2NC-DNGA150416 (4) 4NC-DNGA150416
(2) 2NC-DNGA150420 (5) 4NC-DNGA150420
(3) 2NC-DNGA150424 (6) 4NC-DNGA150424

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig	Clamp Set		Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	LH				N·m					
DDJN R/L 2525M15 R24	★	★	25	25	150	32	25	32		1							
DDJN R/L 3225P15 R24	★		32	25	170	32	32	38	ONC-DNGA1504OO	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*1)	LH040	LH025
DDJN R/L 3232P15 R24	★		32	32	170	40	32	38		1							

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

D 55° | 107.5° | CBN

DDHN
External/Profiling

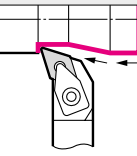


Fig 1

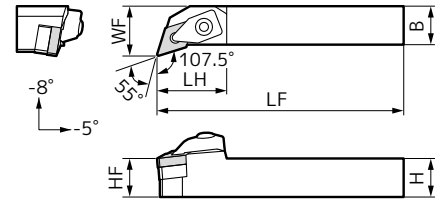


Figure shows right-handed (R) tool.

Insert L147



(1) 2NC-DNGA150416 (4) 4NC-DNGA150416
(2) 2NC-DNGA150420 (5) 4NC-DNGA150420
(3) 2NC-DNGA150424 (6) 4NC-DNGA150424

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig	Clamp Set		Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
	R	L	H	B	LF	WF	HF	LH				N·m					
DDHN R/L 2525M15 R24	★	★	25	25	150	35	25	35	ONC-DNGA1504OO	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*1)	LH040	LH025

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

★mark: Global stocked item Blank: Made-to-order item N·m Recommended Tightening Torque (N·m)

Inserts & Special Holders for High-efficiency Machining

D 55° 63° CBN

DDNN
External/Profiling

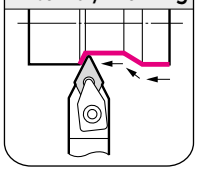
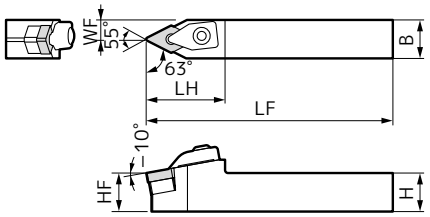


Fig 1



本図は右勝手（R）を示す

Insert L147



(1) 2NC-DNGA150416 (4) 4NC-DNGA150416
(2) 2NC-DNGA150420 (5) 4NC-DNGA150420
(3) 2NC-DNGA150424 (6) 4NC-DNGA150424

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DDNN N 2525M15 R24	★	25	25	150	13	25	40	ONC-DNGA1504OO	1	SCP-2	**5.0**	DNS1504-R24	BFTX0409N	TRX15 (*1)	LH040	LH025

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

T 60° 91° CBN

DTGN
External Turning

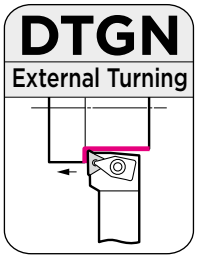
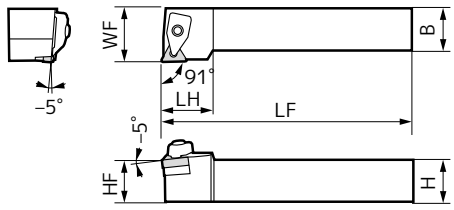


Fig 1



本図は右勝手（R）を示す

Insert L147



(1) 3NC-TNGA160416 (4) 6NC-TNGA160416
(2) 3NC-TNGA160420 (5) 6NC-TNGA160420
(3) 3NC-TNGA160424 (6) 6NC-TNGA160424

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DTGN R/L 2525M16 R24	★	★	25	25	150	32	25	32		1							
DTGN R/L 3225P16 R24	★		32	25	170	32	32	32	ONC-TNGA1604OO	1	SCP-1	**5.0**	TNS1604-R24	BFTX0307N	TRX10 (*1)	LH040	LH025
DTGN R/L 3232P16 R24	★		32	32	170	40	32	32		1							

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

T 60° 91° CBN

DTFN
Facing

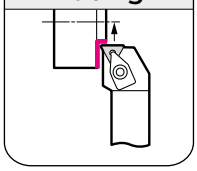
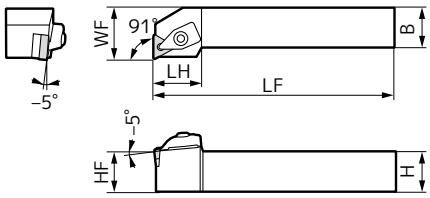


Fig 1



本図は右勝手（R）を示す

Insert L147



(1) 3NC-TNGA160416 (4) 6NC-TNGA160416
(2) 3NC-TNGA160420 (5) 6NC-TNGA160420
(3) 3NC-TNGA160424 (6) 6NC-TNGA160424

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DTFN R/L 2525M16 R24	★	★	25	25	150	32	25	30	ONC-TNGA1604OO	1	SCP-1	**5.0**	TNS1604-R24	BFTX0307N	TRX10 (*1)	LH040	LH025

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C50

N·m Recommended Tightening Torque (N·m)

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

Inserts & Special Holders for High-efficiency Machining

Single-Sided Insert type (SUMIBORON)

Dimensions (mm)

Appearance	ISO Cat. No.	No. of Cutting Edges	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	Corner Radius	CBN Cutting Edge Length	Inscribed Circle	Thickness	Hole Dia.
	**CNGA 120416 NC2**	2				★	★	★	★	1.6	3.3	12.7	4.76	5.16
	CNGA 120420 NC2	2				★	★	★	★	2.0	3.2	12.7	4.76	5.16
	CNGA 120424 NC2	2				★	★	★	★	2.4	3.1	12.7	4.76	5.16
	**DNGA 150416 NC2**	2				★	★	★	★	1.6	3.4	12.7	4.76	5.16
	DNGA 150420 NC2	2				★	★	★	★	2.0	3.0	12.7	4.76	5.16
	DNGA 150424 NC2	2				★	★	★	★	2.4	2.7	12.7	4.76	5.16
	**TNGA 160416 NC3**	3				★	★	★	★	1.6	3.3	9.525	4.76	3.81
	TNGA 160420 NC3	3				★	★	★	★	2.0	3.0	9.525	4.76	3.81
	TNGA 160424 NC3	3				★	★	★	★	2.4	2.7	9.525	4.76	3.81

Double-Sided Insert type (SUMIBORON)

Dimensions (mm)

Appearance	ISO Cat. No.	No. of Cutting Edges	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	Corner Radius	CBN Cutting Edge Length	Inscribed Circle	Thickness	Hole Dia.
	**CNGA 120416 NC4**	4	★	★	★	★	★	★	★	1.6	3.3	12.7	4.76	5.16
	CNGA 120420 NC4	4	★	★	★	★	★	★	★	2.0	3.2	12.7	4.76	5.16
	CNGA 120424 NC4	4	★	★	★	★	★	★	★	2.4	3.1	12.7	4.76	5.16
	**DNGA 150416 NC4**	4	★	★	★	★	★	★	★	1.6	3.4	12.7	4.76	5.16
	DNGA 150420 NC4	4	★	★	★	★	★	★	★	2.0	3.0	12.7	4.76	5.16
	DNGA 150424 NC4	4	★	★	★	★	★	★	★	2.4	2.7	12.7	4.76	5.16
	**TNGA 160416 NC6**	6	★	★	★	★	★	★	★	1.6	3.3	9.525	4.76	3.81
	TNGA 160420 NC6	6	★	★	★	★	★	★	★	2.0	3.0	9.525	4.76	3.81
	TNGA 160424 NC6	6	★	★	★	★	★	★	★	2.4	2.7	9.525	4.76	3.81

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

For Hardened Steel

High Feed Turning (HFT-O)

Features HFT-D/HFT-O

- Up to 8 times higher productivity than conventional hard turning
- Octagon CBN insert (8 cutting edges) and rhomboid shape CBN insert (2 cutting edges)
- Special wiper technology with smooth cutting edge entry on the workpiece
- Good surface roughness (Rz < 4 µm) even at elevated feed rates of f = 1.2 mm/rev
- Stable monoblock design holders based on HSK. ISO-PSC. VDI. KM or DIN coupling
- High cutting removal rates while maintaining required qualities
- Special tools on request available



VDI



ISO-PSC



DIN



KM



Monoblock Tool Holders in Various Design

Combination possible to adopt to different applications like boring. facing. outer diameter turning. chamfering.

Couplings available as VDI. ISO-PSC. DIN. KM and HSK shank.

High stability double clamp system

Direction defined coolant / air supply

Octagon CBN insert

Easy handling and secure insert guiding in stable insert seat



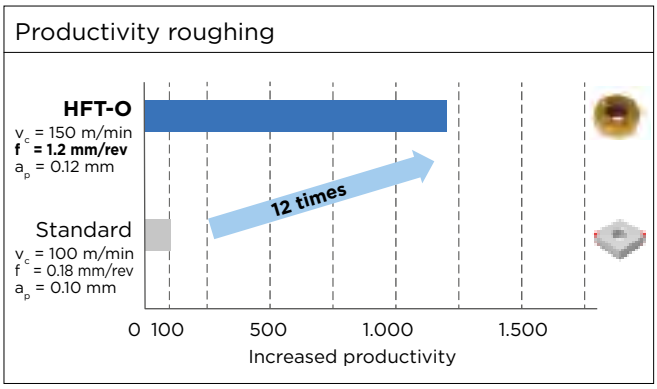
Cutting Conditions

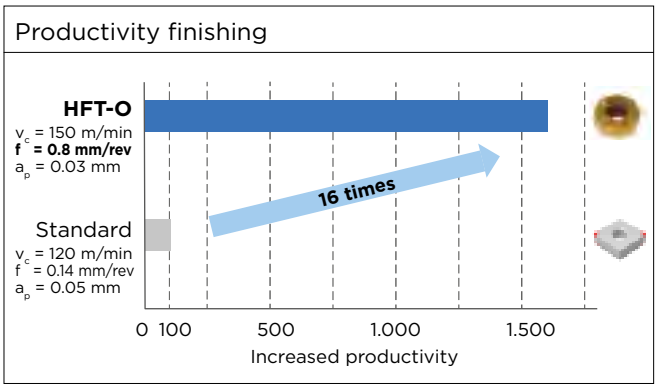
General Conditions*	v_c = 80–200 m/min	f = 0.2–1.2 mm/rev	a_p = 0.05–0.25 mm

* are set according to the project

HFT-O Offering Production Cost Reduction

Cutting process time up to 90 %

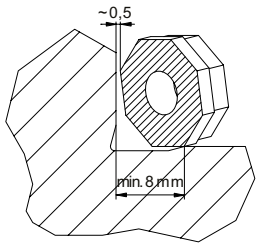




Result: **HFT-O** = 12–16 times faster than existing process with keeping the requested tolerances and surface roughness requirements. Insert offers double number of cutting edges. Additionally. the tool life could be doubled.

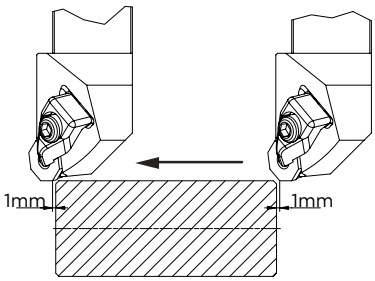
General Details

To machine close to shoulder (inner or outer diameter) you need a relief groove of approximately 8 mm.



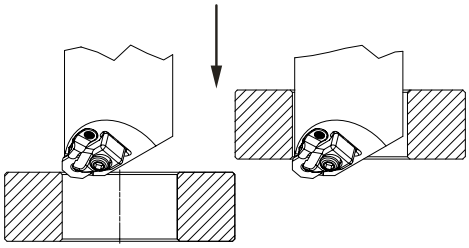
Distance overhang shaft exit 1 mm

Safety distance shaft entrance 1 mm



Safety distance hole entrance 1 mm

Distance overhang hole exit 1 mm



High Feed Turning (HFT-D)

■ Monoblock Tool Holders in Various Design

Combination possible to adopt to different applications like boring. facing. outer diameter turning. chamfering. Couplings available as VDI. ISO-PSC. DIN. KM and HSK shank.

VDI



ISO-PSC



DIN



KM



Easy handling and secure insert guiding in stable insert seat

Direction defined coolant / air supply

Diamond shape CBN insert

High stability double clamp system



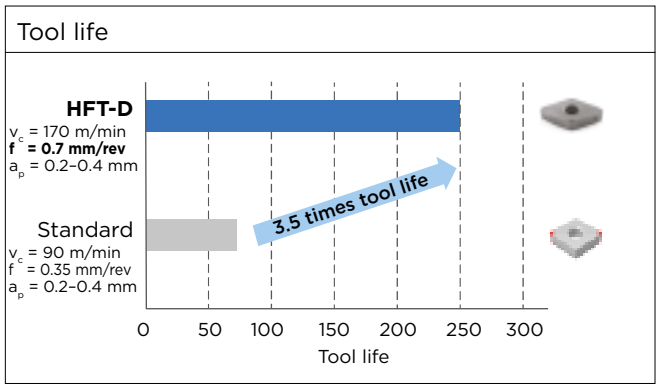
■ Cutting Conditions

General Conditions*	v_c = 80–200 m/min	f = 0.1–1.2 mm/rev	a_p = 0.03–0.45 mm

* are set according to the project

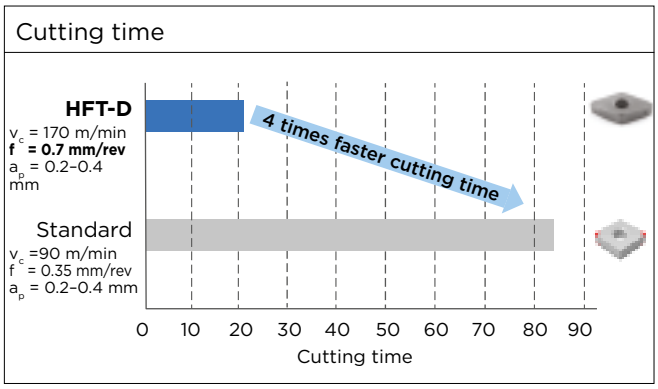
■ HFT-D Offering Production Cost Reduction

250 / 70 Pieces per cutting edge



Shaft machining with wobble and different cutting depths up to 0.4 mm. In compliance with all required tolerances and surface qualities → tool life increase factor 3.5.
→ cycle time reduction factor 4.

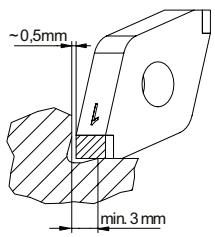
22 / 84 Cutting time in seconds



CBN hard turning / outside diameter turning

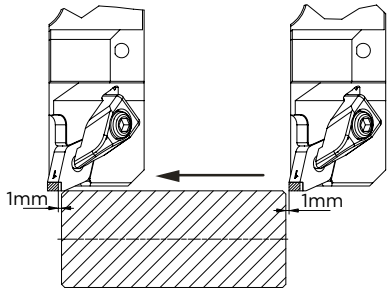
■ General Details

To machine close to shoulder (inner or outer diameter) you need a relief groove of approximately 3 mm.



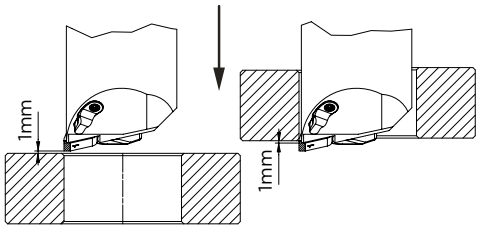
Distance overhang shaft exit 1 mm

Safety distance shaft entrance 1 mm



Safety distance hole entrance 1 mm

Distance overhang hole exit 1 mm



High Feed Turning

■ Application Range

Inner Diameter Turning

- Through hole application is recommended (blind hole makes chip stacking and jamming).
- Inner diameter has to be more than 50 mm.
- Additional interfaces can be adapted to increase the turning length.
- Length of cut is recommended less than 3xD.

Outer Diameter Turning and Facing

- Straight outer diameter turning and facing.
- No limitation of work size. but rigidity of the workpiece and clamping is important.
- Additional interfaces can be adapted to increase the turning length.

Taper. Sheave Surface Turning

- Different approach angles of the insert can be introduced into the system according to the customer's requirements.

■ Inner Diameter Turning

Ring Gear . HFT-D. BNC200



Face Gear. HFT-O. BNC30G



Pipe. HFT-D. BNC30G



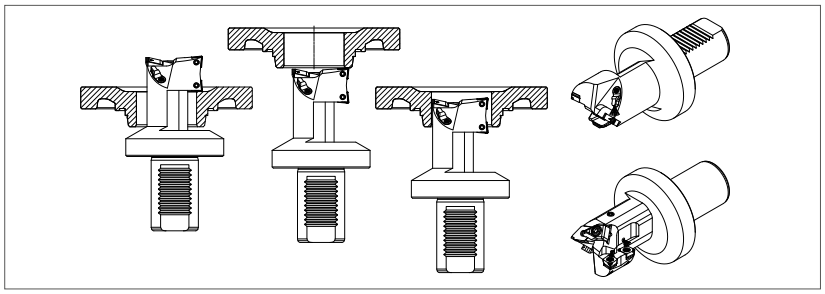
■ Inside Turning, Outside Turning

Bearing Ring. HFT-D/HFT-O. BNC30G



■ Inside Turning, Front Facing and Rear Side

Shift Wheel. HFT-D & ISO. BNC200



■ Outer Diameter Turning and Facing

Drive Shaft. HFT-D. BNC200



Drive Shaft. HFT-O. BNC200



Protection Disc. HFT-D/HFT-O



■ Taper, Sheave and Surface Turning

Taper Roller. HFT-D. BNC30G (1)



Taper Roller. HFT-D. BNC30G (2)



Bearing Ring. HFT-D/HFT-O. BNC30G



(N·m) Recommended Tightening Torque (N·m)

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

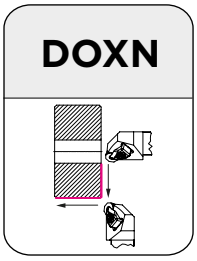
Blank: Made-to-order item

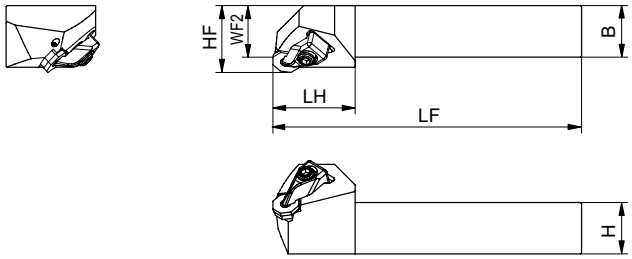
— mark: Not available

High Feed Turning (HFT-O)

■ HFT DOXN R/L 2525M 1204

Outer Diameter Turning, Facing, Boring possible





Above figures show right hand tools.
Attention: You need approximately 8 mm overhang on the shoulder (see page 2)

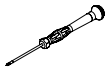
Holders

ISO Cat. No.	Stock		Dimensions (mm)					
	R	L	H	B	LF	WF2	HF	LH
HFT DOXN R/L 2525M 1204	★	★	25	25	150	25	32.5	40

Spare Parts for Clamping System

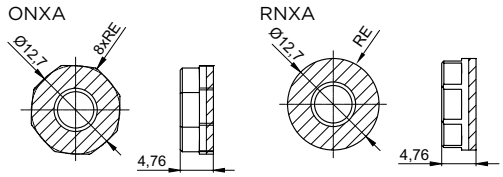






Clamp	Spring	Clamp Bolt	Clamp Wrench	Shim	Screw	Screw Wrench
SCP2 (Set)		5 (N·m)	LH040	CSCFHFT	MIB1.6-3	SDBSM

CBN-Inserts



E00200: Cutting edge rounded 10–20 µm. B: Full top CBN insert

ISO Cat. No.	Grade		RE (mm)	Outer Dia. Turning	Facing	Boring possible	Applicable Holder
	BNC30G	BNC200					
ONXA 1204 R150 R E00200 B*	★	★	150	◎	–	–	HFT DOXN **R** 2525M 1204
ONXA 1204 R150 L E00200 B**	★	★	150	◎	–	–	HFT DOXN **L** 2525M 1204
ONXA 1204 R28 R E00200 B*	★	★	28	○	◎	◎	HFT DOXN **R** 2525M 1204
ONXA 1204 R28 L E00200 B**	★	★	28	○	◎	◎	HFT DOXN **L** 2525M 1204
RNXA 1204 N E00200 B***	★	★	6.35	○	○	○	HFT DOXN **R/L** 2525M 1204

* Right handed (R) octagon inserts can only be used in right handed (R) tools.
** Left handed (L) octagon inserts can only be used in left handed (L) tools.
*** Can be used in right (R) or left (L) handed tool holders. Round inserts produce less cutting pressure when turning compared to octagonal inserts. but the quality of surface finish is also reduced.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

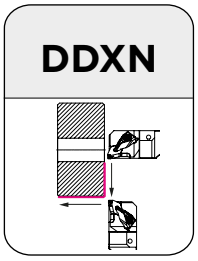
HFT	DOXN	R/L	25	25	M	1204
Holder Description „High Feed Turning“	Clamping System D: Double Clamp O: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Shank Height (H)	Shank Width (B)	Holder Length	Insert Size

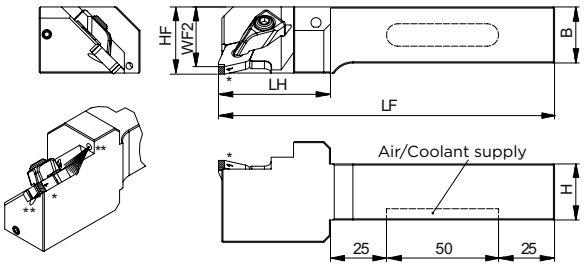
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
– mark: Not available
(N·m) Recommended Tightening Torque (N·m)

High Feed Turning (HFT-D)

■ HFT DDXN R/L 2525M 1504

Outer Diameter Turning. Facing





* Note mounting position: Cutting edge number must be visible as shown.

** Air / coolant outlet

*** Screw plugs for air / coolant transfer shall not be removed.

Above figures show right hand tools.
Attention: You need approximately 3 mm overhang on the shoulder (see page 3)

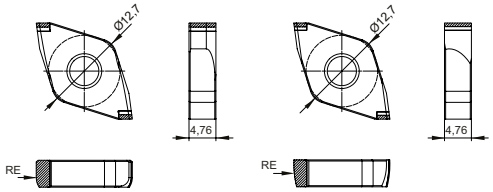
Holders

ISO Cat. No.	Stock		Dimensions (mm)					
	R	L	H	B	LF	WF2	HF	LH
HFT DDXN R/L 2525M 1504	★	★	25	25	150	26.6	30	50

Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench			
SCP2 (Set)		5 N·m	LH040			

CBN-Inserts



S01215: Chamfer 0.10-0.15x15° + Cutting edge rounded 10–20 µm
E00200: Cutting edge rounded 10–20 µm

ISO Cat. No.	Grade		RE (mm)	Outer Dia. Turning	Facing	Boring possible	Applicable Holder
	BNC30G	BNC200					
DNXA 1504 R3 R S01215*	★	★	3	◎	○	–	HFT DDXN **R** 2525M 1504
DNXA 1504 R3 L S01215**	★	★	3	◎	○	–	HFT DDXN **L** 2525M 1504
DNXA 1504 R16 R S01215*	★	★	16	○	○	–	HFT DDXN **R** 2525M 1504
DNXA 1504 R16 L S01215**	★	★	16	○	○	–	HFT DDXN **L** 2525M 1504
DNXA 1504 R16 R E00200*		★	16	○	○	–	HFT DDXN **R** 2525M 1504
DNXA 1504 R16 L E00200**		★	16	○	○	–	HFT DDXN **L** 2525M 1504

* Right handed (R) inserts can only be used in right handed (R) tools.
** Left handed (L) inserts can only be used in left handed (L) tools.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

HFT	DDXN	R/L	25	25	M	1504
Holder Description „High Feed Turning“	Clamping System D: Double Clamp D: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Shank Height (H)	Shank Width (B)	Holder Length	Insert Size

N·m Recommended Tightening Torque (N·m)

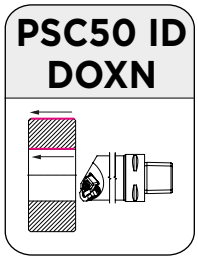
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

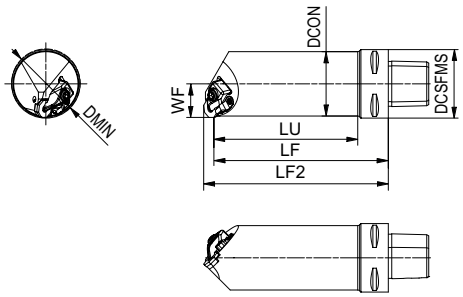
Blank: Made-to-order item
— mark: Not available

High Feed Turning (HFT-O)

■ PSC50 HFT ID 25105 DOXN R/L 1204

Boring, Outer Diameter Turning possible



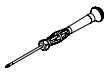


Above figures show right hand tools.
Attention: You need approximately 8 mm overhang on the shoulder (see page 2)

Holders

ISO Cat. No.	Stock		Dimensions (mm)						
	R	L	DMIN	DCON	WF	LU	LF	LF2	DCSFMS
PSC50 HFT ID 25105 DOXN R/L 1204	★	★	50	47	24.5	105	127.3	134.8	50

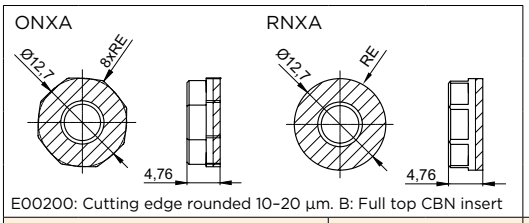
Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench	Shim	Screw	Screw Wrench
SCP2 (Set)		5 (N·m)	LH040	CSCFHFT	MIB1.6-3	SDBSM

Spare Parts for Coolant Supply

For Holder **L**eft:	PSC50 HFT ID 25105 DOXN L 1204		For Holder **R**ight:	PSC50 HFT ID 25105 DOXN R 1204	
					
Cooling Block **L**eft	Screw	Seal	Cooling Block **R**ight	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



E00200: Cutting edge rounded 10–20 µm. B: Full top CBN insert

ISO Cat. No.	Grade		RE (mm)	Boring	Outer Dia. Turning	Applicable Holder
	BNC30G	BNC200				
ONXA 1204 R28 R E00200 B*	★	★	28	◎	○	PSC50 HFT ID 25105 DOXN **L** 1204
ONXA 1204 R28 L E00200 B**	★	★	28	◎	○	PSC50 HFT ID 25105 DOXN **R** 1204
ONXA 1204 R150 R E00200 B*	★	★	150	–	◎	PSC50 HFT ID 25105 DOXN **L** 1204
ONXA 1204 R150 L E00200 B**	★	★	150	–	◎	PSC50 HFT ID 25105 DOXN **R** 1204
RNXA 1204 N E00200 B***	★	★	6.35	○	○	PSC50 HFT ID 25105 DOXN **R/L** 1204

* Right handed (R) inserts can only be used in left handed (L) tools.
** Left handed (L) inserts can only be used in right (R) handed tools.
*** Can be used in right (R) or left handed (L) tool holders. Round inserts produce less cutting pressure when turning compared to octagonal inserts. but the quality of surface finish is also reduced.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

PSC	50	HFT	ID	25	105	DOXN	R/L	1204
Polygon Shank	Shank Diameter	Holder Descrip-tion „High Feed Turning“	Inner Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp O: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

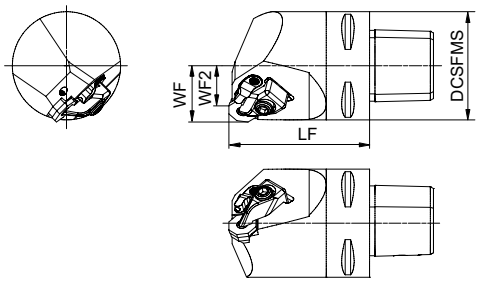
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

High Feed Turning (HFT-O)

■ PSC50 HFT OD 26065 DOXN R/L 1204

Outer Diameter Turning and Facing



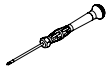


Above figures show right hand tools.
Attention: You need approximately 8 mm overhang on the shoulder (see page 2)

Holders

ISO Cat. No.	Stock		Dimensions (mm)					
	R	L	WF	WF2	LF	DCSFMS		
PSC50 HFT OD 26065 DOXN R/L 1204	★	★	26	18.5	65	50		

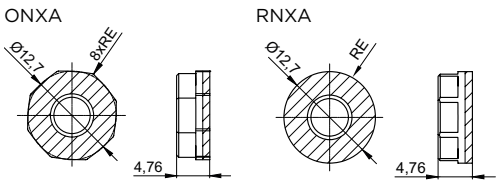
Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench	Shim	Screw	Screw Wrench
SCP2 (Set)		5 N·m	LH040	CSCFHFT	MIB1.6-3	SDBSM

Spare Parts for Coolant Supply

For Holder Right:	PSC50 HFT OD 26065 DOXN R 1204		For Holder Left:	PSC50 HFT OD 26065 DOXN L 1204	
					
Cooling Block Left	Screw	Seal	Cooling Block Right	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



E00200: Cutting edge rounded 10–20 µm. B: Full top CBN insert

ISO Cat. No.	Grade		RE (mm)	Outer Dia. Turning	Facing	Applicable Holder
	BNC30G	BNC200				
ONXA 1204 R150 R E00200 B*	★	★	150	◎	–	PSC50 HFT OD 26065 DOXN **R** 1204
ONXA 1204 R150 L E00200 B**	★	★	150	◎	–	PSC50 HFT OD 26065 DOXN **L** 1204
ONXA 1204 R28 R E00200 B*	★	★	28	○	◎	PSC50 HFT OD 26065 DOXN **R** 1204
ONXA 1204 R28 L E00200 B**	★	★	28	○	◎	PSC50 HFT OD 26065 DOXN **L** 1204
RNXA 1204 N E00200 B***	★	★	6.35	○	○	PSC50 HFT OD 26065 DOXN **R/L** 1204

* Right handed (R) inserts can only be used in right handed (R) tools.
** Left handed (L) inserts can only be used in left handed (L) tools.
*** Can be used in right (R) or left handed (L) tool holders. Round inserts produce less cutting pressure when turning compared to octagonal inserts. but the quality of surface finish is also reduced.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

PSC	50	HFT	OD	26	065	DOXN	R/L	1204
Polygon Shank	Shank Diameter	Holder Description „High Feed Turning“	Outer Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp O: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

N·m Recommended Tightening Torque (N·m)

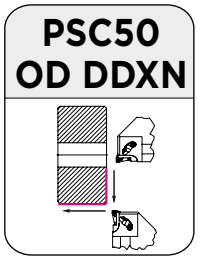
★ mark: Global stocked item
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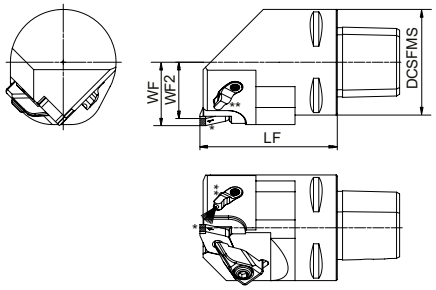
Blank: Made-to-order item
— mark: Not available

High Feed Turning (HFT-D)

■ PSC50 HFT OD 30065 DDXN R/L 1504

Outer Diameter Turning and Facing





* Note mounting position: Cutting edge number must be visible as shown.

** Air / coolant outlet

Above figures show right hand tools.
Attention: You need approximately 3 mm overhang on the shoulder (see page 3)

Holders

ISO Cat. No.	Stock		Dimensions (mm)					
	R	L	WF	WF2	LF	DCSFMS		
PSC50 HFT OD 30065 DDXN R/L 1504	★	★	30	26.6	65	50		

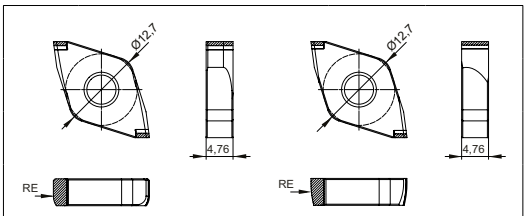
Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench			
SCP2 (Set)		5 (N·m)	LH040			

Spare Parts for Coolant Supply

For Holder Right:	PSC50 HFT OD 30065 DDXN R 1504		For Holder Left:	PSC50 HFT OD 30065 DDXN L 1504	
					
Cooling Block Left	Screw	Seal	Cooling Block Right	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



S01215: Chamfer 0.10-0.15x15° + Cutting edge rounded 10–20 µm
E00200: Cutting edge rounded 10–20 µm

ISO Cat. No.	Grade		RE (mm)	Outer Dia. Turning	Facing	Applicable Holder
	BNC30G	BNC200				
DNXA 1504 R3 **R** S01215*	★	★	3	◎	○	PSC50 HFT OD 30065 DDXN **R** 1504
DNXA 1504 R3 **L** S01215**	★	★	3	◎	○	PSC50 HFT OD 30065 DDXN **L** 1504
DNXA 1504 R16 **R** S01215*	★	★	16	○	○	PSC50 HFT OD 30065 DDXN **R** 1504
DNXA 1504 R16 **L** S01215**	★	★	16	○	○	PSC50 HFT OD 30065 DDXN **L** 1504
DNXA 1504 R16 **R** E00200*		★	16	○	○	PSC50 HFT OD 30065 DDXN **R** 1504
DNXA 1504 R16 **L** E00200**		★	16	○	○	PSC50 HFT OD 30065 DDXN **L** 1504

* Right handed (R) inserts can only be used in right handed (R) holders.
** Left handed (L) inserts can only be used in left handed (L) holders.

◎ Preferred choice
○ Suitable

■ Identification Details - Holder

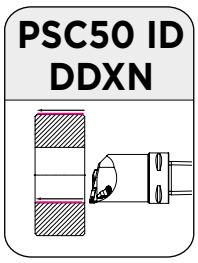
PSC	50	HFT	OD	30	065	DDXN	R/L	1504
Polygon Shank	Shank Diameter	Holder Description „High Feed Turning“	Outer Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp D: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

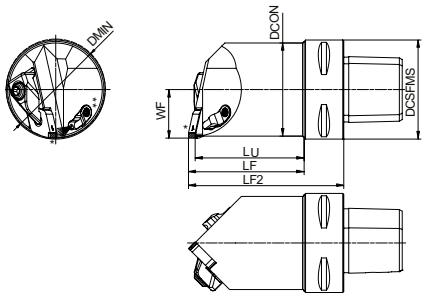
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
(N·m) Recommended Tightening Torque (N·m)

High Feed Turning (HFT-D)

■ PSC50 HFT ID 25055 DDXN R/L 1504

Boring, Outer Diameter Turning possible





* Note mounting position: Cutting edge number must be visible as shown.

** Air / coolant outlet

Above figures show right hand tools.
Attention: You need approximately 3 mm overhang on the shoulder (see page 3)

Holders

ISO Cat. No.	Stock		Dimensions (mm)						
	R	L	DMIN	DCON	WF	LU	LF	LF2	DCSFMS
PSC50 HFT ID 25055 DDXN R/L 1504	★	★	50	47	24.5	55	58.4	78.4	50

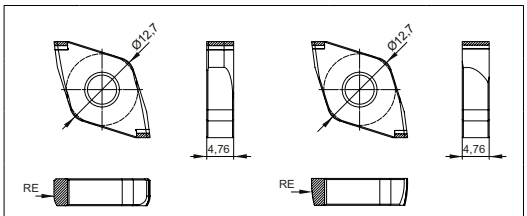
Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench			
SCP2 (Set)		5 (N·m)	LH040			

Spare Parts for Coolant Supply

For Holder Left:	PSC50 HFT ID 25055 DDXN L 1504		For Holder Right:	PSC50 HFT ID 25055 DDXN R 1504	
					
Cooling Block Left	Screw	Seal	Cooling Block Right	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



S01215: Chamfer 0.10-0.15x15° + Cutting edge rounded 10–20 µm
E00200: Cutting edge rounded 10–20 µm

ISO Cat. No.	Grade		RE (mm)	Boring	Outer Dia. Turning	Applicable Holder
	BNC30G	BNC200				
DNXA 1504 R16 R S01215*	★	★	16	◎	○	PSC50 HFT ID 25055 DDXN **L** 1504
DNXA 1504 R16 L S01215**	★	★	16	◎	○	PSC50 HFT ID 25055 DDXN **R** 1504
DNXA 1504 R16 R E00200*		★	16	○	○	PSC50 HFT ID 25055 DDXN **L** 1504
DNXA 1504 R16 L E00200**		★	16	○	○	PSC50 HFT ID 25055 DDXN **R** 1504
DNXA 1504 R3 R E00200*	★	★	3	–	◎	PSC50 HFT ID 25055 DDXN **L** 1504
DNXA 1504 R3 L E00200**	★	★	3	–	◎	PSC50 HFT ID 25055 DDXN **R** 1504

* Right handed (R) inserts can only be used in left handed (L) tools.
** Left handed (L) inserts can only be used in right handed (R) tools.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

PSC	50	HFT	ID	25	055	DDXN	R/L	1504
Polygon Shank	Shank Diameter	Holder Description „High Feed Turning“	Inner Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp D: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

(N·m) Recommended Tightening Torque (N·m)

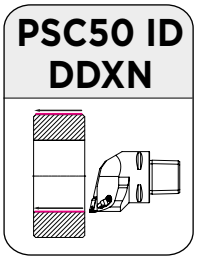
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

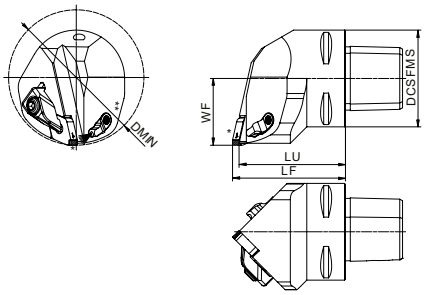
Blank: Made-to-order item
– mark: Not available

High Feed Turning (HFT-D)

■ PSC50 HFT ID 35055 DDXN R/L 1504

Boring, Outer Diameter Turning possible





* Note mounting position: Cutting edge number must be visible as shown.

** Air / coolant outlet

*** Screw plugs for air / coolant transfer shall not be removed.

Above figures show right hand tools.
Attention: You need approximately 3 mm overhang on the shoulder (see page 3)

Holders

ISO Cat. No.	Stock		Dimensions (mm)						
	R	L	DMIN		WF	LU	LF		DCSFMS
PSC50 HFT ID 35055 DDXN R/L 1504	★	★	70		34.5	55	58.4		50

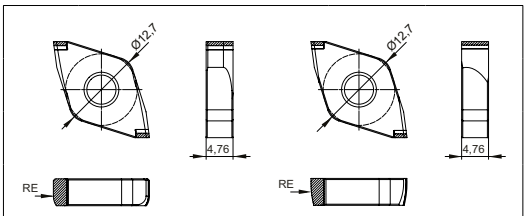
Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench			
SCP2 (Set)	5 N·m		LH040			

Spare Parts for Coolant Supply

For Holder Left:	PSC50 HFT ID 35055 DDXN L 1504		For Holder Right:	PSC50 HFT ID 35055 DDXN R 1504	
					
Cooling Block Left	Screw	Seal	Cooling Block Right	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



S01215: Chamfer 0.10-0.15x15° + Cutting edge rounded 10–20 µm
E00200: Cutting edge rounded 10–20 µm

ISO Cat. No.	Grade		RE (mm)	Boring	Outer Dia. Turning	Applicable Holder
	BNC30G	BNC200				
DNXA 1504 R16 R S01215*	★	★	16	◎	○	PSC50 HFT ID 25055 DDXN **L** 1504
DNXA 1504 R16 L S01215**	★	★	16	◎	○	PSC50 HFT ID 25055 DDXN **R** 1504
DNXA 1504 R16 R E00200*		★	16	○	○	PSC50 HFT ID 25055 DDXN **L** 1504
DNXA 1504 R16 L E00200**		★	16	○	○	PSC50 HFT ID 25055 DDXN **R** 1504
DNXA 1504 R3 R E00200*	★	★	3	–	◎	PSC50 HFT ID 25055 DDXN **L** 1504
DNXA 1504 R3 L E00200**	★	★	3	–	◎	PSC50 HFT ID 25055 DDXN **R** 1504

* Right handed (R) inserts can only be used in left handed (L) tools.
** Left handed (L) inserts can only be used in right handed (R) tools.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

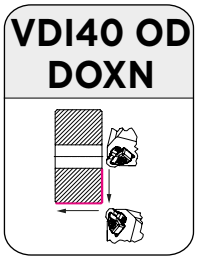
PSC	50	HFT	ID	35	055	DDXN	R/L	1504
Polygon Shank	Shank Diameter	Holder Description „High Feed Turning“	Inner Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp D: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

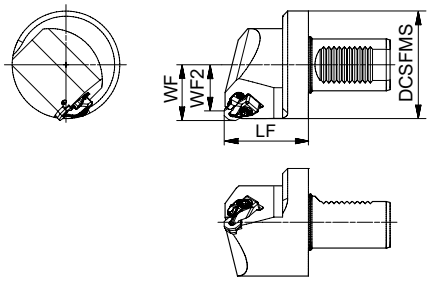
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
– mark: Not available
N·m Recommended Tightening Torque (N·m)

High Feed Turning (HFT-O)

■ VDI40 HFT OD 43065 DOXN R/L 1204

Outer Diameter Turning and Facing





Above figures show right hand tools.
Attention: You need approximately 8 mm overhang on the shoulder (see page 2)

Holders

ISO Cat. No.	Stock		Dimensions (mm)					
	R	L	WF	WF2	LF	DCSFMS		
VDI40 HFT OD 43065 DOXN R/L 1204	★	★	43	35.5	65	83		

Spare Parts for Clamping System





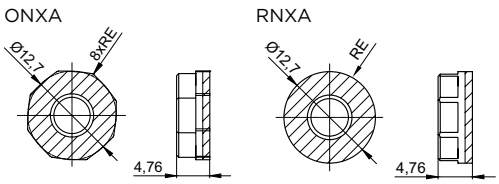


Clamp	Spring	Clamp Bolt	Clamp Wrench	Shim	Screw	Screw Wrench
SCP2 (Set)		5 (N·m)	LH040	CSCFHFT	MIB1.6-3	SDBSM

Spare Parts for Coolant Supply

For Holder Right:	VDI40 HFT OD 43065 DOXN R 1204		For Holder Left:	VDI40 HFT OD 43065 DOXN L 1204	
					
Cooling Block Left	Screw	Seal	Cooling Block Right	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



E00200: Cutting edge rounded 10–20 µm. B: Full top CBN insert

ISO Cat. No.	Grade		RE (mm)	Outer Dia. Turning	Facing	Applicable Holder
	BNC30G	BNC200				
ONXA 1204 R150 R E00200 B*	★	★	150	◎	–	VDI40 HFT OD 43065 DOXN **R** 1204
ONXA 1204 R150 L E00200 B**	★	★	150	◎	–	VDI40 HFT OD 43065 DOXN **L** 1204
ONXA 1204 R28 R E00200 B*	★	★	28	○	◎	VDI40 HFT OD 43065 DOXN **R** 1204
ONXA 1204 R28 L E00200 B**	★	★	28	○	◎	VDI40 HFT OD 43065 DOXN **L** 1204
RNXA 1204 N E00200 B***	★	★	6.35	○	○	VDI40 HFT OD 43065 DOXN **R/L** 1204

* Right handed (R) inserts can only be used in right handed (R) tools.
** Left handed (L) inserts can only be used in left handed (L) tools.
*** Can be used in right (R) or left (L) handed tool holders. Round inserts produce less cutting pressure when turning compared to octagonal inserts. but the quality of surface finish is also reduced.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

VDI	40	HFT	OD	43	065	DOXN	R/L	1204
Cylindrical Shank	Shank Diameter	Holder Description „High Feed Turning“	Outer Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp O: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

(N·m) Recommended Tightening Torque (N·m)

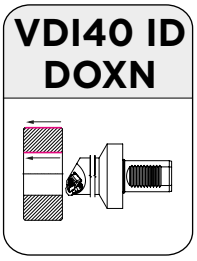
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

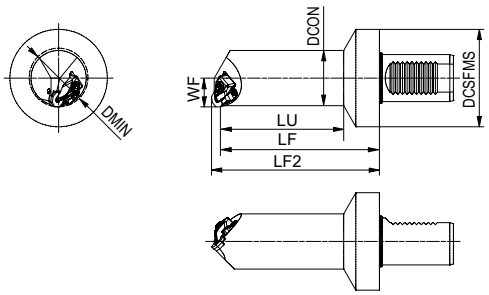
Blank: Made-to-order item
— mark: Not available

High Feed Turning (HFT-O)

■ VDI40 HFT ID 25105 DOXN R/L 1204

Boring, Outer Diameter Turning possible



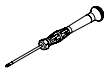


Above figures show right hand tools.
Attention: You need approximately 8 mm overhang on the shoulder (see page 2)

Holders

ISO Cat. No.	Stock		Dimensions (mm)						
	R	L	DMIN	DCON	WF	LU	LF	LF2	DCSFMS
VDI40 HFT ID 25105 DOXN **R/L** 1204	★	★	50	47	24.5	105	135.4	142.8	83

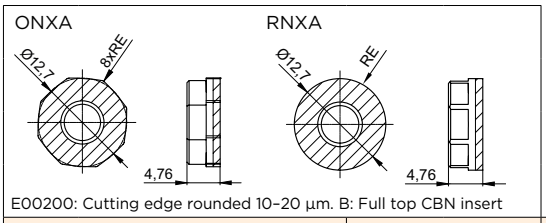
Spare Parts for Clamping System

						
Clamp	Spring	Clamp Bolt	Clamp Wrench	Shim	Screw	Screw Wrench
SCP2 (Set)		5 N·m	LH040	CSCFHFT	MIB1.6-3	SDBSM

Spare Parts for Coolant Supply

For Holder Right:	VDI40 HFT ID 25105 DOXN L 1204		For Holder Left:	VDI40 HFT ID 25105 DOXN R 1204	
					
Cooling Block Left	Screw	Seal	Cooling Block Right	Screw	Seal
CBLHFTSP (Set)			CBRHFTSP (Set)		

CBN-Inserts



E00200: Cutting edge rounded 10–20 µm. B: Full top CBN insert

ISO Cat. No.	Grade		RE (mm)	Outer Dia. Turning	Facing	Applicable Holder
	BNC30G	BNC200				
ONXA 1204 R28 R E00200 B*	★	★	28	◎	○	VDI40 HFT ID 25105 DOXN **L** 1204
ONXA 1204 R28 L E00200 B**	★	★	28	◎	○	VDI40 HFT ID 25105 DOXN **R** 1204
ONXA 1204 R150 R E00200 B*	★	★	150	–	◎	VDI40 HFT ID 25105 DOXN **L** 1204
ONXA 1204 R150 L E00200 B**	★	★	150	–	◎	VDI40 HFT ID 25105 DOXN **R** 1204
RNXA 1204 N E00200 B***	★	★	6.35	○	○	VDI40 HFT ID 25105 DOXN **R/L** 1204

* Right handed (R) inserts can only be used in left handed(L) tools.
** Left handed (L) inserts can only be used in right handed (R) tools.
*** Can be used in right (R) or left (L) handed tool holders. Round inserts produce less cutting pressure when turning compared to octagonal inserts. but the quality of surface finish is also reduced.

◎ Preferred choice
○ Suitable
– Not possible

■ Identification Details - Holder

VDI	40	HFT	ID	25	105	DOXN	R/L	1204
Cylindrical Shank	Shank Diameter	Holder Description „High Feed Turning“	Inner Diameter Turning	Cutting Edge Distance	Holder Length	Clamping System D: Double Clamp O: Insert Shape X: Holder Style N: Relief Angle=0°	Feed Direction R: Right Hand L: Left Hand	Insert Size

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High Feed Turning (HFT-O)

■ Technical Details

Spare Parts for HFT-O Square shank holder

ONXA & RNXA
can be used



Example: HFT DOXN L 2525M 1204

Spare Parts for Clamping System:

① SCP2 → Clampset
② LH040 → Clamp Wrench
③ CSCFHFT → Shim
④ MIB1.6-3 → Screw
⑤ SDBSM → Screw Wrench

Spare Parts for VDI40-. PSC50 HFT-O Toolholders

ONXA & RNXA
can be used



Example: PSC50 HFT ID 25105 DOXN L 1204

Spare Parts for Clamping System:

① SCP2 → Clampset
② CSCFHFT → Shim
③ MIB1.6-3 → Screw
④ SDBSM → Screw Wrench
⑤ LH040 → Clamp Wrench
⑥ TRX10 → Torx Wrench

Spare Part Set for Coolant Supply:

CBLH-FTSP/CBRH-FTSP →
- ⑦ Screw
- ⑧ Coolant Block
- ⑨ Seal

High Feed Turning (HFT-D)

■ Technical Details

Spare Parts for HFT-D Shank



Example: HFT DDXN L 2525M 1504

Spare Parts for Clamping System:

① SCP2 → Clampset
② LH040 → Clamp Wrench

Spare Parts for PSC50 HFT-D Toolholders



Example: PSC50 HFT ID 35055 DDXN R 1504

Spare Parts for Clamping System:

① SCP2 → Clampset
② LH040 → Clamp Wrench
③ TRX10 → Torx Wrench

Spare Part Set for Coolant Supply:

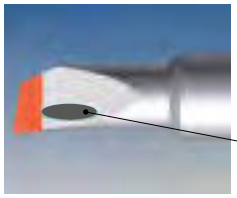
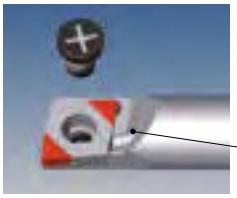
CBLH-FTSP/CBRH-FTSP →
- ④ Screw
- ⑤ Coolant Block
- ⑥ Seal

BSME series / SEXC series



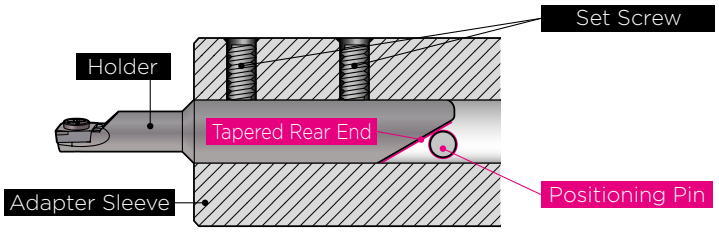
■ Features

- For internal boring of hardened steel with min. bore diameters from ø2.5mm.
- Achieves high-precision cutting edge positioning thanks to the newly developed clamp mechanism.
- Realises high-efficiency machining by switching from grinding to cutting in the small diameter range.
- BSME series (brazed type)
  Can be used with bore diameters from ø2.5 to 5.0mm.
- SEXC series (indexable Insert type)
  Can be used with bore diameters from ø4.0 to 6.0mm.
  Expansion of coated carbide and cermet grades.
- Economical 2-cornered insert.

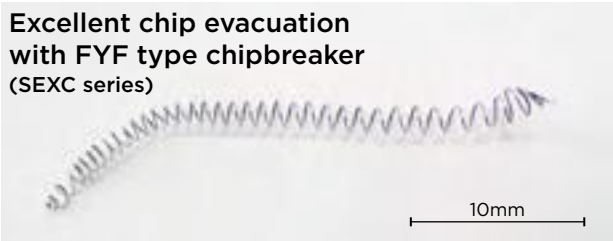
Brazed CBN type BSME series	Indexable Insert type SEXC series
Min. Bore Dia.: ø2.5 to 5.0mm	Min. Bore Dia.: ø4.0 to 6.0mm
High-quality, unique cutting edge shape  Internal Coolant Supply (Standard)	2-cornered insert used  Internal Coolant Supply (Standard)

Clamp Mechanism

Achieves high-precision cutting edge positioning by combining a holder with a tapered rear end and an adapter sleeve with an internal positioning pin. (common to BSME series and SEXC series)

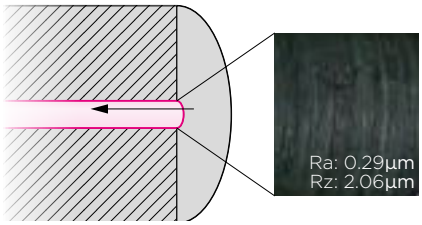


Excellent chip evacuation with FYF type chipbreaker (SEXC series)



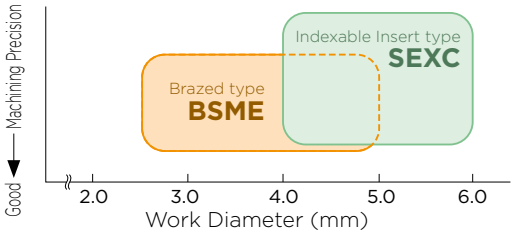
Work Material: X5CrNi18-10 Internal Boring,
Insert: ECEM 03X102L-FYF (AC1030U)
Cutting Conditions: vc = 100m/min, f = 0.05mm/rev, ap = 0.03mm, Work Dia.: ø4

Excellent machined surface quality with cermet grade (SEXC series)

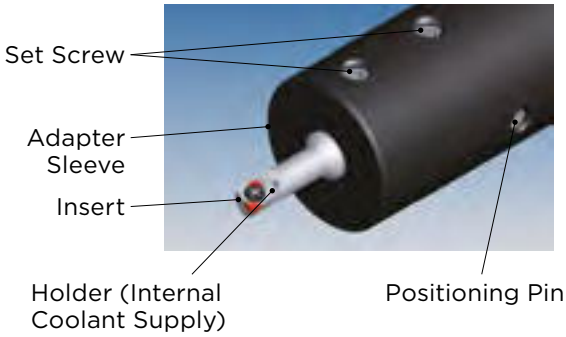


Work Material: 15CrMo5 Internal Boring,
Insert: ECEM 03X102L-FYF (T1500A)
Cutting Conditions: vc = 100 m/min, f = 0.03 mm/rev, ap = 0.03 mm

Application Range



Basic Configuration



BSME series

CBN

SUMIBORON
Brazed

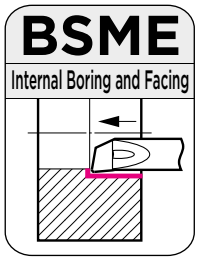


Fig 1

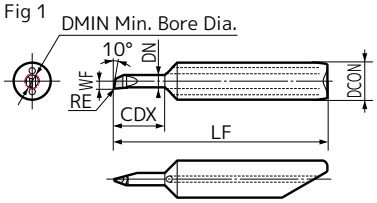


Fig 2

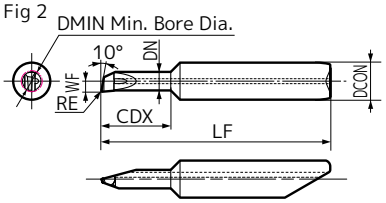


Figure shows right-handed (R) tool.

Holder (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000 R	BN2000 L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Maximum Boring Depth CDX	Corner Radius RE	Applicable Adapter Sleeve	Fig
BSME R/L 25020D2S6	★	★	**2.5**	6.0	2.0	32.0	1.20	5.3	0.2		1
BSME R/L 25020D3S6	★	★	**2.5**	6.0	2.0	34.5	1.20	7.8	0.2		1
BSME R/L 25020D4S6			**2.5**	6.0	2.0	37.0	1.20	10.3	0.2		1
BSME R/L 30020D2S6	★	★	**3.0**	6.0	2.5	32.8	1.45	6.3	0.2		2
BSME R/L 30020D3S6	★	★	**3.0**	6.0	2.5	35.8	1.45	9.3	0.2		2
BSME R/L 30020D4S6			**3.0**	6.0	2.5	38.8	1.45	12.3	0.2		2
BSME R/L 35020D2S6	★	★	**3.5**	6.0	3.0	33.5	1.70	7.3	0.2		2
BSME R/L 35020D3S6	★	★	**3.5**	6.0	3.0	37.0	1.70	10.8	0.2		2
BSME R/L 35020D4S6			**3.5**	6.0	3.0	40.5	1.70	14.3	0.2	HBSM6020	2
BSME R/L 40020D2S6	★	★	**4.0**	6.0	3.5	33.9	1.95	8.3	0.2	HBSM6020A	2
BSME R/L 40020D3S6	★	★	**4.0**	6.0	3.5	37.9	1.95	12.3	0.2		2
BSME R/L 40020D4S6			**4.0**	6.0	3.5	41.9	1.95	16.3	0.2		2
BSME R/L 45020D2S6	★	★	**4.5**	6.0	4.0	35.0	2.20	9.3	0.2		2
BSME R/L 45020D3S6	★	★	**4.5**	6.0	4.0	39.5	2.20	13.8	0.2		2
BSME R/L 45020D4S6			**4.5**	6.0	4.0	44.0	2.20	18.3	0.2		2
BSME R/L 50020D2S6	★	★	**5.0**	6.0	4.5	35.8	2.45	10.3	0.2		2
BSME R/L 50020D3S6	★	★	**5.0**	6.0	4.5	40.8	2.45	15.3	0.2		2
BSME R/L 50020D4S6			**5.0**	6.0	4.5	45.8	2.45	20.3	0.2		2

The BSME series requires HBSM6020(A) adapter sleeve (sold separately).

Identification Code

BSM Series Code | **E** Carbide Shank with Oil Hole | **R** Feed Direction | **350** Min. Bore Dia. | **20** Cutting Edge Corner Radius | **D2** L/D | **S6** Shank Dia.

Fig 1

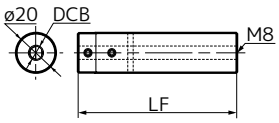
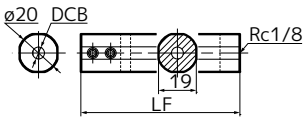


Fig 2



Adapter Sleeve (Sold Separately)

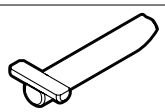
Parts Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM 6020	★	6.0	80	1	BT0506	TH025
HBSM 6020 A	★	6.0	80	2		

Mounting Method L151

Alignment Jig (Sold Separately) For HBSM6020 Adapter Sleeve

ISO Cat. No.	Stock
AFBSM 60	★



This jig is used for centring adapter sleeves when setting them into adapter sleeve holders.

Recommended Cutting Conditions

Work Material	H Hardened Steel	
Spindle Speed n (min^{-1})	Above 2,000	Above 2,000
Depth of Cut ap (mm)	0.01-0.15	0.01-0.15
Feed Rate f (mm/rev)	0.01-0.10	0.01-0.10

May cause chattering or chipping at the cutting edge during low-speed machining.
Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SEXC series

Expansion | Carbide Coolant Hole | CBN

Carbide / Cermet / SUMIBORON
Screw-on

SumiSmall

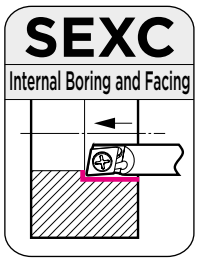


Fig 1

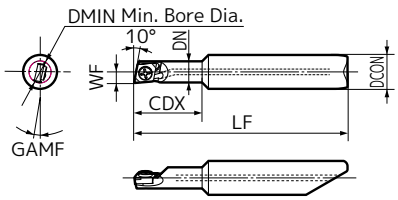


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Boring Depth CDX	Rake Angle GAMF	Applicable Adapter Sleeve	Fig	Bolt	Bolt N·m	Wrench
E06D2 SEXC R/L 03-04P	★	★	**4.0**	6.0	3.75	33.75	1.95	8	-13°	HBSM6020 HBSM6020A	1	MIB1.6-2	**0.2**	SDBSM
E06D3 SEXC R/L 03-04P	★	★	**4.0**	6.0	3.75	37.75	1.95	12	-13°		1			
E06D2 SEXC R/L 03-05P	★	★	**5.0**	6.0	4.75	35.25	2.45	10	-12°		1	MIB1.6-2.5	**0.2**	
E06D3 SEXC R/L 03-05P	★	★	**5.0**	6.0	4.75	40.25	2.45	15	-12°		1			
E06D2 SEXC R/L 03-06P	★	★	**6.0**	6.0	5.75	36.75	2.95	12	-11°		1	MIB1.6-3	**0.2**	
E06D3 SEXC R/L 03-06P	★	★	**6.0**	6.0	5.75	42.75	2.95	18	-11°		1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The SEXC series requires HBSM6020(A) adapter sleeve (sold separately).

Identification Code

E	06	D2	-	S	E	X	C	R	03	-	04	P
Carbide Shank with Oil Hole	Shank Dia.	L/D		Screw-on	Insert Shape	Cutting Edge Shape	Insert Relief Angle	Feed Direction	Insert Inscribed Circle		Min. Bore Dia.	Accessories

Fig 1

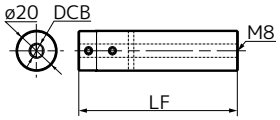
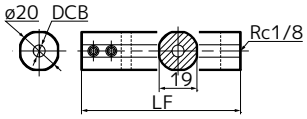


Fig 2



Adapter Sleeve (Sold Separately)

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM 6020	★	6.0	80	1	BT0506	TH025
HBSM 6020 A	★	6.0	80	2		

Mounting Method L151

Alignment Jig (Sold Separately) For HBSM6020 Adapter Sleeve

ISO Cat. No.	Stock
AFBSM 60	★

This jig is used for centring adapter sleeves when setting them into adapter sleeve holders.

Insert (Coated Carbide / SUMIBORON)

Dimensions (mm)

ISO Cat. No.	AC1030U R	AC1030U L	T1500A R	T1500A L	BN2000	BN7125	BN7000	Corner Radius RE	Fig
ECEM 03X1005 R/L FYF	★	★	★	★	—	—	—	0.05	1
ECEM 03X101 R/L FYF	★	★	★	★	—	—	—	0.1	1
ECEM 03X1015 R/L FYF	★	★	★	★	—	—	—	0.15	1
ECEM 03X102 R/L FYF	★	★	★	★	—	—	—	0.2	1
ECXA 030X02 LE NU2	—	—	—	—	★	★		0.2	2
ECXA 030X02 LF NU2	—	—	—	—	★	★	▲	0.2	2

Fig 1

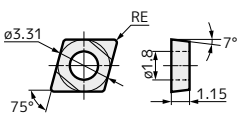
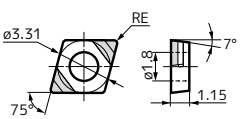


Figure shows right-handed (R) tool.

Fig 2



Part Number Suffix: LE: Honed Edge, LF: Sharp Edged, FYF: Sharp Edged (with Chipbreaker)

Recommended Cutting Conditions

Work Material	P General Steel		M Stainless Steel		K Cast Iron		N Non-Ferrous Metal		S Exotic Alloy	H Hardened Steel		
Insert Grades	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	BN2000	BN7125	BN7000
Spindle Speed n (min⁻¹)	2,000-10,000	2,000-10,000	2,000-8,000	2,000-8,000	2,000-10,000	2,000-10,000	5,000-15,000	5,000-15,000	2,000-6,000	Above 2,000	Above 2,000	Above 2,000
Depth of Cut ap (mm)	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	0.01-0.15	0.01-0.15	0.01-0.15
Feed Rate f (mm/rev)	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	0.01-0.10	0.01-0.10	0.01-0.10

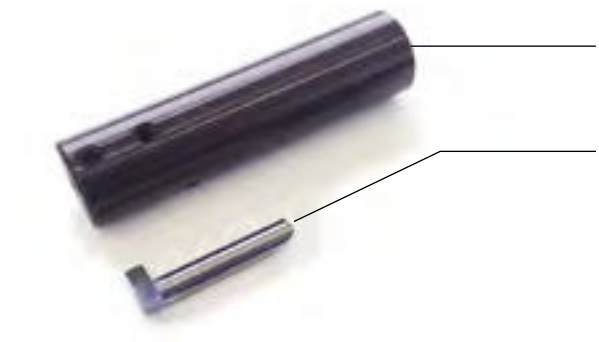
May cause chattering or chipping at the cutting edge during low-speed machining. Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.

N·m Recommended Tightening Torque (N·m)

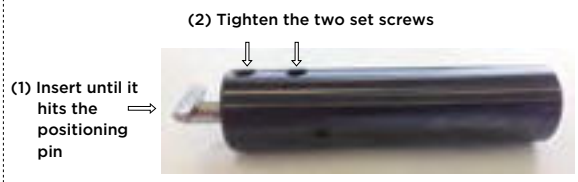
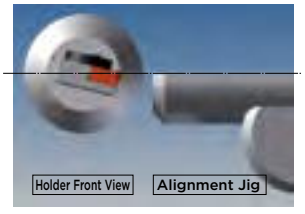
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

■ Dedicated Adapter Sleeve/Alignment Jig

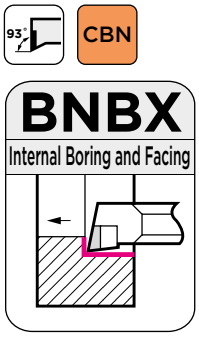


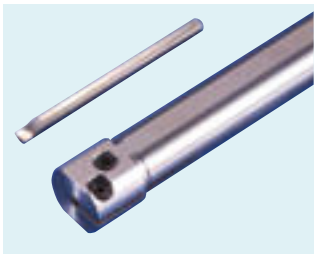
■ Mounting Method (HBSM6020A has a side lock flat, so centring with an alignment jig is not required.)

1	Insert the alignment jig until it hits the positioning pin set in the adapter sleeve, and tighten the two set screws.	
2	Mount the adapter sleeve into the sleeve holder and temporarily tighten the fastening screws.	
3	Rotate the adapter sleeve gradually to adjust until the flat strip of the alignment jig is horizontal. 	When a boring bar is mounted into the adapter sleeve adjusted by the alignment jig, its cutting edge position will automatically be set at the centre. 
4	Using a tool presetter, measure the diameter of the tool.	

*Steps 1 and 3 above are not required when using HBSM6020A.

BNBX series





- **Newly developed high rigidity slit-clamping system, excellent for small hole internal boring**
  - Enables maximum overhang of L/D = 5
  - Minimal deformation produces boring with excellent dimensional tolerance
  - Minimal chatter produces superior surface finish
  - Easy bar indexing while clamped
- **Lineup now includes BN2000 for hardened steel and BN7125/BN7000 for sintered alloy**

Holder (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000	BN7125	BN7000	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
BNBX 020R	★	★	▲	**2.5**	2.0	1.8	40	0.2	HBX 2016	1
BNBX 025R	★	★	▲	**3.0**	2.5	2.2	40	0.2	HBX 2516	1
BNBX 030R	★	★	▲	**3.5**	3.0	2.7	40	0.2	HBX 3016	1
BNBX 035R	★	★	▲	**4.0**	3.5	3.2	40	0.2	HBX 3516	1
BNBX 040R	★	★	▲	**4.5**	4.0	3.7	40	0.2	HBX 4016	1
BNBX 045R	★	★	▲	**5.0**	4.5	4.2	40	0.2	HBX 4516	1
BNBX 050R	★	★	▲	**5.5**	5.0	4.7	60	0.2	HBX 5016	1
BNBX 055R	★	★	▲	**6.0**	5.5	5.2	60	0.2	HBX 5516	1
BNBX 060R	★	★	▲	**6.5**	6.0	5.7	60	0.2	HBX 6016	1
BNBX 065R	★			**7.0**	6.5	6.2	60	0.2	HBB 6516	1
BNBX 070R	★			**7.5**	7.0	6.7	80	0.2	HBB 716	1
BNBX 075R	★			**8.0**	7.5	7.2	80	0.2	HBB 7516	1
BNBX 080R	★			**8.5**	8.0	7.7	80	0.2	HBB 816	1

BNBX bars can be used with HBB type adapter sleeves, but HBX type adapter sleeves are recommended for bars below ø6mm.

Fig 1

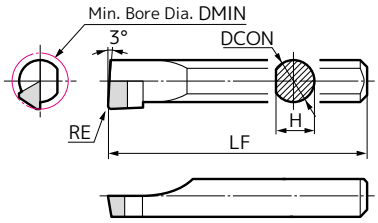


Fig 1

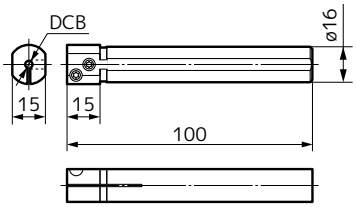
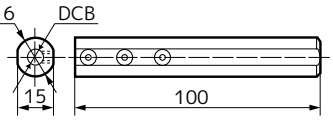


Fig 1



Adapter Sleeve (HBX type)

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2016	★	2.0	BNBX 020R	1
HBX 2516	★	2.5	BNBX 025R	1
HBX 3016	★	3.0	BNBX 030R	1
HBX 3516	★	3.5	BNBX 035R	1
HBX 4016	★	4.0	BNBX 040R	1
HBX 4516	★	4.5	BNBX 045R	1
HBX 5016	★	5.0	BNBX 050R	1
HBX 5516	★	5.5	BNBX 055R	1
HBX 6016	★	6.0	BNBX 060R	1

Adapter Sleeve (HBB type)

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBB 6516	★	6.5	BNBX 065R	1
HBB 716	★	7.0	BNBX 070R	1
HBB 7516	★	7.5	BNBX 075R	1
HBB 816	★	8.0	BNBX 080R	1

HBB type adapter sleeve can also be used with ø2.5 to 6.0mm holders.

Recommended Cutting Conditions

Spindle Speed n	Above 2,000min^{-1}	Low speeds may cause chattering and chipping on the cutting edge.
Depth of Cut ap	0.01 to 0.2mm	Excessive depth of cut may cause larger tool deformation, resulting in deterioration of bore accuracy.
Feed Rate f	0.01 to 0.1mm/rev	—

Parts (for Adapter Sleeve)

Applicable Adapter Sleeve	Flat Insert Screw	N·m	Set Screw	Wrench
HBX2○○○	BFTX0409N	**1.5**	BT06035T	TRD15
HBX3○○○ HBX4○○○ HBX5○○○ HBX6○○○	BFTX0409N	**3.0**	BT06035T	TRD15
HBB○○○○	—	—	BT0404	LH020

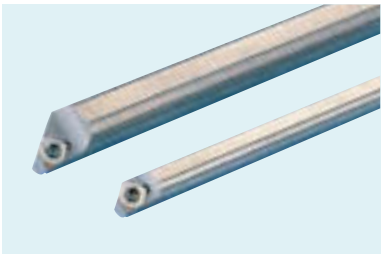
Important Notes

(1) Make the holder overhang as short as possible. (Maximum L/D = 5)
(2) Even minor workpiece runout may affect tool life.
(3) Select a boring bar with a diameter as close to the bore diameter as possible.
(4) Although it is difficult to increase the rotational speed in small-diameter boring applications, higher speeds are recommended whenever possible to extend tool life.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

BNZ series



- ø7mm minimum bore diameter with special one-use insert
- High-rigidity indexable type boring bar with all-cemented carbide shank and powerful clamp
- Economical and easy tool management with one-use type inserts

95° CBN

SUMIBORON
Screw-on

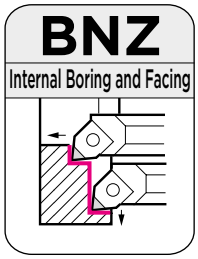
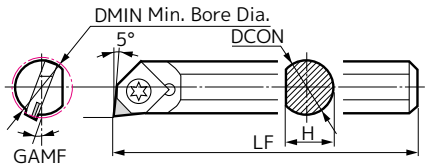


Fig 1



SumiSmall

Holder

Dimensions (mm)

ISO Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Parts: Flat Insert Screw	Parts: Wrench	Parts: Adapter Sleeve
									N·m	 (For Torx hole)	
BNZ 606R	★	**7.0**	6.0	5.5	80	-14°	1	BFTX0204N	0.5	TRX06	HBB616
BNZ 608R	★	**9.0**	8.0	7.5	100	-12°	1				HBB816
BNZ 610R	★	**11.0**	10.0	9.5	125	-10°	1				—
BNZ 612R	★	**13.0**	12.0	11.0	130	-8°	1				
BNZ 616R	★	**17.0**	16.0	15.0	145	-6°	1				
BNZ 620R	★	**21.0**	20.0	19.0	160	-5°	1				

Insert (SUMIBORON)

Dimensions (mm)

Quantity	ISO Cat. No.	BNX10	BNX20	BNC2010	BNC2020	BNC2105	BNC2125	BNC200	BN1000	BN2000	BN7125	BN7000	Corner Radius RE
Single pack	**ZNEX 040102 NU**	★	★	—	—				★	★	★	▲	0.2
	ZNEX 040104 NU	★		—	—				★	★	★	▲	0.4
	ZNEX 040102 NC				★	★	★	★					
	ZNEX 040104 NC				★	★	★	★					
	ZNEX 040102 LE NC			★	—				—	—	—	—	0.2
	ZNEX 040104 LE NC			★	—				—	—	—	—	0.4
	ZNEX 040102 LT NC			—	★				—	—	—	—	0.2
	ZNEX 040104 LT NC			—	★				—	—	—	—	0.4
10 pack	**ZNEX 040102 NU/10VP**			—	—					★			0.2
	ZNEX 040104 NU/10VP			—	—					★			0.4

Fig 1

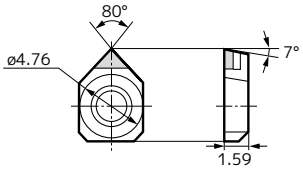
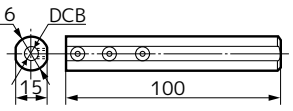


Fig 1



Adapter Sleeve

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Holder	Fig
HBB 616	★	6.0	BNZ 606R	1
HBB 816	★	8.0	BNZ 608R	1

HBX type adapter sleeve (HBX6016) can also be used with BNZ606R.

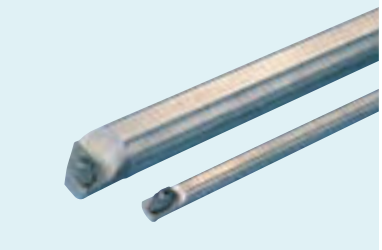
Recommended Cutting Conditions

Spindle Speed n	Above 2,000min^{-1}	Low speeds may cause chattering and chipping on the cutting edge.
Depth of Cut ap	0.03 to 0.2mm	Excessive depth of cut may cause larger tool deformation, resulting in deterioration of bore accuracy.
Feed Rate f	0.03 to 0.1mm/rev	—

Important Notes

(1) Make the holder overhang as short as possible. (Maximum L/D = 5)
(2) Even minor workpiece runout may affect tool life.
(3) Select a boring bar with a diameter as close to the bore diameter as possible.
(4) Although it is difficult to increase the rotational speed in small-diameter boring applications, higher speeds are recommended whenever possible to extend tool life.

BNB series



- **High rigidity full cemented carbide boring bar shank**
  - Minimal deformation produces boring with excellent dimensional tolerance.
  - Minimal chatter produces superior surface finish.
- **Full-top SUMIBORON insert enables 3 cutting edges**
- **Can be used with SUMIDIA inserts for non-ferrous metal machining**
- **Now with economical single-corner NF type SUMIDIA insert**

60° | 92° | CBN | PCD

SUMIBORON
Clamp-on

BNB
Internal Boring and Facing

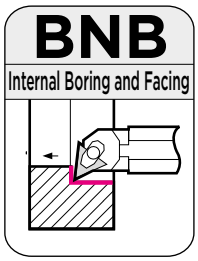
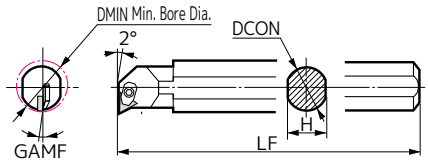


Fig 1



SumiSmall

Holder

Parts

Dimensions (mm)

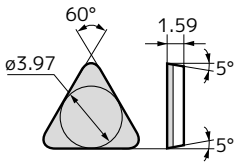
ISO Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Clamp Plate	Bolt	Nut	Wrench
											 (For Hexagonal hole)
BNB 508R/L	★	**10.0**	8.0	7.0	140	-9°	1	BNBC	BH0306	BNBW-2	TH020
BNB 510R	★	**12.0**	10.0	9.0	140	-8°	1				
BNB 512R	★	**14.0**	12.0	11.0	160	-6°	1		FBUP3-A0-9	BNBW-4	
BNB 516R	★	**18.0**	16.0	14.0	180	-5°	1				
BNB 520R	★	**22.0**	20.0	18.0	180	-4°	1		BH0310	BNBW-7	

Insert (SUMIBORON, SUMIDIA)

Dimensions (mm)

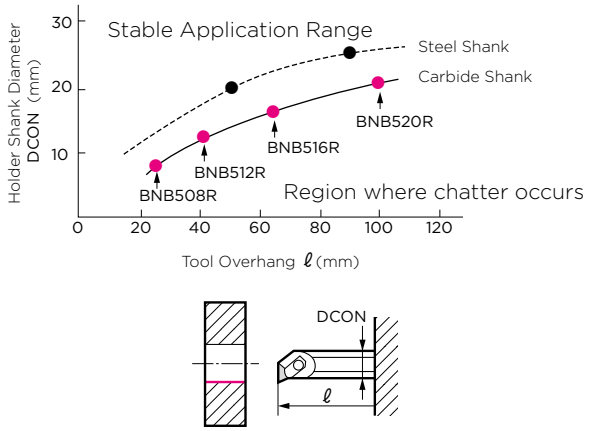
ISO Cat. No.	SUMIBORON BNX10	BNX20	BN2000	BN350	BN500	BN7125	BN7000	SUMIDIA DA150	DA1000	Corner Radius RE
TBGN 060102 B		★	★					★	★	0.2
TBGN 060104 B	▲	★	★	★	★	★	▲	★	★	0.4
TBGN 060108 B		★	★	★	★	★	▲			0.8
TBGN 060102 BSTN[*1]	—	★	—	—	—	—	—	—	—	0.2
TBGN 060104 BSTN[*1]	—	★	—	—	—	—	—	—	—	0.4
TBGN 060108 BSTN[*1]	—	★	—	—	—	—	—	—	—	0.8
TBGN 060102 NF[*2]	—	—	—	—	—	—	—	—	★	0.2
TBGN 060104 NF[*2]	—	—	—	—	—	—	—	—	★	0.4

Fig 1

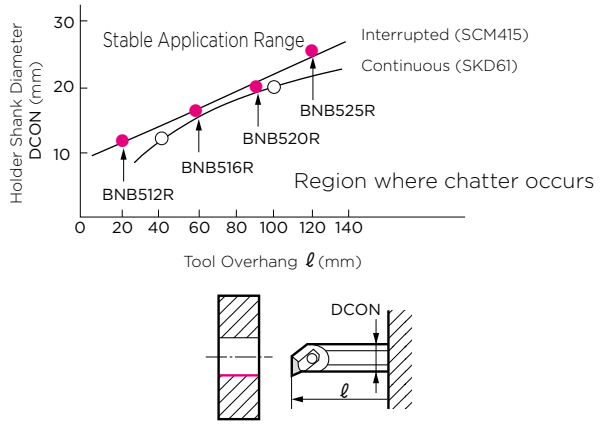


*1: TBGN OOOOOO-BSTN is only available in BNX20 grade and has a smaller negative land angle. (BSTN: -15°, B: -25°. However, the negative land angle is uniquely configured for each grade.)
*2: NF-TBGN is a single corner insert. (This is not a Full-top insert)

Cutting Performance



Work Material: X40CrMoV5-1 (60HRC)
Insert Cat. No.: TBGN060104B
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm

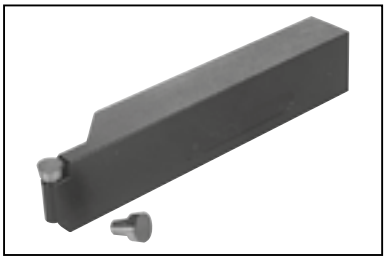


Work Material: 15CrMo5 (61HRC) Internal Diameter ø45 (6U Groove)
Insert Cat. No.: TBGN060104B
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

TRGT series



● Clamping by cutting force alone

- Secure clamping is achieved by inserting the tapered portion of the insert into the holder.
- The lack of protrusions on the insert rake face allows smooth chip evacuation.

● Round insert enables various machining operations

Small round insert with stable clamping can be applied to various machining operations.

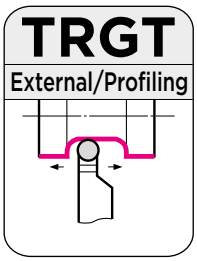


Fig 1

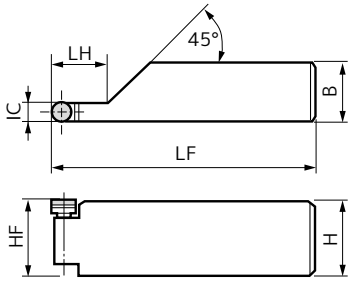


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig
TRGT R/L 2020K05	★		5	20	20	125	20	16	RTGN 0508M0	1
TRGT R/L 2020K06	★		6	20	20	125	20	16	RTGN 0608M0	1
TRGT R/L 2525M07			7	25	25	150	25	20	RTGN 0711M0	1
TRGT R/L 2525M08	★		8	25	25	150	25	20	RTGN 0811M0	1
TRGT R/L 3225P09	★		9	32	25	170	32	25	RTGN 0914M0	1
	★		10	32	25	170	32	25	RTGN 1014M0	1
TRGT R/L 3225P12			12	32	25	170	32	25	RTGN 1214M0	1

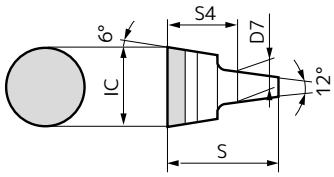
Inserts are not included with the tool holders.

Insert (SUMIBORON)

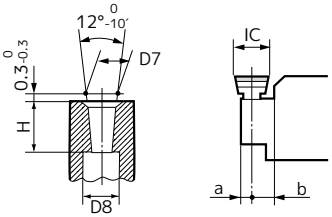
Dimensions (mm)

ISO Cat. No.	BN2000	BNX20	BN7000	Inscribed Circle IC	Diameter D7	Thickness S	Thickness 2 S4	Fig
RTGN 0508M0		★		5	2.5	7.5	3.5	1
RTGN 0608M0		★		6	3.5	7.5	3.5	1
RTGN 0711M0		★		7	3.5	11.0	5.0	1
RTGN 0811M0		★		8	4.5	11.0	5.0	1
RTGN 0914M0		★		9	5.5	14.0	6.0	1
RTGN 1014M0		★		10	5.5	14.0	6.0	1
RTGN 1214M0		★		12	7.5	14.0	6.0	1

Fig 1



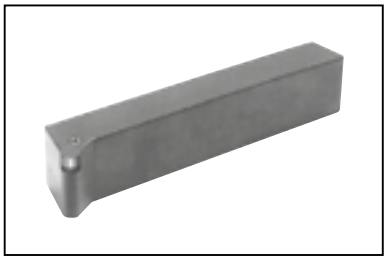
Insert Mounting Details



Supported Insert Diameter IC	H	D7	D8	a	b
5	4.0	2.5	1.9	1.85	3.2
6	4.0	3.5	2.9	2.35	3.7
7	6.0	3.5	2.5	2.75	4.3
8	6.0	4.5	3.5	3.25	4.8
9	7.5	5.5	4.2	4.15	5.9
10	7.5	5.5	4.2	4.15	5.9
12	7.5	7.5	6.2	5.15	6.9

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

PR series



- **Lever lock clamping system**
  - Easy operation; the lack of protrusions on the insert rake face allows smooth chip evacuation.
- **Versatile round insert can be applied to various operations.**

PRGC
External Profiling

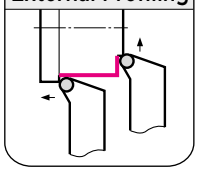


Fig 1

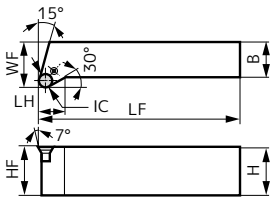


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

ISO Cat. No.	Stock		Inscribed Circle	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig
	R	L	IC	H	B	LF	WF	HF	LH		
PRGC R/L 3225P9	★	★	9	32	25	170	32	32	18	RCGA 0906M0	1

PRDC
General External Turning

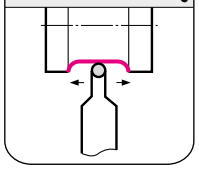
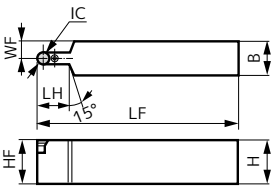


Fig 1



Holder

Dimensions (mm)

ISO Cat. No.	Stock	Inscribed Circle	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig
		IC	H	B	LF	WF	HF	LH		
PRDC N 3225P9	★	9	32	25	170	12.5	32	25	RCGA 0906M0	1

PRGN
General External Turning

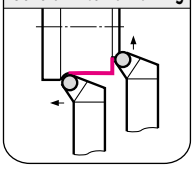


Fig 1

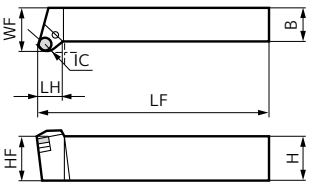


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

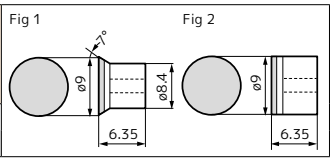
ISO Cat. No.	Stock		Inscribed Circle	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig
	R	L	IC	H	B	LF	WF	HF	LH		
PRG N R/L 3225P9	★	★	9	32	25	170	32	32	10	RNGA 0906M0	1

Inserts are not included with the tool holders.

Insert (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000	BNX20	BN350	BN7000	Fig
RCGA 0906M0	★				1
RNGA 0906M0	★	★			2



Parts

Applicable Holder	Shim	Lever Pin	Bolt	Shim Retainer	Wrench
					
PRGC R/L3225P9	LSR817	LCL3S	LCS3	LSP3	LH025
PRDC N 3225P9					
PRG N R/L3225P9	LSR917				

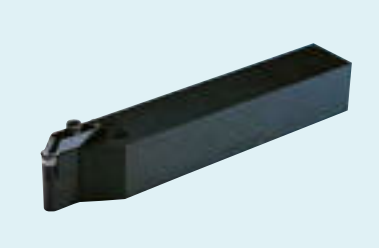
★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

BNRN series



● Insert can be reground and used again

- The same holder can be used for a reground insert by adjusting the slide locator with a clamp.

● Reliable holder design

- The tip of the clamp plate is a cemented carbide chipbreaker that can withstand wear from chips.
- Slide locator uses HSS for durability.

CBN

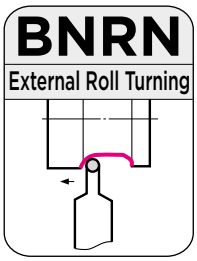
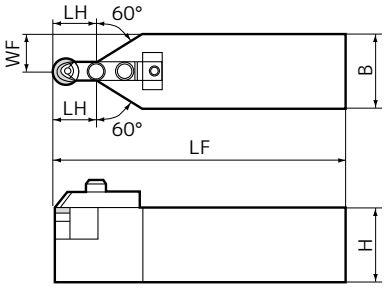


Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Head LH	Applicable Insert New ISO Cat. No.	Applicable Insert (Regrindable range)	Fig
BNRN 3232-08-07		**32**	**32**	200	16	13	RBG08-B	8.0 to 7.0	1
BNRN 4038-10-09		**40**	**38**	250	19	17	RBG10-B	10.0 to 9.0	1
BNRN 4038-12-11		**40**	**38**	250	19	20	RBG12-B	12.0 to 11.0	1
BNRN 5050-14-12		**50**	**50**	350	25	25	*	14.0 to 12.0	1
BNRN 5050-16-14		**50**	**50**	350	25	25	RBG16-B	16.0 to 14.0	1
BNRN 5050-18-16		**50**	**50**	350	25	30	*	18.0 to 16.0	1
BNRN 5050-20-18		**50**	**50**	350	25	30	RBG20-B	20.0 to 18.0	1
BNRN 5050-22-20		**50**	**50**	350	25	35	*	22.0 to 20.0	1
BNRN 5050-24-22		**50**	**50**	350	25	35	*	24.0 to 22.0	1
BNRN 5050-26-24		**50**	**50**	350	25	35	RBG26-B	26.0 to 24.0	1

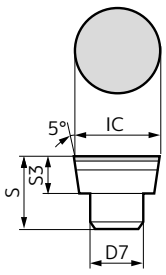
*Blank space indicates holders for reground inserts. Inserts are sold separately.

Insert (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN7125	BN7000	Inscribed Circle IC	Diameter D7	Thickness 2 S3	Thickness S	Fig
RBG 08-B	★	▲	8.0	4.0	4.0	6.5	1
RBG 10-B	★	▲	10.0	5.0	5.0	9.0	1
RBG 12-B	★	▲	12.0	6.0	6.0	11.0	1
RBG 16-B	★	▲	16.0	8.0	8.0	13.0	1
RBG 20-B	★	▲	20.0	10.0	10.0	15.0	1
RBG 26-B	★	▲	26.0	14.0	10.0	15.0	1

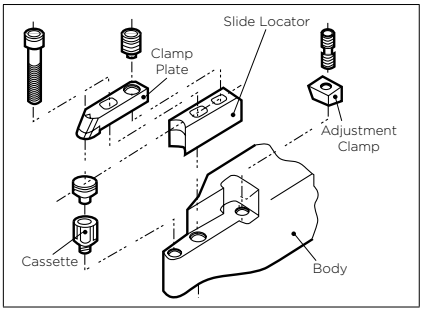
Fig 1



Parts

Applicable Holder	Slide Locator	Adjustment Clamp	Cassette	Clamp Plate	Cap Screw	Set Screw	Double Screw	Wrench
BNRN 3232-08-07	BNRSR-08	BNRC-08	BNRE-08	BNRW-08	BX0425	BTD0609	WB5-18	LH025
BNRN 4038-10-09	BNRSR-10		BNRE-10					LH030
BNRN 4038-12-11	BNRSR-12	BNRC-12	BNRE-12	BNRW-12	BX0635	BTD0812	WB6-20	LH030
BNRN 5050-14-12	BNRSR-14		BNRE-14		BX0640		WB6-30	LH040 LH050
BNRN 5050-16-14	BNRSR-16	BNRC-16	BNRE-16	BNRW-16	BX0640	BTD0812	WB8-30	LH040 LH050
BNRN 5050-18-16	BNRSR-18		BNRE-18				WB6-30	
BNRN 5050-20-18	BNRSR-20	BNRC-20	BNRE-20	BNRW-20			WB8-30	
BNRN 5050-22-20	BNRSR-22		BNRE-22				WB6-30	
BNRN 5050-24-22	BNRSR-24	BNRC-26	BNRE-24	BNRW-26	BX0840	BTD0818	WB6-30	LH040
BNRN 5050-26-24	BNRSR-26		BNRE-26				WB8-30	LH060

Structure



★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

GWB series



■ Features

- Tangentially-mounted insert enhances tool rigidity.
- Double clamping holder design improves stability during continuous and interrupted grooving. Can also be used for traverse cutting.
- Long tool life for interrupted cutting applications with the new Coated SUMIBORON BNC30G grade for grooving (BN2000 recommended for continuous cutting).
- Suited for grooving various types of hardened steel. Variety of widths of cut available from 1.5mm to 6.0mm.

External | CBN

Hardened Steel. Shallow Grooves
Double Clamp

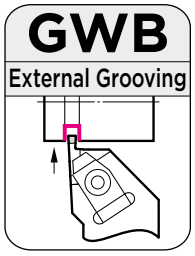


Fig 1

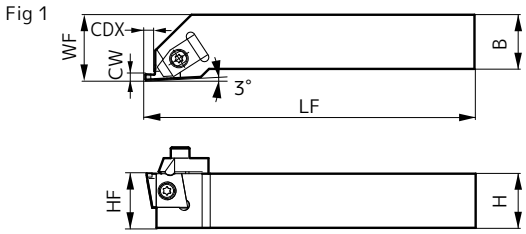


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Maximum Groove Depth CDX	Group No.	Fig	Clamp Plate	Cap Screw	Cap Screw (N·m)	Flat Head Screw	Spring	Wrench
GWB R/L 2020-45			20	20	151	25	20	1.5 ≤ CW ≤ 4.5	3.5 to 5.0	1	1	TF72/TF73	BX0520T	5.0	BFTX0511N	GSP06	TRX20
GWB R/L 2525-45	★	★	25	25	151	30	25	1.5 ≤ CW ≤ 4.5	3.5 to 5.0	1	1						
GWB R/L 2525-60	★	★	25	25	151	30	25	4.5 < CW ≤ 6.0	5.0	2	1						

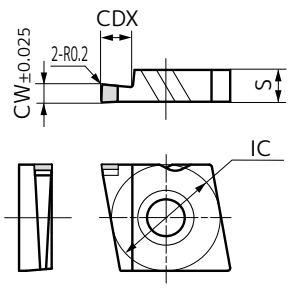
Dimensions in ( ) are for width of cut (CW) of 3.0 or less. Right-handed (R) tool holders are applicable with right-handed (R) inserts and clamp plates (TF72).

Insert (SUMIBORON)

Dimensions (mm)

ISO Cat. No.	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Width of Cut CW	Groove Depth CDX	Inscribed Circle IC	Thickness S	Group No.	Applicable Holder	Fig
CGA R/L 1504150	★	★	★	★	**1.5**	3.5	15.875	4.76	1	GWB R/L 2525-45	1
CGA R/L 1504200	★	★	★	★	**2.0**	3.5	15.875	4.76			1
CGA R/L 1504250	★	★	★	★	**2.5**	4.0	15.875	4.76			1
CGA R/L 1504300	★	★	★	★	**3.0**	4.0	15.875	4.76			1
CGA R/L 1504350	★	★	★	★	**3.5**	5.0	15.875	4.76			1
CGA R/L 1504400	★	★	★	★	**4.0**	5.0	15.875	4.76			1
CGA R/L 1504450	★	★	★	★	**4.5**	5.0	15.875	4.76			1
CGA R/L 1506500	★	★	★	★	**5.0**	5.0	15.875	6.35	2	GWB R/L 2525-60	1
CGA R/L 1506550	★	★	★	★	**5.5**	5.0	15.875	6.35			1
CGA R/L 1506600	★	★	★	★	**6.0**	5.0	15.875	6.35			1

Fig 1



* It is also possible to manufacture widths of cut other than those listed above (CW = 1.5 to 6.0mm).

Grade Features

Grade	Application Range	Features	HV(GPa)	TRS(GPa)
BN2000	Continuous Grooving	General-purpose grade with superior wear resistance	31 to 34	1.0 to 1.1
BNC30G	Interrupted Grooving	Grade suited to interrupted grooving. Features tough substrate with special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2

Recommended Cutting Conditions

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm/rev)	0.04 to 0.08

*In order to avoid thermal cracking of the SUMIBORON cutting edge during interrupted cutting. ensure that the work material is thoroughly dry before cutting.

Application Examples

Tooling	Work Material	Tool Cat. No.	Cutting Conditions	Tool Life Comparison
Shaft Grooving: Continuous Required Surface Roughness for Groove Sides: Ra 0.4μm	Carburised steel 58 to 62 HRC	CGAR1504200 BN2000	vc: 120m/min f: 0.05mm/rev Groove Depth: 2mm Dry	GWB series BN2000 — No Chipping; Conventional Tool — Chipping; 0, 500, 1,000; No. of Workpieces (pcs.)
Spline Grooving: Interrupted	Carburised steel 58 to 62 HRC	CGAR1504200 BNC30G	vc: 100m/min f: 0.05mm/rev Groove Depth: 1.6mm Dry	GWB series BNC30G — No Chipping; Competitor's Product — Chipping; 0, 200, 400, 600; No. of Workpieces (pcs.)

(N·m) Recommended Tightening Torque (N·m)

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

GWB / PSC series



CBN Grooving System for Hardened Steels

- GWB Type
- ISO-PSC Polygon Modular
- CGA Inserts



■ Features

Tangential insert

80 degree tangentially mounted insert improves rigidity



Double clamping system

The double clamping system increases stability so even axial feeds are possible.

Coated CBN grade BNC30G

Tough new coated CBN grade for interrupted hard grooving

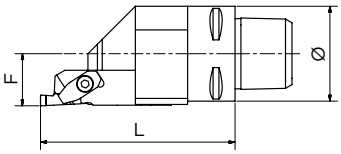


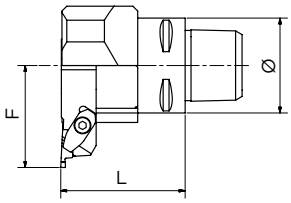
Wide insert range 1.5–6.0 mm

Wide range of width's and grades for continuous and interrupted cut grooving operations

ISO-PSC Polygon Modular CGA Grooving System

PSC







Holders

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Ø (mm)	F (mm)	L (mm)	Cap Screw	Cap Screw N·m	Wrench
PSC 40GM00 R/L	★	★	40	22	82	BFTX0619N	**7.5**	LT25
PSC 50GM00 R/L	★	★	50	27	82			
PSC 40GM90 R/L	★	★	40	43	52.5			
PSC 50GM90 R/L	★	★	50	48	55			

Cassette

Parts

Dimensions (mm)

ISO Cat. No.	Stock R	Stock L	Grooving Width (mm)	Grooving Depth (mm)	Inserts	Insert Screw	Insert Screw N·m	Wrench	Cap Screw N·m	Cap Screw	Clamp Finger	Spring	Wrench
GWBCM R/L 45	★	★	1.5–2.0	3.5	CGA1504□□0	BFTX0511N	**5.0**	TRX20	**3.0**	SCP4A			TRX20
			2.5–3.0	4.0									
GWBCM R/L 60	★	★	3.5–6.0	5.0	CGA1506□□0								

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

BNGG series



■ Features

- ● Improved rigidity for longer tool life
  Strong clamping reduces insert fracture and holder chatter
- ● Enhanced tooling for 2mm fine grooves or threading
  Grooving and threading can be done by changing the support

External CBN

Hardened Steel, Shallow Grooves
Clamp-on

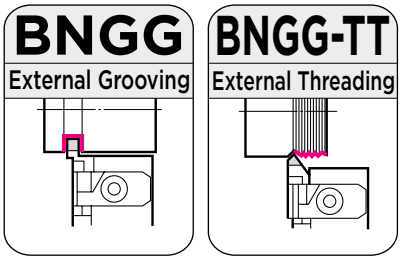


Fig 1 (Grooving)

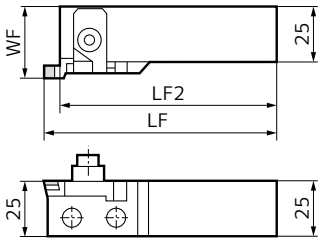


Fig 2 (Threading)

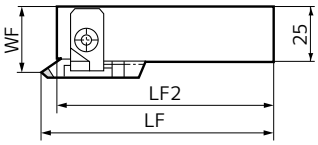


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Cutting Edge Distance WF	Overall Length LF	Overall Length 2 LF2	Applicable Insert	Fig
Grooving	**BNGG R/L 2525-200**	★		30.5	150	145	BNGNT0200 R/L	1
	BNGG R/L 2525-250	★		30.5	150	145	BNGNT0250 R/L	1
	BNGG R/L 2525-300	★		30.5	150	145	BNGNT0300 R/L	1
	BNGG R/L 2525-400	★		30.5	151	145	BNGNT0400 R/L	1
	BNGG R/L 2525-500	★		30.5	151	145	BNGNT0500 R/L	1
	BNGG R/L 2525-600	★		30.5	152	145	BNGNT0600 R/L	1
Threading	**BNGG R/L 2525-TT**	★		28.5	150	145	BNTT1020 R/L, BNTT1530 R/L	2

Inserts are not included with the tool holders.
* Holder body is universal. The holder can be configured for different groove widths or threading by changing the support.

Insert (SUMIBORON)

Dimensions (mm)

	ISO Cat. No.	BN2000 R	BN2000 L	BNX20 R	BNX20 L	BN350 R	BN350 L	Width of Cut CW	Groove Depth CDX	Corner Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
Grooving	**BNGNT0200 R/L**	★				★		**2.0**	4.0	0.2	25	6.0	BNGG R/L 2525-200	1
	BNGNT0250 R/L	★				★		**2.5**	4.0	0.2	25	6.0	BNGG R/L 2525-250	1
	BNGNT0300 R/L	★				★		**3.0**	5.0	0.4	25	6.0	BNGG R/L 2525-300	1
	BNGNT0400 R/L	★				★		**4.0**	6.0	0.4	26	6.0	BNGG R/L 2525-400	1
	BNGNT0500 R/L	★				★		**5.0**	6.0	0.4	26	6.0	BNGG R/L 2525-500	1
	BNGNT0600 R/L	★				★		**6.0**	7.0	0.4	27	6.0	BNGG R/L 2525-600	1
Threading	**BNTT1020 R/L**	★						Pitch 1.0 to 2.0		0.14	25	4.0	BNGG R/L 2525-TT	2
	BNTT1530 R/L	★						Pitch 1.5 to 3.0		0.2	25	4.0		2

Fig 1 (Grooving)

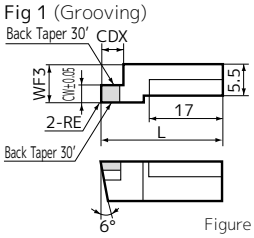


Fig 2 (Threading)

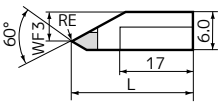


Figure shows right-handed (R) tool.

Parts

Applicable Holder	Support	Clamp Plate	Adjustment Screw	Spring	Cap Screw	Wrench	
BNGG R/L2525-200	BNGSR/L200	BNGCR/L	FMJ	GSP06	BX0615 (For Clamp Plate) BX0414 (For Support)	LH050 (For Clamp Plate) LH030 (For Support)	1.8×45
BNGG R/L2525-250	BNGSR/L250						
BNGG R/L2525-300	BNGSR/L300						
BNGG R/L2525-400	BNGSR/L400						
BNGG R/L2525-500	BNGSR/L500						
BNGG R/L2525-600	BNGSR/L600						
BNGG R/L2525-TT	BNGSR/LTT						

Recommended Cutting Conditions

• Grooving

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm/rev)	0.03 to 0.07

• Threading

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm)	Maximum Pitch 3.0

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

MEMO

FMU type/FMU-E type

High-speed Finishing for Cast Iron



- High speed finishing cutter for grey cast iron milling that uses removable cartridges for easy insert runout precision management
- Utilises SUMIBORON grade insert for cast iron machining with excellent wear and fracture resistance
- Available in shell type and small diameter type with shank

■ Features

- High-speed machining at vc = up to 2,000m/min
- Surpasses Rz 3.2 surface finish
- Safety structure for centrifugal force under high-speed cutting conditions
- Runout is less than 10µm: just attach the cartridge
- Easy runout adjustment using external setting
- Running cost is reduced because of the economical insert



■ Application Range

GG-25 to GG-30 (200 to 250HB) with pearlite matrix and grey cast iron (130 to 160HB) with ferrite matrix
[Example] Engine blocks, cylinder heads, etc.

■ Specifications

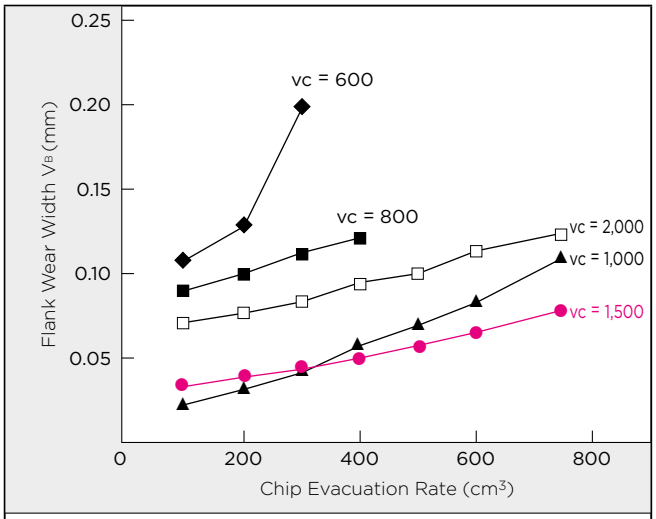
• **Shell**	ø80 to ø315mm (FMU type)
Shank type	ø40 to ø63mm (FMU-E type)
• **Regular Blade**	SNEW1203ADTR/L
• **Low Thrust Blade**	SNEW1203ADTR/L-S

■ Recommended Cutting Conditions

• **Cutting Speed**	vc = 800 to 2,000m/min
• **Feed Rate**	fz = 0.1 to 0.3mm/t
• **Depth of Cut**	ap = 0.5mm or less
• **Coolant**	Dry

■ Cutting Performance

• Wear Diagram



Work Material : GG-25 240HB (Pearlite)
Cutting Speed : vc = 600 to 2,000m/min Feed Rate: fz = 0.15mm/t
Depth of Cut : ap = 0.5mm Dry

FMU type/FMU-E type

Rake Angle		
Radial	2°	
Axial	8°	

0.5mm 45°

Face Milling



Fig 1

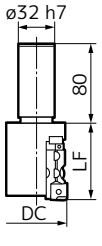


Fig 2

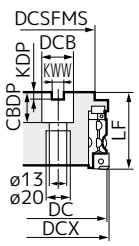


Fig 3

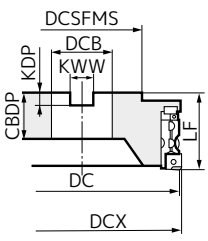


Fig 4

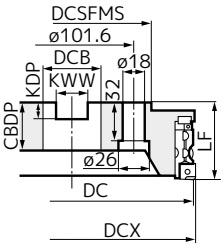
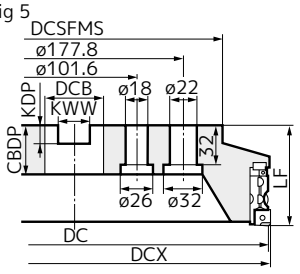


Fig 5



Body

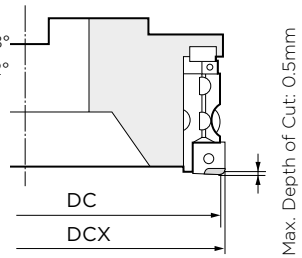
Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU 4040ER**	★	37.2	**40**	—	63	—	—	—	—	2	1.0	1
	FMU 4050ER	★	47.2	**50**	—	63	—	—	—	—	3	1.2	1
	FMU 4063ER	★	60.2	**63**	60	63	**25.4**	9.5	6	25	4	1.0	2
	FMU 4080R	★	**80**	82.8	60	63	**25.4**	9.5	6	25	6	1.7	2
	FMU 4100R	★	**100**	102.8	76	63	**31.75**	12.7	8	38	8	2.5	3
	FMU 4125R	★	**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.9	3
	FMU 4160R	★	**160**	162.8	100	63	**50.8**	19.1	11	38	12	6.3	3
	FMU 4200R	★	**200**	202.8	130	63	**47.625**	25.4	14	40	16	9.3	4
	FMU 4250R		**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.5	4
	FMU 4315R		**315**	317.8	240	80	**47.625**	25.4	14	40	24	25.0	5

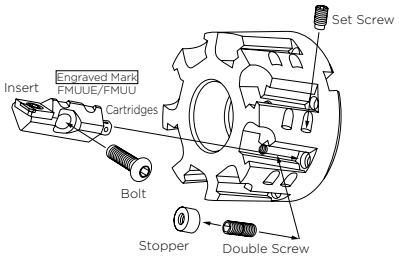
Inserts are sold separately.

Max. Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing			
ISO Cat. No.		BN7125	BN7000	Fig
SNEW1203ADTR		★	▲	1
SNEW1203ADTR-S		★	▲	2

-S denotes a low-thrust insert.

Fig 1

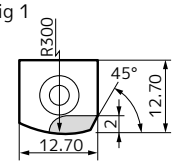
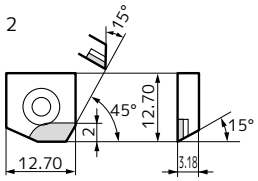


Fig 2



Cartridges

Cartridges	Flat Insert Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			 (For Flat Insert Screw)	
FMUU(E)*	BFTX0509N	**5.0**	FMUJ	P3	TTX20	TH015

* FMU4040ER/4050ER/4063ER use FMUUE type cartridges.
* FMUU/FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

Setting Gauge



FMU-SET (Sold Separately)

*Dial gauge is not included.

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)	Anti-seizure Cream
				 (For Cartridges)	 (For Set Screws)	 (For Stoppers)	
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025	SUMI-P

*FMU4040ER, 4050ER and 4063ER use BH0615 bolts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800-**1,400**-2,000	0.10-**0.20**-0.30	BN7125(Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

FM(F) type

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 45°

Face Milling



Fig 1

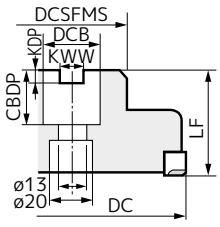


Fig 2

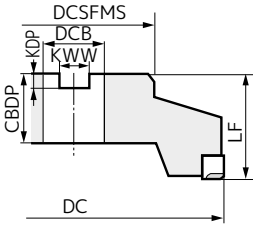


Fig 3

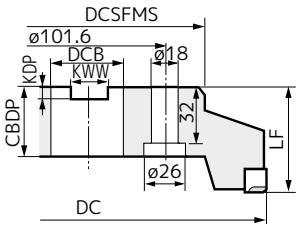
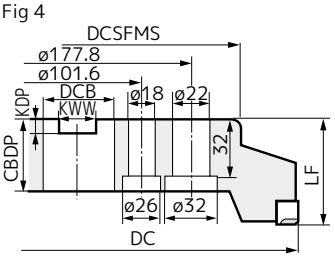


Fig 4



High-speed Finishing for Cast Iron

● **Specially designed cutting edge shape combined with SUMIBORON grade for cast iron machining, realising high-speed milling of grey cast iron.**

Body

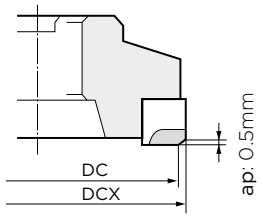
Dimensions (mm)

	ISO Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FM 5080 R/L**	★		**80**	82.8	60	50	**25.4**	9.5	6	25	6	1.6	1
	FM 5100 R/L	★		**100**	102.8	75	50	**31.75**	12.7	8	32	8	2.4	2
	FM 5125 R/L	★		**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.4	2
	FM 5160 R/L	★		**160**	162.8	100	63	**50.8**	19.1	11	38	12	5.6	2
	FM 5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	16	8.3	3
	FM 5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.3	3
	FM 5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	24	27.8	4
	FMF 5125 R/L			**125**	127.8	75	63	**38.1**	15.9	10	38	12	3.4	2
	FMF 5160 R/L			**160**	162.8	100	63	**50.8**	19.1	11	38	16	5.6	2
	FMF 5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	20	8.3	3
	FMF 5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	24	14.3	3
	FMF 5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	28	27.8	4

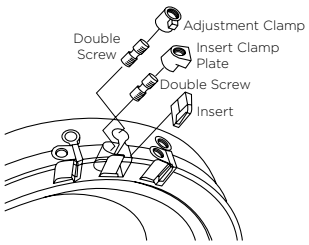
Inserts are sold separately.

Body

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON				
Process	High-speed/Light Cutting	K		K		
	Medium Cutting	K		K		
	Roughing					
ISO Cat. No.		BN7125 R	BN7125 L	BN7000 R	BN7000 L	Fig
SNEN 1504ADT R/L		★		▲		1
SNEN 1504ADT R/L S		★		▲		2

Fig 1

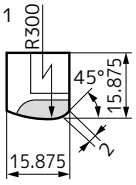
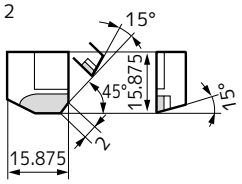


Fig 2



Parts

Applicable Cutter	Insert Clamp Plate	Adjustment Clamp	Adjustment Screw	Double Screw	Wrench	Wrench
FM(F) 5080R/L	FMW	—	FMJ	WB7F-20TL	TT25	1.8 x 45
FM(F) 5100R/L to FM(F) 5315R/L		FME	—			—

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

RM type

Rake Angle	Radial	-6° 45'
	Axial	-5° 45'

3mm 75°

Face Milling



Fig 1

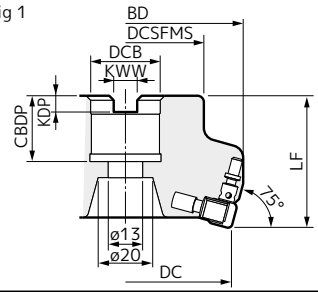
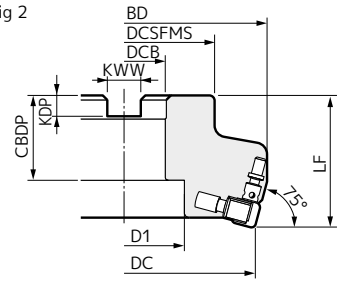


Fig 2



For High-speed, High-efficiency Milling of Cast Iron

● High-efficiency Milling of Grey Cast Iron
- Utilises solid SUMIBORON for high-speed cutting of vc = 1,500m/min
- High speed roughing with depth of cut up to 3.0mm
- Wiper insert for high-speed finishing

● Low Cost
- Economical double-sided insert with 8 usable corners
- Insert can be reground and used again

● Simple Runout Adjustment Mechanism
- Simple design for direct insert mounting
- Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Maximum Spindle Speed (min⁻¹)	Weight (kg)	Fig
Inch	**RM 3080R**		**80**	90	60	50	**25.4**	9.5	6	25	—	6	9,000	1.6	1
	RM 3100R		**100**	110	70	50	**31.75**	12.7	8	32	46	8	8,000	2.1	2
	RM 3125R		**125**	135	80	63	**38.1**	15.9	10	38	59	10	7,000	3.9	2
	RM 3160R		**160**	170	100	63	**50.8**	19.1	11	38	80	12	6,000	5.9	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing	K	K	
ISO Cat. No.		BNS8125	BNC8115	Fig
SNGN 090308		★	★	1
SNGN 090312		★	★	1
SNEN 090308 W		★	★	2

Fig 1

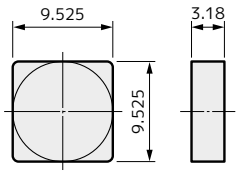
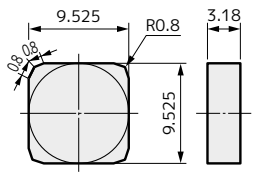
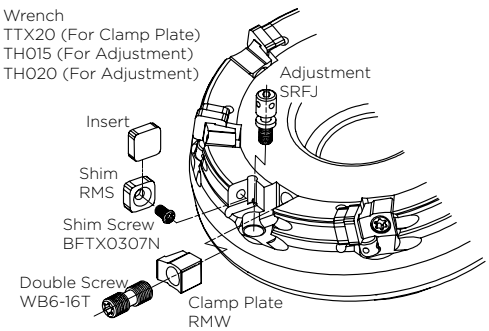


Fig 2 Wiper Insert





Parts

Shim	Shim Screw		Clamp Plate	Double Screw	Adjustment	Wrench (For Clamp Plate)	Wrench (For Adjustment)	Wrench (For Adjustment)
RMS	BFTX0307N	**2.0**	RMW	WB6-16T	SRFJ	TTX20	TH015	TH020

⚠ Precautions for Use

- Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts. Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

For hardened steel machining, use the SEC-ACE MILL DNF series.
Body: H45 Insert: L120

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800- **1,150** -1,500	0.05- **0.13** -0.20	BNS8125 (Dry)

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

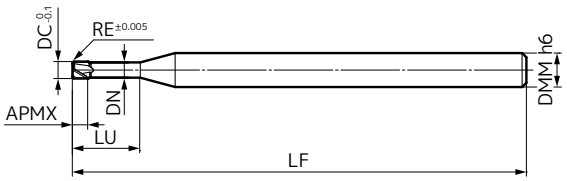
N·m Recommended Tightening Torque (N·m)

BNBR type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Corner R | Shoulder Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Wiper Edge	Fig
BNBR 2D020R005 0054	★	**0.2**	0.05	0.1	0.5	50	0.17	4	No	1
BNBR 2D030R005 0054	★	**0.3**	0.05	0.15	0.5	50	0.27	4	No	1
BNBR 2D040R005 0054	★	**0.4**	0.05	0.2	0.5	50	0.37	4	No	1
BNBR 2D050R005 0054	★	**0.5**	0.05	0.3	0.5	50	0.47	4	No	1
BNBR 2D050R005 0154	★	**0.5**	0.05	0.3	1.5	50	0.47	4	No	1
BNBR 2D050R005 0254	★	**0.5**	0.05	0.3	2.5	50	0.47	4	No	1
BNBR 2D050R010 0154	★	**0.5**	0.10	0.3	1.5	50	0.47	4	No	1
BNBR 2D050R010 0254	★	**0.5**	0.10	0.3	2.5	50	0.47	4	No	1
BNBR 2D100R005 0304	★	**1.0**	0.05	0.7	3.0	50	0.97	4	Yes	1
BNBR 2D100R005 0504	★	**1.0**	0.05	0.7	5.0	50	0.97	4	Yes	1
BNBR 2D100R010 0304	★	**1.0**	0.10	0.7	3.0	50	0.97	4	Yes	1
BNBR 2D100R010 0504	★	**1.0**	0.10	0.7	5.0	50	0.97	4	Yes	1
BNBR 2D100R020 0304	★	**1.0**	0.20	0.7	3.0	50	0.97	4	Yes	1
BNBR 2D100R020 0504	★	**1.0**	0.20	0.7	5.0	50	0.97	4	Yes	1
BNBR 2D100R030 0304	★	**1.0**	0.30	0.7	3.0	50	0.97	4	Yes	1
BNBR 2D100R030 0504	★	**1.0**	0.30	0.7	5.0	50	0.97	4	Yes	1
BNBR 2D150R010 0454	★	**1.5**	0.10	1.2	4.5	50	1.47	4	Yes	1
BNBR 2D150R010 0754	★	**1.5**	0.10	1.2	7.5	50	1.47	4	Yes	1
BNBR 2D150R020 0454	★	**1.5**	0.20	1.2	4.5	50	1.47	4	Yes	1
BNBR 2D150R020 0754	★	**1.5**	0.20	1.2	7.5	50	1.47	4	Yes	1
BNBR 2D150R030 0454	★	**1.5**	0.30	1.2	4.5	50	1.47	4	Yes	1
BNBR 2D150R030 0754	★	**1.5**	0.30	1.2	7.5	50	1.47	4	Yes	1
BNBR 2D200R010 0604	★	**2.0**	0.10	1.5	6.0	50	1.97	4	Yes	1
BNBR 2D200R020 0604	★	**2.0**	0.20	1.5	6.0	50	1.97	4	Yes	1
BNBR 2D200R030 0604	★	**2.0**	0.30	1.5	6.0	50	1.97	4	Yes	1
BNBR 2D200R050 0604	★	**2.0**	0.50	1.5	6.0	50	1.97	4	Yes	1

Grade: BNX20

Identification Code

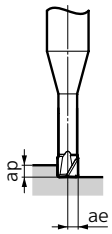
BNBR 2 D050 R010 - 015 4

Series Code	Number of Flutes	Dia.	Corner Radius	Neck Length	Shank Dia.
BNBR	2	D050	R010	015	4

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

BNBR type



Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

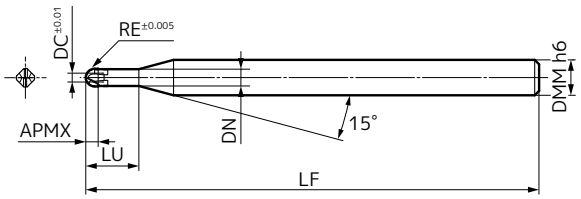
Work Material			STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
DC (mm)	RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)
0.2	0.05	0.5	40,000	400	0.005	0.03	40,000	400	0.005	0.03	40,000	250	0.005	0.02
0.3	0.05	0.5	40,000	500	0.010	0.05	40,000	500	0.010	0.05	40,000	300	0.005	0.03
0.4	0.05	0.5	40,000	600	0.015	0.1	40,000	600	0.015	0.1	40,000	400	0.01	0.05
0.5	0.05	0.5	40,000	600	0.02	0.15	40,000	600	0.02	0.15	40,000	400	0.01	0.1
	0.05	1.5	40,000		0.02	0.1	40,000		0.02	0.1	35,000			0.05
	0.1		40,000				40,000				35,000			
	0.05	2.5	40,000		0.01	0.05	40,000		0.01	0.05	35,000			
	0.1		40,000				40,000				35,000			
1.0	0.05	3.0	35,000	800	0.03	0.3	35,000	800	0.03	0.2	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
	0.05	5.0	35,000		0.02	0.2	35,000	800	0.02	0.1	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
1.5	0.1	4.5	26,000	800	0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
	0.1	7.5	26,000		0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
2.0	0.1	6.0	20,000	800	0.03	0.7	20,000	800	0.03	0.7	15,000	600	0.03	0.7
	0.2		20,000				20,000				15,000			
	0.3		20,000				20,000				15,000			
	0.5		20,000				20,000				15,000			

BNBP type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
BNBP 2R020 0124	★	**0.20**	**0.4**	0.3	1.2	50	0.37	4	1
BNBP 2R020 0126	★	**0.20**	**0.4**	0.3	1.2	50	0.37	6	1
BNBP 2R020 0204	★	**0.20**	**0.4**	0.3	2.0	50	0.37	4	1
BNBP 2R020 0304	★	**0.20**	**0.4**	0.3	3.0	50	0.37	4	1
BNBP 2R020 0404	★	**0.20**	**0.4**	0.3	4.0	50	0.37	4	1
BNBP 2R030 0154	★	**0.30**	**0.6**	0.4	1.5	50	0.57	4	1
BNBP 2R030 0156	★	**0.30**	**0.6**	0.4	1.5	50	0.57	6	1
BNBP 2R030 0204	★	**0.30**	**0.6**	0.4	2.0	50	0.57	4	1
BNBP 2R030 0304	★	**0.30**	**0.6**	0.4	3.0	50	0.57	4	1
BNBP 2R030 0404	★	**0.30**	**0.6**	0.4	4.0	50	0.57	4	1
BNBP 2R030 0504	★	**0.30**	**0.6**	0.4	5.0	50	0.57	4	1
BNBP 2R030 0604	★	**0.30**	**0.6**	0.4	6.0	50	0.57	4	1
BNBP 2R050 0254	★	**0.50**	**1.0**	0.6	2.5	50	0.97	4	1
BNBP 2R050 0256	★	**0.50**	**1.0**	0.6	2.5	50	0.97	6	1
BNBP 2R050 0304	★	**0.50**	**1.0**	0.6	3.0	50	0.97	4	1
BNBP 2R050 0404	★	**0.50**	**1.0**	0.6	4.0	50	0.97	4	1
BNBP 2R050 0604	★	**0.50**	**1.0**	0.6	6.0	50	0.97	4	1
BNBP 2R050 0804	★	**0.50**	**1.0**	0.6	8.0	50	0.97	4	1
BNBP 2R075 0404	★	**0.75**	**1.5**	0.9	4.0	50	1.47	4	1
BNBP 2R075 0406	★	**0.75**	**1.5**	0.9	4.0	50	1.47	6	1
BNBP 2R100 0554	★	**1.00**	**2.0**	1.4	5.5	50	1.97	4	1
BNBP 2R100 0556	★	**1.00**	**2.0**	1.4	5.5	50	1.97	6	1
BNBP 2R100 0804	★	**1.00**	**2.0**	1.4	8.0	50	1.97	4	1

Grade: BN350

Identification Code

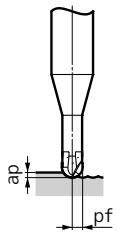
BNBP 2 R030 - 015 4

Series Code	Number of Flutes	Ballnose Radius		Neck Length	Shank Dia.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

BNBP type



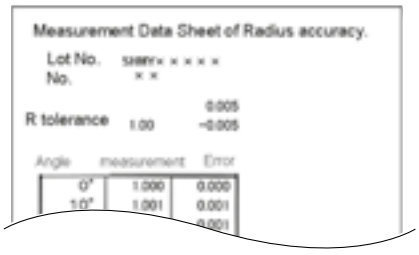
Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

Work Material		STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.2	1.2	40,000	1,000	0.005	0.010	40,000	800	0.005	0.010	40,000	600	0.005	0.005
	2.0	40,000	800	0.005	0.010	40,000	600	0.005	0.010	40,000	400	0.005	0.005
	3.0	40,000	600	0.005	0.010	40,000	500	0.005	0.010	40,000	300	0.005	0.005
	4.0	40,000	500	0.005	0.010	40,000	400	0.005	0.005	40,000	200	0.005	0.005
0.3	1.5	40,000	1,600	0.020	0.020	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020
	2.0	40,000	1,500	0.010	0.020	40,000	1,300	0.010	0.020	40,000	1,100	0.010	0.010
	3.0	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020	40,000	1,000	0.010	0.010
	4.0	30,000	1,200	0.010	0.010	30,000	1,000	0.010	0.010	30,000	700	0.005	0.010
	5.0	30,000	800	0.010	0.010	30,000	700	0.005	0.010	30,000	600	0.005	0.005
	6.0	30,000	600	0.005	0.010	30,000	500	0.005	0.005	30,000	400	0.005	0.005
0.5	2.5	40,000	2,800	0.040	0.050	40,000	2,800	0.030	0.040	40,000	2,200	0.020	0.030
	3.0	40,000	2,600	0.040	0.050	40,000	2,600	0.030	0.040	40,000	2,100	0.020	0.030
	4.0	40,000	2,400	0.030	0.050	40,000	2,400	0.020	0.030	40,000	2,000	0.020	0.020
	6.0	25,000	1,500	0.020	0.030	25,000	1,500	0.010	0.020	25,000	1,300	0.010	0.010
	8.0	16,000	1,200	0.020	0.020	16,000	1,100	0.010	0.020	16,000	850	0.010	0.010
0.75	4.0	32,000	2,400	0.030	0.030	32,000	2,200	0.020	0.030	32,000	2,000	0.020	0.020
1.0	5.5	40,000	4,000	0.050	0.050	40,000	4,000	0.030	0.030	40,000	3,000	0.020	0.030
	8.0	32,000	3,000	0.030	0.050	32,000	2,600	0.020	0.030	32,000	2,200	0.010	0.020

■ Radius Accuracy Inspection Test Results

Radius accuracy inspection report is attached as below with the ballnose type.


Measurement Data Sheet of Radius accuracy.

Lot No.

No.

R tolerance 1.00 0.005 −0.005

Angle	measurement	Error
0°	1.000	0.000
1.0°	1.001	0.001

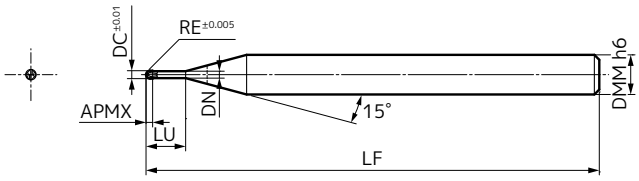


BNBC type

Copper Alloy

2 Flutes | CBN | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
BNBC 2R010 0034	★	**0.1**	**0.2**	0.2	0.3	50	0.17	4	1
BNBC 2R010 0104	★	**0.1**	**0.2**	0.2	1.0	50	0.17	4	1
BNBC 2R020 0054	★	**0.2**	**0.4**	0.3	0.5	50	0.37	4	1
BNBC 2R020 0204	★	**0.2**	**0.4**	0.3	2.0	50	0.37	4	1
BNBC 2R030 0104	★	**0.3**	**0.6**	0.4	1.0	50	0.57	4	1
BNBC 2R030 0304	★	**0.3**	**0.6**	0.4	3.0	50	0.57	4	1
BNBC 2R050 0304	★	**0.5**	**1.0**	0.6	3.0	50	0.97	4	1

Grade: BN700

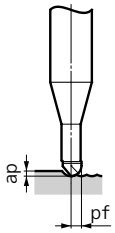
Identification Code

BNBC 2 R030 - 010 4

Series Code	Number of Flutes	Ballnose Radius		Neck Length	Shank Dia.

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.



Side Milling

Work Material / Cutting Conditions / Cat. No.	Copper Alloy			
	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Standard depth of cut (mm) ap	pf
BNBC 2R010 0034	20,000 -50,000	350	0.01	0.02
BNBC 2R010 0104		350	0.007	0.015
BNBC 2R020 0054	20,000 -50,000	800	0.025	0.05
BNBC 2R020 0204		700	0.02	0.03
BNBC 2R030 0104	20,000 -50,000	1,400	0.05	0.15
BNBC 2R030 0304		1,200	0.04	0.1
BNBC 2R050 0304	20,000 -50,000	2,200	0.15	0.35

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIDIA/SUMIDIA BINDERLESS SUMICRYSTAL M1 to M73



Grades	SUMIDIA series	M2
	SUMIDIA BINDERLESS NPD10 / New SUMIDIA DA1090	M4
	SUMIDIA DA1000	M6
Inserts	SUMIDIA BREAK MASTER LD type/GD type	M7
	SUMIDIA BREAK MASTER DM type	M8
	SUMIDIA Insert Identification Code	M9
	Stock Table for SUMIDIA Indexable Inserts	M10
	Stock Table for SUMIDIA / SUMIDIA BINDERLESS Indexable Inserts	M31
Holders	SEC-Wide-Cut Holders SGW series	M32
	SUMIDIA MINI Boring Bars CKB series	M33
	SUMIDIA Small Diameter Boring Bars DABB series	M34
	New SUMIDIA BINDERLESS Small Diameter Boring Bars DABX series	M35
Cutters/ Endmills	Expansion High-efficiency Cutter for Aluminum Alloys ALNEX ANX series	M36
	High-efficiency Cutter for Aluminum Alloys HF series	M48
	High-Speed Cutter for Aluminum Alloys RF series	M54
	High-efficiency Cutter for Aluminum Alloys SRF series	M56
	SUMIDIA Mini-Cutter DFE series	M58
	SUMIDIA BINDERLESS Endmills NPDRS/NPDBS/NPDB type	M59
	SUMIDIA Endmill DFE series	M63
	SUMIDIA Endmill DAE series	M64
Drills	SUMIDIA Drill DAL series	M65
	SUMIDIA Drill DDL series	M65

M SUMICRYSTAL

SUMICRYSTAL M68
SUMICRYSTAL PD/PDX M69
SUMICRYSTAL UP M70
SUMICRYSTAL UP (Half Cut) M71
SUMICRYSTAL UPT M72
SUMICRYSTAL CD M73

Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SUMIDIA series



■ General Features

Our SUMIDIA sintered diamond series has 5 grades (DA1090, DA90, DA150, DA2200, DA1000) with individual features depending on the optimum combination of diamond particle size and binder, as well as the NPD10 grade (nano-polycrystalline diamond) where nano-sized diamond particles are directly bound with high strength without using binders.
This series is suited to a wide range of applications from machining of aluminum alloy to machining of hard brittle materials and cemented carbide.

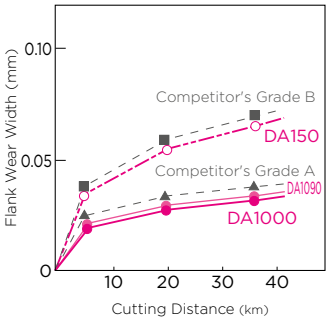
■ Grades, Features and Applications

Grade		Features	Applications	Average grain size of diamond particles (μm)	Hardness HK (GPa)	Transverse Rupture Strength (GPa)
SUMIDIA BINDERLESS	NPD10	100% diamond structure that directly binds nano-sized diamond particles with high strength. Demonstrates optimum wear and fracture resistance as well as the best edge sharpness.	· Finishing of Cemented Carbide · Machining of Hard Brittle Materials (Ceramic)	up to 0.05	120 to 130	≈ 3.15
SUMIDIA	DA1000	High-density sintered grade made of ultra-fine grain diamond that demonstrates excellent wear and fracture resistance as well as edge sharpness.	· Machining of High-Silicon Aluminum Alloy · Roughing, Interrupted Machining and Finishing of Aluminum Alloy · Woodcraft or Wooden Board Cutting/Facing · General Finishing of Non-Ferrous Metals	up to 0.5	50 to 60	≈ 2.60
	DA2200	Sintered grade made of ultra-fine grain diamond that demonstrates optimum wear and fracture resistance and excellent edge sharpness.	· Roughing, Interrupted Machining and Finishing of Aluminum Alloy · Woodcraft or Wooden Board Cutting/Facing	0.5	45 to 55	≈ 2.45
	DA150	Grade with micro-grained sintered diamond particles. With strong diamond particle bonding, it has an excellent balance of machinability and wear resistance.	· General Finishing of Non-Ferrous Metals · Finishing of Semi-Sintered Ceramic and Mold-Extruded Products · FRP, Hard Rubber & Carbon Cutting · Wooden or Inorganic Board Cutting/Facing	5	50 to 60	≈ 1.95
	New DA1090	Grade in which coarse diamond grains are sintered at high density. Shows the highest diamond content for excellent wear resistance and fracture resistance.	· Machining of High-Silicon Aluminum Alloy · Machining of Aluminum Composite (MMC) · Green or Semi-Sintered Cemented Carbide & Ceramic Roughing · Machining of Sintered Ceramic/Stone/Rock	up to 50	55 to 70	≈ 1.30
	DA90	Contains coarser diamond particles than other grades, giving it good wear resistance suitable for the machining of carbides and high-silicon aluminum. Shows the highest diamond content for excellent wear resistance.		50	50 to 65	≈ 1.10

Transverse rupture strength measured with test piece equivalent to insert PCD layer

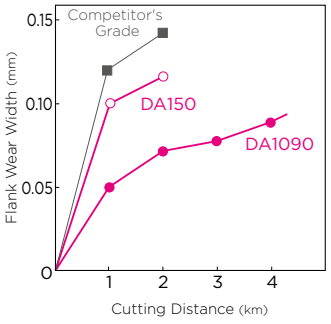
■ Performance

Continuous Cutting of Al-25% Si Alloy



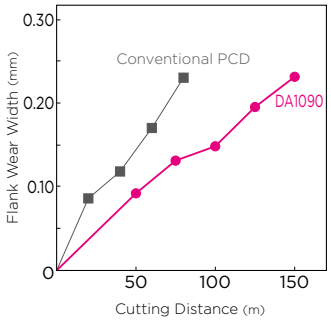
Work Material: Al-25% Si alloy
Tool Cat. No. : SPGN 120304
Cutting Conditions: vc = 500m/min
f = 0.1mm/rev
ap = 0.2mm, Dry

Continuous Cutting of MMC (Al-20% SiC)



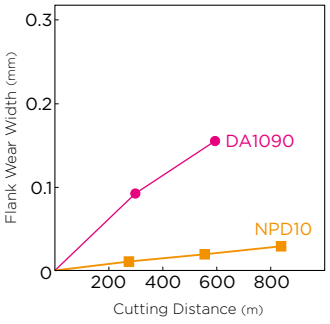
Work Material: MMC (Al-20%SiC)
Tool Cat. No. : CNMX 120408
Cutting Conditions: vc = 350m/min
f = 0.2mm/rev
ap = 0.18mm Wet

Continuous Cutting of Cemented Carbide (87HRA)



Work Material:
Cemented Carbide (87HRA)
Tool Cat. No. : DCMW 070204 NF
Cutting Conditions: vc = 20m/min
f = 0.1mm/rev
ap = 0.2mm Wet

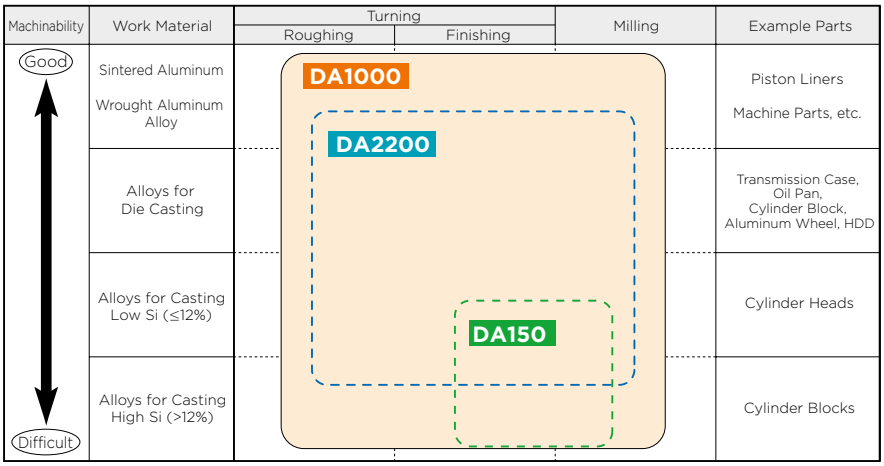
Continuous Cutting of Cemented Carbide (91HRA)



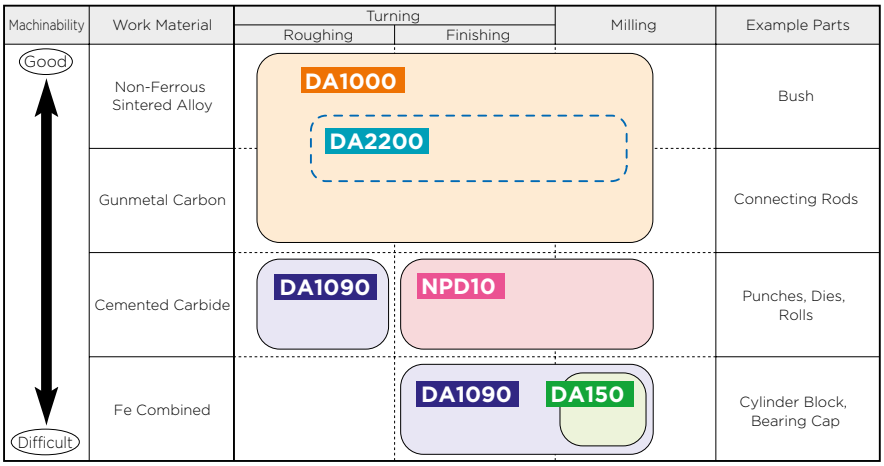
Work Material:
Cemented Carbide (91HRA)
Tool Cat. No. :
DCMW 11T304 RH (NPD10)
DCMW 11T304 NF (DA90)
Cutting Conditions: vc = 20m/min
f = 0.05mm/rev
ap = 0.05mm, Dry

■ Application Range

● Aluminum



● Non-aluminum



■ Recommended Cutting Conditions (Turning)

Work Material	Cutting Speed vc(m/min)	Feed Rate f(mm/rev)	Depth of Cut ap(mm)
Aluminum Alloy	up to 3,000	up to 0.2	up to 3
Copper Alloy	up to 1,000	up to 0.2	up to 3
Reinforced Plastics	up to 1,000	up to 0.4	up to 2
Wood or Organic Materials (Cutting, etc.)	up to 4,000	up to 0.4	—
Cemented Carbide	up to 30	up to 0.2	up to 0.5
Carbon	100 to 600	1	up to 2

■ SUMIDIA Grinding Method

Functions		Description
Grinding Machine	—	(1) A special-purpose high-rigidity grinding machine. (2) Capable of wet grinding operations.
Grinding Wheel	Abrasive Grain	Diamond
	Grain Size	Rough Grinding: 400 mesh, Finish Grinding: 800 to 1,500 mesh
	Bond	Vitrified or Metal Bond Dedicated for Polycrystalline Diamond Tool
	Concentration	100 to 125
	Dressing	Use a WA stick with a mesh of about 400.
Grinding Conditions	Peripheral Speed	800 to 1,000m/min
	Table Rocking	30 to 60 cycle/min
	Grinding Fluid	Water-soluble Grinding Fluid (Solution type)
Others	—	(1) The rake face is generally lapped. (2) Inspect for edge chipping using a microscope with a magnification of 30 to 50 times. (3) Machining of non-ferrous metals requires a sharp cutting edge. (4) Surfaces that were cut by EDM should have more than 0.05mm ground off.

*Please contact us for details on regrinding of NPD10.

NPD10/DA1090

Nano-polycrystalline Diamond



- **Indexable Inserts**
  (Cemented Carbide Turning) ☞M31
- **Ballnose Endmills and Radius Endmills**
  (Cemented Carbide Milling) ☞M59 ~

■ General Features

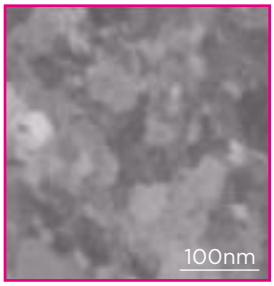
Nano-polycrystalline diamond is a polycrystalline diamond that directly binds nano-sized diamond particles with high strength without using any binders. This Sumitomo Electric proprietary material is harder than polycrystalline diamond with a binder, achieving excellent wear resistance and fracture resistance.
NPD10 cutting edge is 100% diamond material made from high-hardness nano-polycrystalline diamond which, unlike single-crystal diamonds, has no anisotropy.
Achieves longer tool life and higher machining accuracy than conventional diamonds in the machining of cemented carbide and other hard brittle materials.

■ Features

- **Ideal for finishing of cemented carbide and other hard brittle materials (NPD10)**
  The outstanding wear resistance of nano-polycrystalline diamond enables high-precision machining of cemented carbides.
- **Maintains excellent dimensional accuracy for a long time (NPD10)**
  Compared to conventional diamond tools, the number of tool changes is drastically reduced, improving work efficiency and reducing total costs.

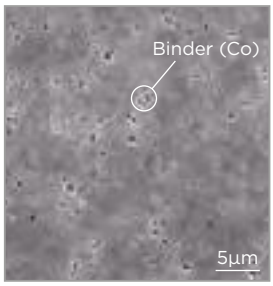
■ Comparison of Structures

Nano-polycrystalline Diamond Tool SEM Profile



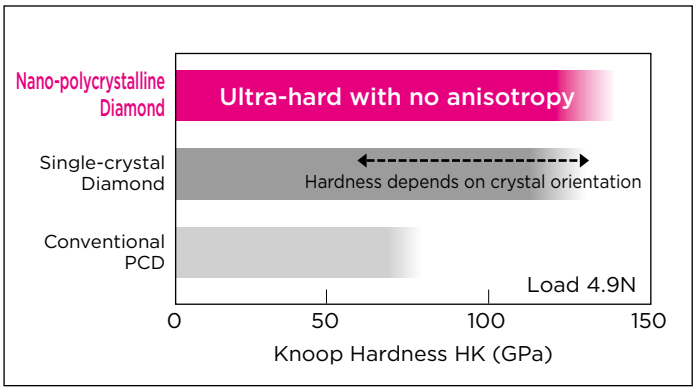
Diamond Particles (30 to 50nm)

Conventional PCD SEM Profile

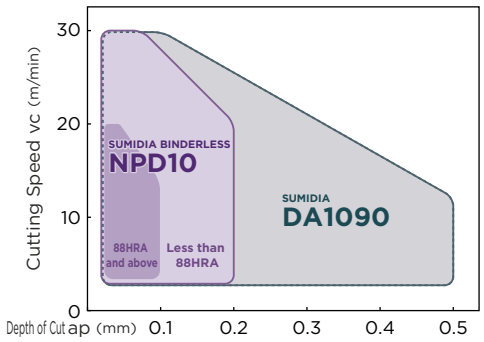


Diamond Particles (1 to 10 μm)

■ Hardness



■ Application Range (Cemented Carbide Machining)



■ Applications of NPD10 and DA1090 (Cemented Carbide Machining)

Grade	SUMIDIA BINDERLESS **NPD10**		SUMIDIA **DA1090**	
Dimensional Tolerance	◎	Best	△	The first recommendation is NPD10
Tool Life (Wear Resistance)	◎	Best ap = 0.2mm or less f =0.1mm/rev or less recommended	○	ap = 0.2mm or above can also be used
Machining Cemented Carbide With Sintered Surface	×	Not Applicable	◎	Best
Machined Surface Quality	◎	Best	△	The first recommendation is NPD10

■ Recommended Cutting Conditions (Cemented Carbide Machining)

Work Material				Grade	Cutting Conditions		
Classification		Hardness (HRA)	Our Grades		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
VM, VC	40	88 or more	G5,D2	**NPD10**	5 - **15** - 20	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07
VM, VC	70,60,50	83 to less than 88	G7,G6	**NPD10**	5 - **20** - 30	0.03 - **0.10** - 0.20	0.03 - **0.10** - 0.20
VM, VC	-	83 or more	G7,G6 G5,D2	**DA1090**	5 - **20** - 30	0.03 - **0.10** - 0.20	0.03 - **0.20** - 0.50

Min. - **Optimum** - Max. Lubrication: Dry

NPD10/DA1090

VIDEO OF CUTTING



■ General Features

DA1090 is a polycrystalline diamond grade with the highest diamond content, made by sintering coarse diamond particles at high density. High density and enhanced particle binding strength provide excellent wear and fracture resistance when machining cemented carbide and aluminum composite materials, enabling even more stable machining.

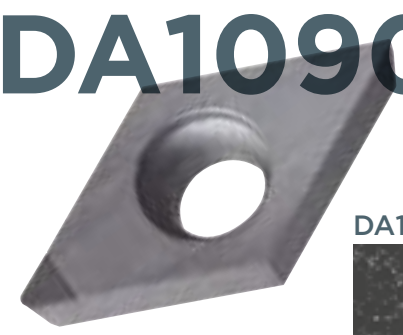
■ Features

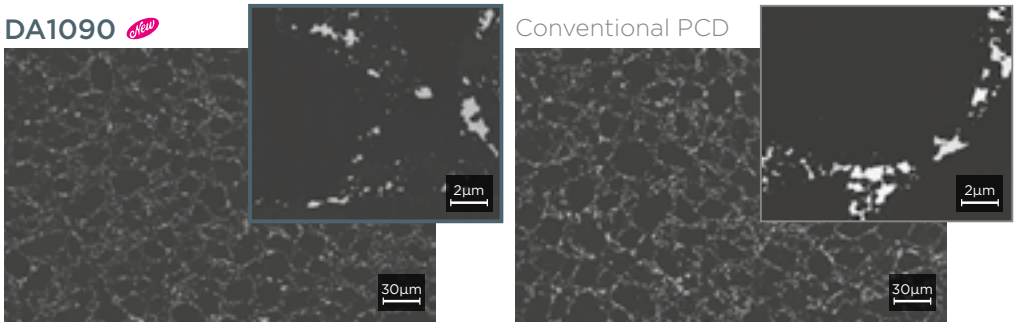
● **Ideal for roughing of cemented carbide and other hard brittle materials**
Coarse-grained polycrystalline diamond with excellent wear resistance and enhanced particle binding strength improve fracture resistance, realising stable machining in high-load roughing of cemented carbide and other hard brittle materials

● **Aluminum alloy and cast iron bi-metal machining is possible when used with ALNEX cutters**
Achieving excellent performance by combining the grade's high wear- and fracture-resistance with the ALNEX GB type blade

SUMIDIA

DA1090 New



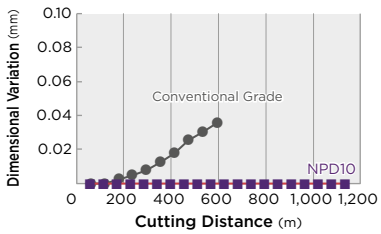


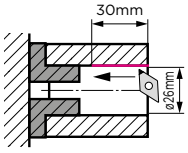
Achieves high content and high strength

*Black areas in image are diamond particles

■ Machining Precision (NPD10)

Internal boring of cemented carbide: VM30 (91HRA)



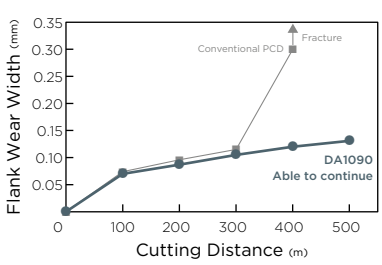


NPD10 shows no dimensional variation even after 1,100m of cutting.

Work Material: Cemented Carbide: VM30 (91HRA)
Tool Cat. No. : DCMW 11T304 RH
Cutting Conditions : vc = 20m/min f = 0.05mm/rev
ap = 0.05mm, Dry

■ Wear Resistance (DA1090)

External turning of cemented carbide VM30 (91HRA)



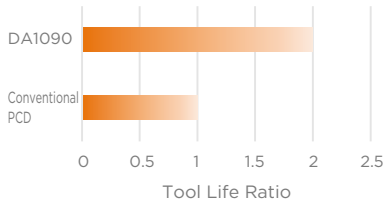
Work Material: Cemented Carbide: VM30 equivalent (91HRA)
Tool Cat. No. : DCMW 11T308 NF
Cutting Conditions : vc = 30m/min, f = 0.05mm/rev,
ap = 0.2mm, Dry

■ Wear Resistance (DA1090)

G-AlSi12(Cu), GG-25
Bi-metal face milling



Improved wear resistance
achieves twice the tool life of conventional PCD



Work Material: G-AlSi12(Cu), GG-25
Tool Cat. No. : ANB1600 RGB
Cutting Conditions : vc = 350m/min, fz = 0.12mm/rev,
ap = 0.2mm Wet

DA1000

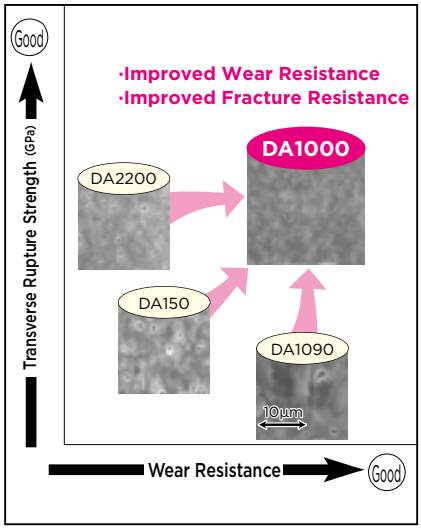


■ Features

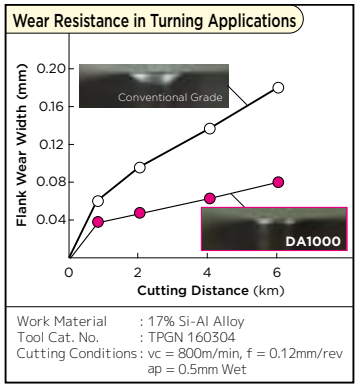
Ultra-high-density sintered ultra-fine grained diamond

- **Significantly improved surface roughness on machined surfaces**
- **Excellent wear resistance and strength**
- **High-performance, high-precision, high-efficiency machining of all aluminum and non-ferrous alloys**

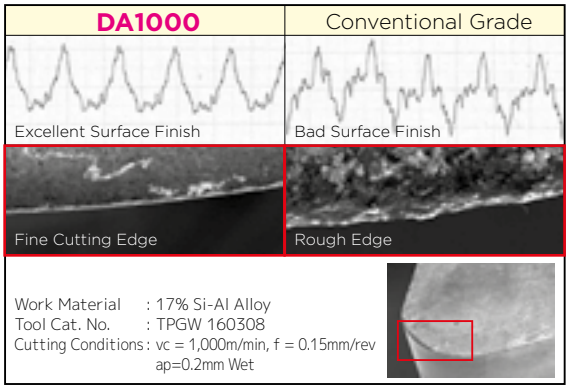
■ Position of DA1000



■ Cutting Performance



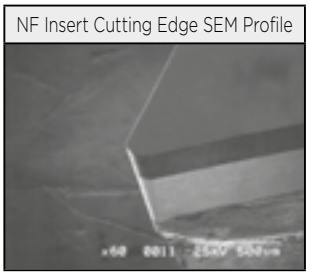
Work Material : 17% Si-Al Alloy
Tool Cat. No. : TPGN 160304
Cutting Conditions : vc = 800m/min, f = 0.12mm/rev
ap = 0.5mm Wet



Work Material : 17% Si-Al Alloy
Tool Cat. No. : TPGW 160308
Cutting Conditions : vc = 1,000m/min, f = 0.15mm/rev
ap=0.2mm Wet

■ NF Insert

The NF type SUMIDIA insert uses optimised design and improved mass production techniques that maintain the good basic performance of DA1000 yet offer higher cost efficiency. This maximises the high performance of SUMIDIA DA1000, including excellent chipping resistance, wear resistance, and machined surface finish.



High-precision cutting edge quality

● Total cost effectiveness with high performance and lower price

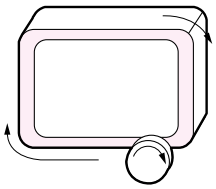
· Optimum design utilizing improved mass production techniques provides a lower cost.
· Regrindable type results in huge total cost reduction.

● Wide lineup from general turning to milling

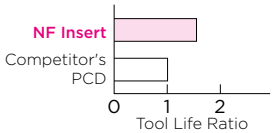
· Wide range of items in stock for small diameter boring and external turning to milling.
· Negative/positive type inserts that can be used on standard lever-lock and pin-lock type holder are also in stock.

■ Application Examples

● Milling of Aluminum Alloy Oil Pump Cover

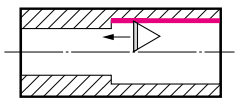


Results:
1.5 times longer tool life than competitors' PCD, with higher cost performance.

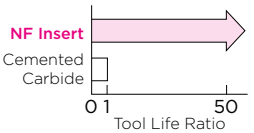


Work Material : G-AlSi12(Cu), Tool Cat. No.: TEEN32RNF
Cutting Conditions : vc = 3,000m/min, fz = 0.06mm/t, ap = 0.2mm Wet

● Boring of Aluminum Valve Bore



Results:
No initial breakage, tool life is more than 50 times that of carbides.



Work Material : G-AlSi12(Cu), Tool Cat. No.: TPGN110304PNF
Cutting Conditions : vc = 530m/min, f = 0.05mm/rev, ap = 0.2mm Wet

SUMIDIA BREAK MASTER

LD type/GD type

VIDEO OF CUTTING

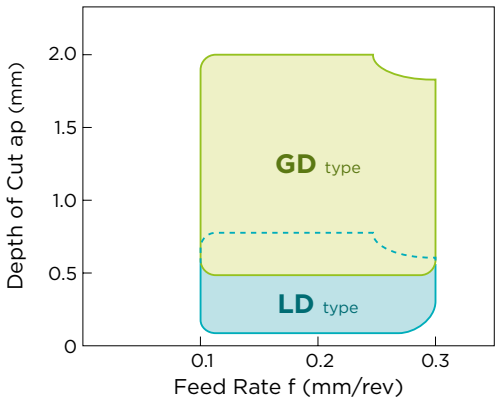


■ Features

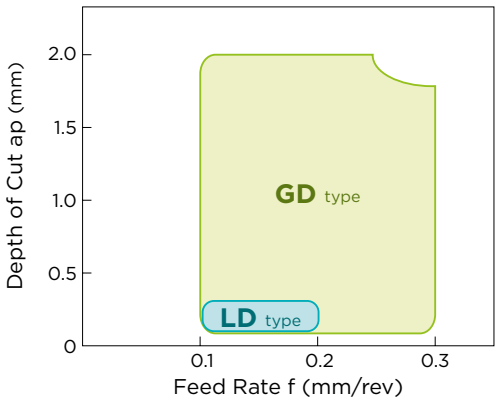
- SUMIDIA insert with chipbreaker.
- Provides excellent chip control in medium finishing and finishing of aluminum alloy.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing high-toughness grade DA1000.

■ Application Range

● Wrought Aluminum Alloy (AlMg1SiCu)

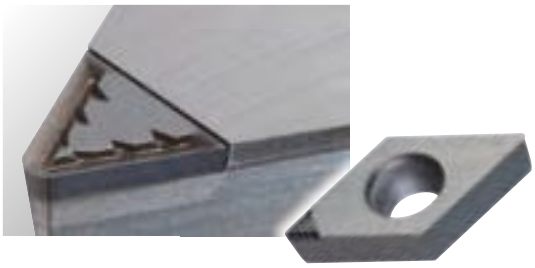


● Cast Aluminum Alloy (G-AlSi12(Cu))



LD type Chipbreaker for Finishing

Provides excellent chip control in finishing

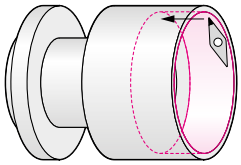


■ Cutting Performance

For Wrought Aluminum Alloy Machining

● Machining Application: Internal Boring of Machine Components

Provides good chip control at small depths of cut for wrought materials





BREAK MASTER LD type



Without Chipbreaker

Work Material: G-AlSi12(Cu), Tool Cat. No.: VCMT110302NLDNF (DA1000)
Cutting Conditions : vc = 200m/min, f = 0.20mm/rev, ap = 0.10mm Wet

GD type Chipbreaker for Medium Finishing

Provides excellent chip control in medium finishing

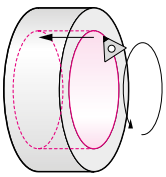


■ Cutting Performance

For Aluminum Alloy Casting Machining

● Machining Application: Internal Boring of Transmission Components

Finely breaks chips in machining of cast materials





BREAK MASTER GD type

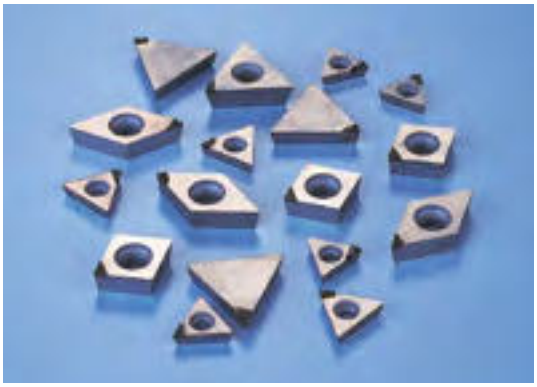


Without Chipbreaker

Work Material: G-AlSi12(Cu), Tool Cat. No.: TPMT110304NGDNF (DA1000)
Cutting Conditions : vc = 400m/min, f = 0.23mm/rev, ap = 1.20mm Wet

Note: Regrinding this product will adversely affect chip control performance.

DM type



■ Features

● Economy One-Use type

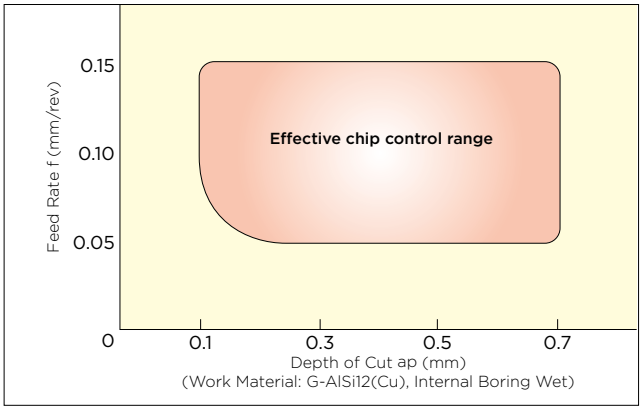
Familiar to users of SUMIBORON one-use inserts, now available in SUMIDIA.

● Cutting Edge with Built-in Chipbreaker for Effective Chip Control

DM type chipbreaker solves chip control problems and greatly improves efficiency.

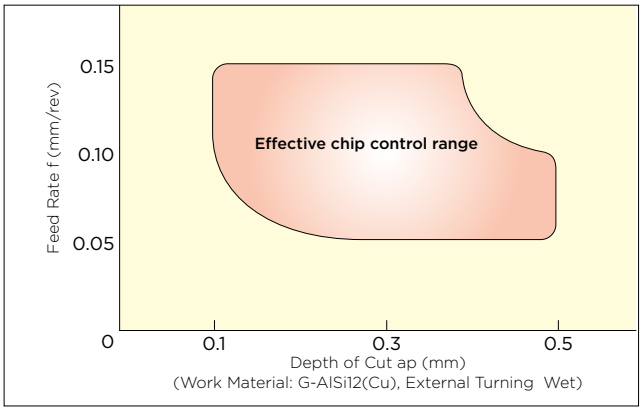
■ Application Range

● For Internal Boring





● External Turning & Facing (Insert Shape: 55°/80° Diamond type)



■ Chip Control

● Chips Produced by BREAK MASTER DM type



● Chips with No Chipbreaker



■ Application Examples

Machining Details	Cutting Conditions	Results
Internal Boring	Work Material: AC2A-T6 vc = 300m/min f = 0.06mm/rev ap = 0.35mm Wet	With the required finished surface roughness of Ra = 1µm or less, the chips curled at lengths of 2mm or so, and did not remain within the work material.

■ Recommended Cutting Conditions

● Internal Boring (Insert Shape: Triangular type)

Feed Rate f	Depth of Cut ap	Coolant
up to 0.15mm/rev	up to 0.7mm	Wet

● External Profiling (Insert Shape: 55°/80° Diamond type)

Feed Rate f	Depth of Cut ap	Coolant
up to 0.15mm/rev	up to 0.5mm	Wet

For facing, depth of cut should be less than 0.4mm.

■ Series

Machining Details	Internal Boring	External Turning and Facing
Cartridge Unit	TPMR 1103 type NU	—
	TPMR 1603 type NU	—
Tool Holder	TPMT 0802 type NU	CCMT 0602 type NU
	TPMT 0902 type NU	CCMT 09T3 type NU
	TPMT 1102 type NU	DCMT 0702 type NU
	TPMT 1103 type NU	DCMT 11T3 type NU
	TPMT 1604 type NU	—

Insert Identification Code

Regrindable type

CNMX 120408 (B)

(1) (2)

(1) Insert ISO Code
(ISO Standard Classification) ☞B2, B3

(2) Additional Information
Refer to Table 1

Table 1 (2) Additional Information

Symbol	Code Description
R	Right-handed
L	Left-handed
B	Full-top PCD type
-WF	Edge with Special Land for Glossy Finishing of Aluminum Wheels
RH	Honing (Cutting Edge Treatment)

Single Corner type

CNMX 120408 NF (P)

(1) (2) (3)

(1) Insert ISO Code
(ISO Standard Classification) ☞B2, B3

(2) Type Code
Refer to Table 2

(3) Additional Information
Refer to Table 3

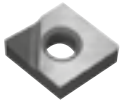
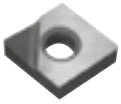
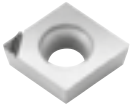
Table 2 (1) Type Code

Symbol	Code Description
NF	NF Insert ☞M6
NU	One-Use Insert (Disposable)

Table 3 (3) Additional Information

Symbol	Code Description
L	Left-handed
P	Full-length Cutting Edge type
N-LD	Chipbreaker type (Neutral) ☞M7
N-GD	
R-DM	Chipbreaker type (Right-handed) ☞M8
L-DM	Chipbreaker type (Left-handed) ☞M8

Insert Shape

Full-top PCD type	Edge With Special Land for Glossy Finishing of Aluminum Wheels	NF Insert	One-Use Insert	Full-length Cutting Edge type	Chipbreaker type
					

C — **80° Diamond type**



Neg.-Pos.

CNMX 1204●●

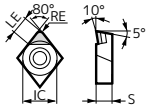
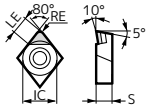
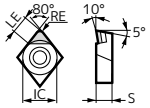
Dimensions (mm)				
	Inscribed Circle IC	12.70	Hole Dia.	5.16
	Thickness S	4.76		

Applicable External Holders ☞ C10 to C12

Applicable Boring Bars ☞ E15, E25 to E27

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ●: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					●	
	Carbide/Hard Brittle Materials	●	●				

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	Dimensions (mm) SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**CNMX 120402 NF**	0.2	5.5	—	—	—	—	★	▲
		CNMX 120404 NF	0.4	5.4	—	—	—	—	★	▲
		CNMX 120408 NF	0.8	5.4	—	—	—	—	★	▲
		CNMX 120412 NF	1.2	5.3	—	—	—	—	★	▲
 One-Use		**CNMX 120402 NU**	0.2	2.8	—	—	—	—		
		CNMX 120404 NU	0.4	2.8	—	—	—	—		
		CNMX 120408 NU	0.8	2.7	—	—	—	—		
		CNMX 120412 NU	1.2	2.6	—	—	—	—		
		**CNMX 120402**	0.2	5.5	—				★	
		CNMX 120404	0.4	5.4	—			★	★	▲
		CNMX 120408	0.8	5.4	—			★	★	▲
		CNMX 120412	1.2	5.3	—			★		

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

SUMIDIA Inserts

C 80° Diamond type



7° Positive

CCMW 03X1●●

Dimensions (mm)	Inscribed Circle IC	3.5	Hole Dia.	1.9
	Thickness S	1.4		

Applicable Boring Bars ☞E18, E22

CCMW 04X1●●

Dimensions (mm)	Inscribed Circle IC	4.3	Hole Dia.	2.3
	Thickness S	1.8		

Applicable Boring Bars ☞E18, E22

CCM■ 0602●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	2.8
	Thickness S	2.38		

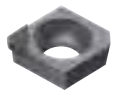
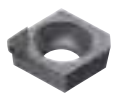
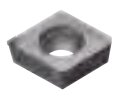
Applicable External Holders ☞C13, D26, D30 to D31, D42

Applicable Boring Bars ☞E18 to E22

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ◕; Carbide/Hard Brittle Materials ● ◕

Dimensions (mm)

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert	**CCMW 03X102 NF**	0.2	1.1	—	★	★	—	—	—
	CCMW 03X104 NF	0.4	1.1	—	★	★	—	—	—
	**CCMW 03X102 RH**	0.2	1.3	★	—	—	—	—	—
	CCMW 03X104 RH	0.4	1.3	★	—	—	—	—	—
 NF Insert	**CCMW 04X102 NF**	0.2	1.5	—	★	★	—	—	—
	CCMW 04X104 NF	0.4	1.5	—	★	★	—	—	—
	**CCMW 04X102 RH**	0.2	1.7	★	—	—	—	—	—
	CCMW 04X104 RH	0.4	1.7	★	—	—	—	—	—
 NF Insert	**CCMW 060202 NF**	0.2	2.4	—	★	★	—	—	—
	CCMW 060204 NF	0.4	2.4	—	★	★	—	—	—
	**CCMW 060202 RH**	0.2	1.7	★	—	—	—	—	—
	CCMW 060204 RH	0.4	1.7	★	—	—	—	—	—
 NF Insert	**CCMT 060201 NF**	0.1	2.8	—	—	—	—	★	▲
	CCMT 060202 NF	0.2	2.8	—	—	—	—	★	▲
	CCMT 060204 NF	0.4	2.8	—	—	—	—	★	▲
 BREAK MASTER	**CCMT 060202 NLD NF**	0.2	2.9	—	—	—	—	★	—
	CCMT 060204 NLD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER	**CCMT 060202 NGD NF**	0.2	2.9	—	—	—	—	★	—
	CCMT 060204 NGD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER	**CCMT 060202 RDM NU**	0.2	2.5	—	—	—	★	—	—
	CCMT 060202 LDM NU	0.2	2.5	—	—	—	★	—	—
	CCMT 060204 RDM NU	0.4	2.5	—	—	—	★	—	—
	CCMT 060204 LDM NU	0.4	2.5	—	—	—	★	—	—
	**CCMT 060201**	0.1	3.3	—			★		
	CCMT 060202	0.2	3.2	—			★		
	CCMT 060204	0.4	3.1	—			★		

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

C — 80° Diamond type



7° Positive

CCM■ 09T3●●

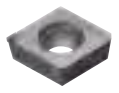
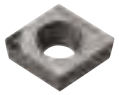
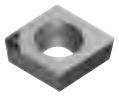
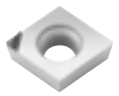
Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	3.97		

Applicable External Holders ☞C13, D26, D30 to D31, D42

Applicable Boring Bars ☞E12, E18 to E22

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ●: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					●	
	Carbide/Hard Brittle Materials	●	●				

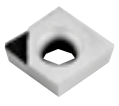
Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	Dimensions (mm) SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**CCMW 09T302 NF**	0.2	2.4	—	★	★	—	—	—
		CCMW 09T304 NF	0.4	2.4	—	★	★	—	—	—
		CCMW 09T308 NF	0.8	2.3	—	★	★	—	—	—
		**CCMW 09T302 RH**	0.2	1.7	★	—	—	—	—	—
		CCMW 09T304 RH	0.4	1.7	★	—	—	—	—	—
		CCMW 09T308 RH	0.8	1.6	★	—	—	—	—	—
 NF Insert		**CCMT 09T301 NF**	0.1	2.8	—	—	—	—	★	▲
		CCMT 09T302 NF	0.2	2.8	—	—	—	—	★	▲
		CCMT 09T304 NF	0.4	2.8	—	—	—	—	★	▲
		CCMT 09T308 NF	0.8	2.7	—	—	—	—	★	▲
 BREAK MASTER		**CCMT 09T302 NLD NF**	0.2	2.9	—	—	—	—	★	—
		CCMT 09T304 NLD NF	0.4	2.9	—	—	—	—	★	—
		CCMT 09T308 NLD NF	0.8	2.8	—	—	—	—	★	—
 BREAK MASTER		**CCMT 09T302 NGD NF**	0.2	2.9	—	—	—	—	★	—
		CCMT 09T304 NGD NF	0.4	2.9	—	—	—	—	★	—
		CCMT 09T308 NGD NF	0.8	2.8	—	—	—	—	★	—
 BREAK MASTER	(Left-Hand)	**CCMT 09T302 RDM NU**	0.2	2.5	—	—	—	★	—	—
		CCMT 09T302 LDM NU	0.2	2.5	—	—	—	★	—	—
		CCMT 09T304 RDM NU	0.4	2.5	—	—	—	★	—	—
		CCMT 09T304 LDM NU	0.4	2.5	—	—	—	★	—	—
		**CCMT 09T301**	0.1	4.2	—			★		
		CCMT 09T302	0.2	4.2	—			★		
		CCMT 09T304	0.4	4.2	—			★		

11° Positive

CPMT 0802●●

Dimensions (mm)	Inscribed Circle IC	7.94	Hole Dia.	3.4
	Thickness S	2.38		

Applicable Boring Bars ☞E23 to E24

		**CPMT 080202**	0.2	4.2	—				★	▲
		CCMT 080204	0.4	4.2	—				★	▲
		CCMT 080208	0.8	4.1	—				★	▲

CPMT 0903●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	3.18		

Applicable Boring Bars ☞E12, E23 to E24

 NF Insert		**CPMT 090302 NF**	0.2	2.8	—	—	—	—	★	▲
		CPMT 090304 NF	0.4	2.8	—	—	—	—	★	▲
		CPMT 090308 NF	0.8	2.7	—	—	—	—	★	▲

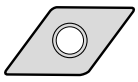
★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

D 55° Diamond type



Negative

DNMA 1504●●

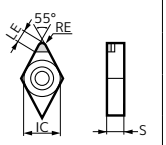
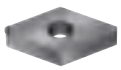
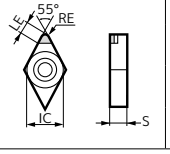
Dimensions (mm)	Inscribed Circle IC	12.70	Hole Dia.	5.6
	Thickness S	4.76		

Applicable External Holders ☞C14 to C16
Applicable Boring Bars ☞E15, E33 to E35

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Dimensions (mm)

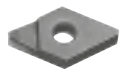
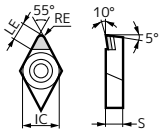
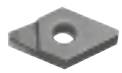
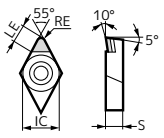
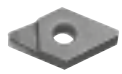
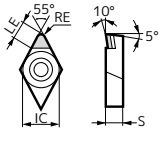
Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**DNMA 150408 NF**	0.8	2.0	—	★	★	—	—	—
		DNMA 150412 NF	1.2	2.0	—	★	★	—	—	—
		**DNMA 150408 RH**	0.8	1.8	★	—	—	—	—	—
		DNMA 150412 RH	1.2	1.8	★	—	—	—	—	—

Neg.-Pos.

DNMX 1504●●

Dimensions (mm)	Inscribed Circle IC	12.70	Hole Dia.	5.16
	Thickness S	4.76		

Applicable External Holders ☞C14 to C16
Applicable Boring Bars ☞E15, E33 to E35

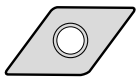
 NF Insert		**DNMX 150402 NF**	0.2	7.4	—	—	—	—	★	▲
		DNMX 150404 NF	0.4	7.1	—	—	—	—	★	▲
		DNMX 150408 NF	0.8	6.7	—	—	—	—	★	▲
		DNMX 150412 NF	1.2	6.2	—	—	—	—	★	▲
 One-Use		**DNMX 150402 NU**	0.2	3.0	—	—	—	—		
		DNMX 150404 NU	0.4	2.8	—	—	—	—		
		DNMX 150408 NU	0.8	2.5	—	—	—	—		
		DNMX 150412 NU	1.2	2.1	—	—	—	—		
		**DNMX 150402**	0.2	6.4	—				★	
		DNMX 150404	0.4	6.2	—			★	★	▲
		DNMX 150408	0.8	5.8	—			★	★	▲
		DNMX 150412	1.2	5.4	—			★	★	▲

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIDIA Inserts

D — 55° Diamond type



7° Positive

DCM■ 0702●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	2.8
	Thickness S	2.38		

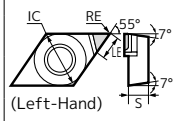
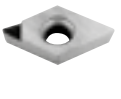
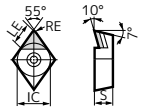
Applicable External Holders C17, D27 to D28, D32 to D33, D43

Applicable Boring Bars E16, E28 to E32

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Dimensions (mm) | SUMIDIA

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**DCMW 070202 NF**	0.2	2.6	—	★	★	—	—	—
		DCMW 070204 NF	0.4	2.4	—	★	★	—	—	—
		**DCMW 070202 RH**	0.2	2.1	★	—	—	—	—	—
		DCMW 070204 RH	0.4	2.0	★	—	—	—	—	—
 NF Insert		**DCMT 070201 NF**	0.1	3.0	—	—	—	—	★	▲
		DCMW 070202 NF	0.2	3.0	—	—	—	—	★	▲
		DCMW 070204 NF	0.4	2.8	—	—	—	—	★	▲
		DCMW 070208 NF	0.8	2.7	—	—	—	—	★	▲
 BREAK MASTER		**DCMT 070202 NLD NF**	0.2	3.1	—	—	—	—	★	—
		DCMT 070204 NLD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER		**DCMT 070202 NGD NF**	0.2	3.1	—	—	—	—	★	—
		DCMT 070204 NGD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER	 (Left-Hand)	**DCMT 070202 RDM NU**	0.2	2.9	—	—	—	★	—	—
		DCMT 070202 LDM NU	0.2	2.9	—	—	—	★	—	—
		DCMT 070204 RDM NU	0.4	2.7	—	—	—	★	—	—
		DCMT 070204 LDM NU	0.4	2.7	—	—	—	★	—	—
		**DCMT 070201**	0.1	4.3	—			★		
		DCMT 070202	0.2	4.2	—			★		
		DCMT 070204	0.4	4.0	—			★		
		DCMT 070208	0.8	3.9	—				★	

★ mark: Global stocked item

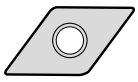
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

SUMIDIA Inserts

D — **55° Diamond type**



7° Positive

DCM■ 11T3●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	3.97		

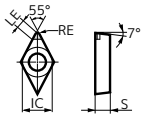
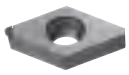
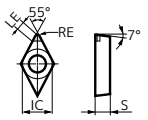
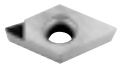
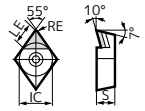
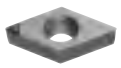
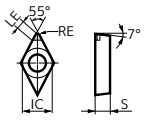
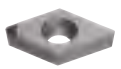
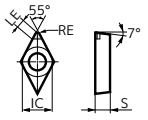
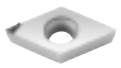
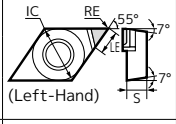
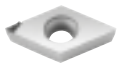
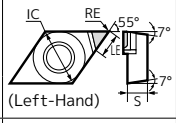
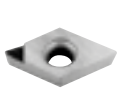
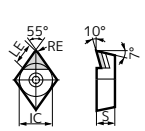
Applicable External Holders ☞ C17, D27 to D28, D32 to D33, D43

Applicable Boring Bars ☞ E13, E28 to E32

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ◕ | Carbide/Hard Brittle Materials ● ◕

Dimensions (mm)

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**DCMW 11T302 NF**	0.2	2.6	—	★	★	—	—	—
		DCMW 11T304 NF	0.4	2.4	—	★	★	—	—	—
		DCMW 11T308 NF	0.8	2.0	—	★	★	—	—	—
		**DCMW 11T302 RH**	0.2	2.1	★	—	—	—	—	—
		DCMW 11T304 RH	0.4	1.9	★	—	—	—	—	—
		DCMW 11T308 RH	0.8	1.6	★	—	—	—	—	—
 NF Insert		**DCMT 11T301 NF**	0.1	3.0	—	—	—	—	★	▲
		DCMT 11T302 NF	0.2	3.0	—	—	—	—	★	▲
		DCMT 11T304 NF	0.4	2.8	—	—	—	—	★	▲
		DCMT 11T308 NF	0.8	2.4	—	—	—	—	★	▲
 BREAK MASTER		**DCMT 11T302 NLD NF**	0.2	3.1	—	—	—	—	★	—
		DCMT 11T304 NLD NF	0.4	2.9	—	—	—	—	★	—
		DCMT 11T308 NLD NF	0.8	2.5	—	—	—	—	★	—
 BREAK MASTER		**DCMT 11T302 NGD NF**	0.2	3.1	—	—	—	—	★	—
		DCMT 11T304 NGD NF	0.4	2.9	—	—	—	—	★	—
		DCMT 11T308 NGD NF	0.8	2.5	—	—	—	—	★	—
 BREAK MASTER	 (Left-Hand)	**DCMT 11T302 RDM NU**	0.2	2.9	—	—	—	★	—	—
		DCMT 11T302 LDM NU	0.2	2.9	—	—	—	★	—	—
 BREAK MASTER	 (Left-Hand)	**DCMT 11T304 RDM NU**	0.4	2.7	—	—	—	★	—	—
		DCMT 11T304 LDM NU	0.4	2.7	—	—	—	★	—	—
		**DCMT 11T301**	0.1	4.3	—			★		
		DCMT 11T302	0.2	4.2	—			★		
		DCMT 11T304	0.4	4.0	—			★		
		DCMT 11T308	0.8		—			★		

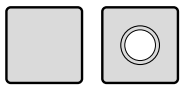
★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

S Square type



Negative

SNMA 1204●●

Dimensions (mm)				
	Inscribed Circle IC	12.70	Hole Dia.	4.76
	Thickness S	5.16		

Applicable External Holders ☞C22 to C28

Applicable Boring Bars ☞E39 to E41

7° Positive

SCMT 0702●●

Dimensions (mm)				
	Inscribed Circle IC	7.94	Hole Dia.	3.4
	Thickness S	2.38		

Applicable External Holders ☞D36

11° Positive

SPGN 0903●●

Dimensions (mm)				
	Inscribed Circle IC	9.525	Hole Dia.	—
	Thickness S	3.18		

Applicable Boring Bars ☞E37

Applicable Cartridge: CE type

SPGN 1203●●

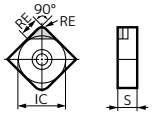
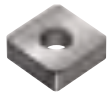
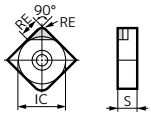
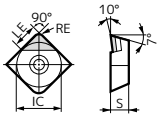
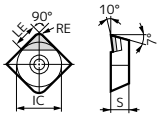
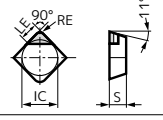
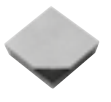
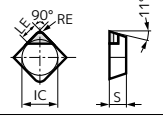
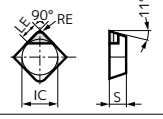
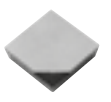
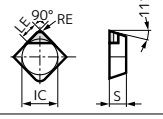
Dimensions (mm)				
	Inscribed Circle IC	12.70	Hole Dia.	—
	Thickness S	3.18		

Applicable External Holders ☞C29 to C30

Applicable Cartridge: CE type

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ●: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					●	
	Carbide/Hard Brittle Materials	●	●				

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	Dimensions (mm) SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**SNMA 120408 NF**	0.8	2.4	—	★	★	—	—	—
		SNMA 120412 NF	1.2	2.4	—	★	★	—	—	—
		**SNMA 120408 RH**	0.8	1.7	★	—	—	—	—	—
		SNMA 120412 RH	1.2	1.7	★	—	—	—	—	—
 NF Insert		**SCMT 070201 NF**	0.1	2.9	—	—	—	—	★	
		SCMT 070202 NF	0.2	2.9	—	—	—	—	★	
		SCMT 070204 NF	0.4	2.9	—	—	—	—	★	
		**SCMT 070201**	0.1	2.9	—	—	—	★		
		SCMT 070202	0.2	2.9	—			★		
		SCMT 070204	0.4	2.9	—			★		
 NF Insert		**SPGN 090304 NF**	0.4	4.8	—	—	—	—	★	▲
		SPGN 090308 NF	0.8	4.8	—	—	—	—	★	▲
		**SPGN 090302**	0.2	4.8	—					
		SPGN 090304	0.4	4.8	—			★		
		SPGN 090308	0.8	4.8	—					
 NF Insert		**SPGN 120304 NF**	0.4	4.8	—	—	—	—	★	▲
		SPGN 120308 NF	0.8	4.8	—	—	—	—	★	▲
		**SPGN 120304**	0.4	4.8	—			★		
		SPGN 120308	0.8	4.8	—					
		SPGN 120312	1.2	4.8	—					

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

S Square type



20° Positive

SEGN 0903●●

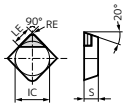
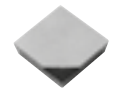
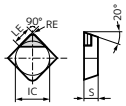
Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	—
	Thickness S	3.18		

Applicable Cartridge: CE type

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

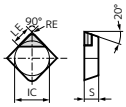
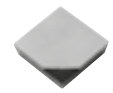
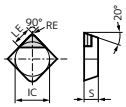
Dimensions (mm)

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**SEGN 090302 NF**	0.2	4.8	—	—	—	—	★	
		**SEGN 090302**	0.2	4.8	—			★		
		SEGN 090304	0.4	4.8	—					
		SEGN 090308	0.8	4.8	—					

SEGN 1203●●

Dimensions (mm)	Inscribed Circle IC	12.70	Hole Dia.	—
	Thickness S	3.18		

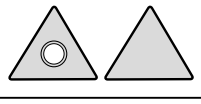
Applicable Cartridge: CE type

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**SEGN 120302 NF**	0.2	4.8	—	—	—	—	★	
		**SEGN 120302**	0.2	4.8	—			★		
		SEGN 120304	0.4	4.8	—					
		SEGN 120308	0.8	4.8	—					

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



Neg.-Pos.

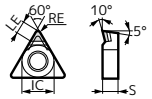
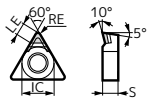
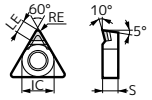
TNMX 1604●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	3.81
	Thickness S	4.76		

Applicable External Holders ☞C31 to C37, D29, D45
Applicable Boring Bars ☞E15, E49 to E51

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ●: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					●	
	Carbide/Hard Brittle Materials	●	●				

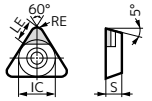
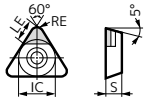
Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**TNMX 160402 NF**	0.2	3.7	—	—	—	—	★	▲
		TNMX 160404 NF	0.4	3.6	—	—	—	—	★	▲
		TNMX 160408 NF	0.8	3.3	—	—	—	—	★	▲
 One-Use		**TNMX 160402 NU**	0.2	3.0	—	—	—	—		
		TNMX 160404 NU	0.4	2.9	—	—	—	—		
		TNMX 160408 NU	0.8	2.6	—	—	—	—		
		**TNMX 160402**	0.2	3.7	—				★	
		TNMX 160404	0.4	3.6	—			★	★	▲
		TNMX 160408	0.8	3.3	—			★	★	▲
		TNMX 160412	1.2	3.0	—					

5° Positive

TBGW 0601●●

Dimensions (mm)	Inscribed Circle IC	3.97	Hole Dia.	2.2
	Thickness S	1.59		

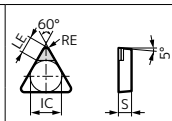
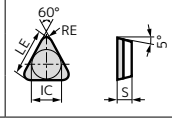
Applicable Boring Bars ☞E44, E46

 NF Insert		**TBGW 060102 NF**	0.2	2.3	—	—	—	—	★	▲
		TBGW 060104 NF	0.4	2.2	—	—	—	—	★	▲
		**TBGW 060102**	0.2	2.3	—			★		
		TBGW 060104	0.4	2.1	—			★		

TBGN 0601●●

Dimensions (mm)	Inscribed Circle IC	3.97	Hole Dia.	—
	Thickness S	1.59		

Applicable Boring Bars ☞E82

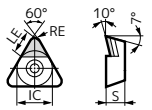
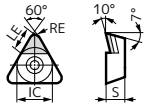
 NF Insert		**TBGN 060102 NF**	0.2	2.1	—	—	—	—	★	▲
		TBGN 060104 NF	0.4	2.0	—	—	—	—	★	▲
		**TBGN 060102 B**	0.2	6.5	—			★	★	
		TBGN 060104 B	0.4	6.2	—			★	★	
		TBGN 060108 B	0.8	5.7	—					

7° Positive

TCMT 0902●●

Dimensions (mm)	Inscribed Circle IC	5.56	Hole Dia.	2.5
	Thickness S	2.38		

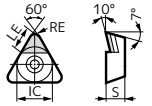
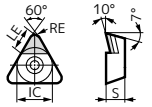
Applicable External Holders ☞D37

 NF Insert		**TCMT 090202 NF**	0.2	2.9	—	—	—	—	★	▲
		TCMT 090204 NF	0.4	2.8	—	—	—	—	★	▲
		**TCMT 090201**	0.1	2.8	—	—	—			
		TCMT 090202	0.2	2.7	—			★		
		TCMT 090204	0.4	2.6	—			★		

TCMT 1102●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	2.8
	Thickness S	2.38		

Applicable External Holders ☞D37

 NF Insert		**TCMT 110201 NF**	0.1	3.0	—	—	—	—	★	▲
		TCMT 110202 NF	0.2	2.9	—	—	—	—	★	▲
		TCMT 110204 NF	0.4	2.8	—	—	—	—	★	▲
		**TCMT 110201**	0.1	2.8	—	—	—			
		TCMT 110202	0.2	2.7	—			★		
		TCMT 110204	0.4	2.6	—			★		

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



11° Positive

TPGW 0802●●

Dimensions (mm)	Inscribed Circle IC	4.76	Hole Dia.	2.4
	Thickness S	2.38		

Applicable Boring Bars ☞E44 to E47

TPM■ 0802●●

Dimensions (mm)	Inscribed Circle IC	4.76	Hole Dia.	2.4
	Thickness S	2.38		

Applicable Boring Bars ☞E44 to E47

TPGW 0902●●

Dimensions (mm)	Inscribed Circle IC	5.56	Hole Dia.	2.8
	Thickness S	2.38		

Applicable Boring Bars ☞E44

TPMT 0902●●

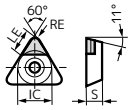
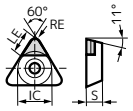
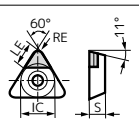
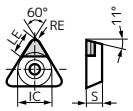
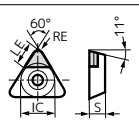
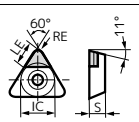
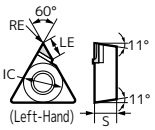
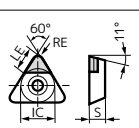
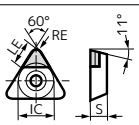
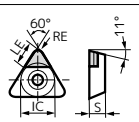
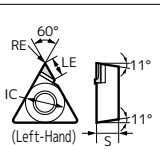
Dimensions (mm)	Inscribed Circle IC	5.56	Hole Dia.	2.8
	Thickness S	2.38		

Applicable Boring Bars ☞E44

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Dimensions (mm)

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**TPGW 080201 NF**	0.1	3.1	—	—	—	—	★	▲
		TPGW 080202 NF	0.2	3.0	—	—	—	—	★	▲
		TPGW 080204 NF	0.4	2.9	—	—	—	—	★	▲
		**TPGW 080202**	0.2	2.9	—			★		
		TPGW 080204	0.4	2.7	—			★		
		TPGW 080208	0.8	2.4	—					
 NF Insert		**TPMW 080202 NF**	0.2	2.5	—	★	★	—	—	—
		TPMW 080204 NF	0.4	2.4	—	★	★	—	—	—
		**TPMW 080202 RH**	0.2	1.2	★	—	—	—	—	—
		TPMW 080204 RH	0.4	1.0	★	—	—	—	—	—
 BREAK MASTER		**TPMT 080202 NLD NF**	0.2	2.9	—	—	—	—	★	—
		TPMT 080204 NLD NF	0.4	2.8	—	—	—	—	★	—
 BREAK MASTER		**TPMT 080202 NGD NF**	0.2	2.9	—	—	—	—	★	—
		TPMT 080204 NGD NF	0.4	2.8	—	—	—	—	★	—
 BREAK MASTER		**TPMT 080202 RDM NU**	0.2	2.5	—	—	—		—	—
		TPMT 080202 LDM NU	0.2	2.5	—	—	—	★	—	—
		TPMT 080204 RDM NU	0.4	2.3	—	—	—		—	—
		TPMT 080204 LDM NU	0.4	2.3	—	—	—	★	—	—
 NF Insert		**TPGW 090202 NF**	0.2	3.1	—	—	—	—	★	▲
		TPGW 090204 NF	0.4	2.9	—	—	—	—	★	▲
 BREAK MASTER		**TPMT 090202 NLD NF**	0.2	3.1	—	—	—	—	★	—
		TPMT 090204 NLD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER		**TPMT 090202 NGD NF**	0.2	3.1	—	—	—	—	★	—
		TPMT 090204 NGD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER		**TPMT 090202 RDM NU**	0.2	2.5	—	—	—		—	—
		TPMT 090202 LDM NU	0.2	2.5	—	—	—	★	—	—
		TPMT 090204 RDM NU	0.4	2.3	—	—	—		—	—
		TPMT 090204 LDM NU	0.4	2.3	—	—	—	★	—	—

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

T Triangular type



11° Positive

TPGW 1102●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	2.8
	Thickness S	2.38		

Applicable Boring Bars E44

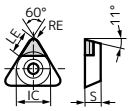
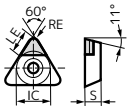
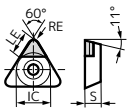
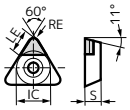
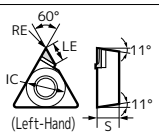
TPMT 1102●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	2.8
	Thickness S	2.38		

Applicable Boring Bars E44

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ●: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					●	
	Carbide/Hard Brittle Materials	●	●				

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	Dimensions (mm) SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**TPGW 110201 NF**	0.1	3.1	—	—	—	—	★	▲
		TPGW 110202 NF	0.2	3.0	—	—	—	—	★	▲
		TPGW 110204 NF	0.4	2.9	—	—	—	—	★	▲
		TPGW 110208 NF	0.8		—	—	—	—	★	▲
		**TPGW 110202**	0.2	3.7	—			★		
		TPGW 110204	0.4	3.6	—			★		
		TPGW 110208	0.8	3.3	—				★	
 BREAK MASTER		**TPMT 110202 NLD NF**	0.2	3.1	—	—	—	—	★	—
		TPMT 110204 NLD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER		**TPMT 110202 NGD NF**	0.2	3.1	—	—	—	—	★	—
		TPMT 110204 NGD NF	0.4	2.9	—	—	—	—	★	—
 BREAK MASTER	 (Left-Hand)	**TPMT 110202 RDM NU**	0.2	2.5	—	—	—		—	—
		TPMT 110202 LDM NU	0.2	2.5	—	—	—	★	—	—
		TPMT 110204 RDM NU	0.4	2.3	—	—	—		—	—
		TPMT 110204 LDM NU	0.4	2.3	—	—	—	★	—	—

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

T Triangular type



11° Positive

TPGW 1103●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	3.4
	Thickness S	3.18		

Applicable Boring Bars E14, E44 to E47

TPM■ 1103●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	3.4
	Thickness S	3.18		

Applicable Boring Bars E14, E44 to E47

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Dimensions (mm)

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert	**TPGW 110301 NF**	0.1	3.1	—	—	—	—	★	▲
	TPGW 110302 NF	0.2	3.0	—	—	—	—	★	▲
	TPGW 110304 NF	0.4	2.9	—	—	—	—	★	▲
	TPGW 110308 NF	0.8	2.7	—	—	—	—	★	▲
 NF Insert	**TPGW 110304 P NF**	0.4	10.4	—	—	—	—	★	—
	TPGW 110308 P NF	0.8	9.8	—	—	—	—	★	—
	**TPGW 110300**	0.05	3.8	—	—	—			
	TPGW 110302	0.2	3.7	—			★		
	TPGW 110304	0.4	3.6	—			★		
	TPGW 110308	0.8	3.3	—			★		
 NF Insert	**TPMW 110302 NF**	0.2	2.5	—	★	★	—	—	—
	TPMW 110304 NF	0.4	2.4	—	★	★	—	—	—
	TPMW 110308 NF	0.8	2.1	—	★	★	—	—	—
	**TPMW 110302 RH**	0.2	1.5	★	—	—	—	—	—
	TPMW 110304 RH	0.4	1.3	★	—	—	—	—	—
	TPMW 110308 RH	0.8	1.0	★	—	—	—	—	—
 NF Insert	**TPMT 110301 NF**	0.1	3.0	—	—	—	—	★	▲
	TPMT 110302 NF	0.2	2.9	—	—	—	—	★	▲
	TPMT 110304 NF	0.4	2.8	—	—	—	—	★	▲
	TPMT 110308 NF	0.8	2.5	—	—	—	—	★	▲
 BREAK MASTER	**TPMT 110302 NLD NF**	0.2	3.1	—	—	—	—	★	—
	TPMT 110304 NLD NF	0.4	2.9	—	—	—	—	★	—
	TPMT 110308 NLD NF	0.8	2.7	—	—	—	—	★	—
 BREAK MASTER	**TPMT 110302 NGD NF**	0.2	3.1	—	—	—	—	★	—
	TPMT 110304 NGD NF	0.4	2.9	—	—	—	—	★	—
	TPMT 110308 NGD NF	0.8	2.7	—	—	—	—	★	—
 BREAK MASTER	**TPMT 110302 RDM NU**	0.2	2.5	—	—	—		—	—
	TPMT 110302 LDM NU	0.2	2.5	—	—	—	★	—	—
	TPMT 110304 RDM NU	0.4	2.3	—	—	—		—	—
	TPMT 110304 LDM NU	0.4	2.3	—	—	—	★	—	—
	**TPMT 110300**	0.05	3.7	—	—	—			▲
	TPMT 110302	0.2	3.6	—					▲
	TPMT 110304	0.4	3.5	—					▲
	TPMT 110308	0.8	3.2	—					▲

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



11° Positive

TPGW 1603●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	3.18		

Applicable Boring Bars E44

TPGW 1604●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	4.76		

Applicable Boring Bars E14, E44 to E46

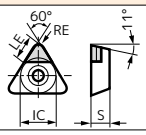
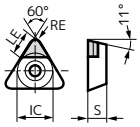
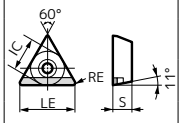
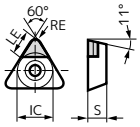
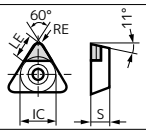
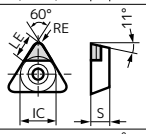
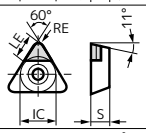
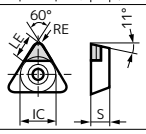
TPM■ 1604●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	4.76		

Applicable Boring Bars E14, E44 to E46

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	Dimensions (mm) NPD10	SUMIDIA DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**TPGW 160302 NF**	0.2	3.1	—	—	—	—	★	▲
		TPGW 160304 NF	0.4	2.9	—	—	—	—	★	▲
		TPGW 160308 NF	0.8	2.7	—	—	—	—	★	▲
 NF Insert		**TPGW 160401 NF**	0.1	3.1	—	—	—	—	★	▲
		TPGW 160402 NF	0.2	3.0	—	—	—	—	★	▲
		TPGW 160404 NF	0.4	2.9	—	—	—	—	★	▲
		TPGW 160408 NF	0.8	2.7	—	—	—	—	★	▲
 NF Insert		**TPGW 160404 P NF**	0.4	15.9	—	—	—	—	★	—
		TPGW 160408 P NF	0.8	15.3	—	—	—	—	★	—
		**TPGW 160402**	0.2	3.7	—			★		
		TPGW 160404	0.4	3.5	—			★		
		TPGW 160408	0.8	3.3	—			★		
		TPGW 160412	1.2	3.0	—					
 NF Insert		**TPMW 160402 NF**	0.2	2.5	—	★	★	—	—	—
		TPMW 160404 NF	0.4	2.4	—	★	★	—	—	—
		TPMW 160408 NF	0.8	2.1	—	★	★	—	—	—
		**TPMW 160402 RH**	0.2	2.2	—	★	★	—	—	—
		TPMW 160404 RH	0.4	2.0	—	★	★	—	—	—
		TPMW 160408 RH	0.8	1.6	—	★	★	—	—	—
 BREAK MASTER		**TPMT 160402 NLD NF**	0.2	3.1	—	—	—	—	★	—
		TPMT 160404 NLD NF	0.4	2.9	—	—	—	—	★	—
		TPMT 160408 NLD NF	0.8	2.7	—	—	—	—	★	—
 BREAK MASTER		**TPMT 160402 NGD NF**	0.2	3.1	—	—	—	—	★	—
		TPMT 160404 NGD NF	0.4	2.9	—	—	—	—	★	—
		TPMT 160408 NGD NF	0.8	2.7	—	—	—	—	★	—

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

T Triangular type



11° Positive

TPGN 0902●●

Dimensions (mm)	Inscribed Circle IC	5.56	Hole Dia.	—
	Thickness S	2.38		

Applicable Cartridge: CP type

TPGN 1103●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	—
	Thickness S	3.18		

Applicable Boring Bars E48

TPMR 1103●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	—
	Thickness S	3.18		

Applicable Boring Bars E48

TPGN 1603●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	—
	Thickness S	3.18		

Applicable External Holders C38 to C39
Applicable Boring Bars E48

TPMR 1603●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	—
	Thickness S	3.18		

Applicable External Holders C36 to C37
Applicable Boring Bars E44

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Dimensions (mm)

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert	**TPGN 090202 NF**	0.2	3.1	—	—	—	—	★	▲
	TPGN 090204 NF	0.4	3.0	—	—	—	—	★	▲
	TPGN 090208 NF	0.8	2.7	—	—	—	—	★	
	**TPGN 090202**	0.2	3.7	—			★		
	TPGN 090204	0.4	3.6	—			★		
	TPGN 090208	0.8	3.2	—					
 NF Insert	**TPGN 110302 NF**	0.2	3.0	—	—	—	—	★	▲
	TPGN 110304 NF	0.4	2.9	—	—	—	—	★	▲
	TPGN 110308 NF	0.8	2.7	—	—	—	—	★	▲
 NF Insert	**TPGN 110304 P NF**	0.4	10.4	—	—	—	—	★	▲
	TPGN 110308 P NF	0.8	9.8	—	—	—	—	★	▲
	**TPGN 110300**	0.05	3.8	—	—	—			
	TPGN 110302	0.2	3.7	—			★		
	TPGN 110304	0.4	3.6	—			★		
	TPGN 110308	0.8	3.3	—			★		

Part Number Suffix - P: Full-length Cutting Edge type

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 BREAK MASTER	**TPMR 110302 RDM NU**	0.2	2.5	—	—	—		—	—
	TPMR 110302 LDM NU	0.2	2.5	—	—	—	★	—	—
	TPMR 110304 RDM NU	0.4	2.3	—	—	—		—	—
	TPMR 110304 LDM NU	0.4	2.3	—	—	—	★	—	—
 NF Insert	**TPGN 160302 NF**	0.2	3.0	—	—	—	—	★	▲
	TPGN 160304 NF	0.4	2.9	—	—	—	—	★	▲
	TPGN 160308 NF	0.8	2.7	—	—	—	—	★	▲
 NF Insert	**TPGN 160304 P NF**	0.4	15.9	—	—	—	—	★	▲
	**TPGN 160302**	0.2	3.7	—			★		
	TPGN 160304	0.4	3.5	—			★		
	TPGN 160308	0.8	3.3	—			★		
	TPGN 160312	1.2	3.0	—					

Part Number Suffix - P: Full-length Cutting Edge type

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 BREAK MASTER	**TPMR 160302 RDM NU**	0.2	2.5	—	—	—		—	—
	TPMR 160302 LDM NU	0.2	2.5	—	—	—	★	—	—
	TPMR 160304 RDM NU	0.4	2.3	—	—	—		—	—
	TPMR 160304 LDM NU	0.4	2.3	—	—	—	★	—	—

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

T Triangular type



20° Positive

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ◕ ◕ ◕ ◕ ◕ ◕
Carbide/Hard Brittle Materials ● ◕

Dimensions (mm) | SUMIDIA

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	NPD10	DA1090	DA90	DA150	DA1000	DA2200
TEGN 1102●● Dimensions (mm): Inscribed Circle IC 6.35, Thickness S 2.38, Hole Dia. —. Applicable Cartridge: CE type									
 NF Insert	**TEGN 110202 NF**	0.2	3.1	—	—	—	—	★	▲
	TEGN 110204 NF	0.4	2.9	—	—	—	—	★	▲
	**TEGN 110202**	0.2	3.7	—			★		
	TEGN 110204	0.4	3.6	—			★		
	TEGN 110208	0.8	3.3	—					
TEGN 1103●● Dimensions (mm): Inscribed Circle IC 6.35, Thickness S 3.18, Hole Dia. —. Applicable Cartridge: CE type									
 NF Insert	**TEGN 110302 NF**	0.2	3.1	—	—	—	—	★	▲
	TEGN 110304 NF	0.4	2.9	—	—	—	—	★	▲
	TEGN 110308 NF	0.8	2.7	—	—	—	—	★	▲
 NF Insert	**TEGN 110304 P NF**	0.4	10.4	—	—	—	—	★	▲
	TEGN 110308 P NF	0.8	9.8	—	—	—	—	★	▲
	**TEGN 110302**	0.2	3.7	—			★		
	TEGN 110304	0.4	3.6	—			★		
	TEGN 110308	0.8	3.3	—					

Part Number Suffix - P: Full-length Cutting Edge type

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	NPD10	DA1090	DA90	DA150	DA1000	DA2200
TEGN 1603●● Dimensions (mm): Inscribed Circle IC 9.525, Thickness S 3.18, Hole Dia. —. Applicable Cartridge: CE type									
 NF Insert	**TEGN 160302 NF**	0.2	3.0	—	—	—	—	★	
	TEGN 160304 NF	0.4	2.9	—	—	—	—	★	
 NF Insert	**TEGN 160304 P NF**	0.4	15.9	—	—	—	—	★	▲
	**TEGN 160302**	0.2	3.7	—			★		
	TEGN 160304	0.4	3.6	—			★	★	▲
	TEGN 160308	0.8	3.3	—					

Part Number Suffix - P: Full-length Cutting Edge type

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	NPD10	DA1090	DA90	DA150	DA1000	DA2200
TEGN 2204●● Dimensions (mm): Inscribed Circle IC 12.70, Thickness S 4.76, Hole Dia. —. Applicable Cartridge: CE type									
	**TEGN 220404**	0.4	3.6	—			★		
	TEGN 220408	0.8	3.3	—					

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

V 35° Diamond type

Negative

VNMA 1604●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	3.81
	Thickness S	4.76		

Applicable External Holders ☞C40 to C41

Neg.-Pos.

VNMX 1604●●

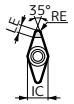
Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	3.81
	Thickness S	4.76		

Applicable External Holders ☞C40 to C41

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ●: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					●	
	Carbide/Hard Brittle Materials	●	●				

Dimensions (mm)

Shape			ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert			**VNMA 160408 NF**	0.8	1.9	—	★	★	—	—	—
			VNMA 160412 NF	1.2	1.7	—	★	★	—	—	—
			**VNMA 160408 RH**	0.8	1.8	★	—	—	—	—	—
			VNMA 160412 RH	1.2	1.5	★	—	—	—	—	—
 NF Insert			**VNMX 160402 NF**	0.2	6.9	—	—	—	—	★	▲
			VNMX 160404 NF	0.4	6.4	—	—	—	—	★	▲
			VNMX 160408 NF	0.8	5.6	—	—	—	—	★	▲
			VNMX 160412 NF	1.2	4.7	—	—	—	—	★	▲
 One-Use			**VNMX 160402 NU**	0.2	3.6	—	—	—	—		▲
			VNMX 160404 NU	0.4	3.1	—	—	—	—		▲
			VNMX 160408 NU	0.8	2.3	—	—	—	—		▲
			VNMX 160412 NU	1.2	2.3	—	—	—	—		▲
			**VNMX 160402**	0.2	6.9	—			★	★	
			VNMX 160404	0.4	6.4	—			★	★	▲
			VNMX 160408	0.8	5.6	—			★	★	▲
			VNMX 160412	1.2	4.7	—			★	★	▲

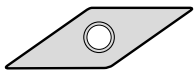
★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

V 35° Diamond type



7° Positive

VCMW 0802●●

Dimensions (mm)	Inscribed Circle IC	4.76	Hole Dia.	2.3
	Thickness S	2.38		

Applicable Boring Bars ☞ E53, E56, E59, E62

VCM■ 1103●●

Dimensions (mm)	Inscribed Circle IC	6.35	Hole Dia.	2.8
	Thickness S	3.18		

Applicable External Holders ☞ C42 to C43, D29, D40, D44

Applicable Boring Bars ☞ E56, E59, E62

VCM■ 1604●●

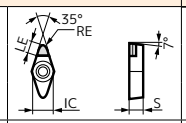
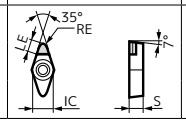
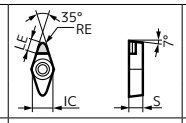
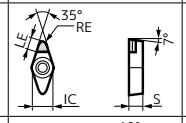
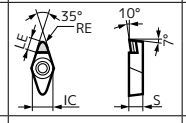
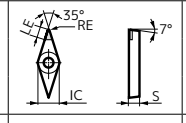
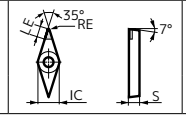
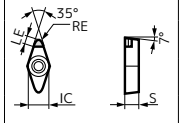
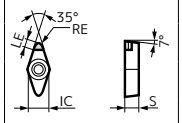
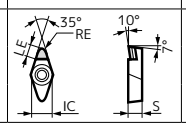
Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	4.76		

Applicable External Holders ☞ C42 to C43

Applicable Boring Bars ☞ E56, E59

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				
	Dimensions (mm)	SUMIDIA					

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		VCMW 080202 NF	0.2	3.2	—	★	★	—	—	—
		VCMW 080204 NF	0.4	2.8	—	★	★	—	—	—
		VCMW 080201 RH	0.1	2.2	★	—	—	—	—	—
		VCMW 080202 RH	0.2	1.9	★	—	—	—	—	—
		VCMW 080204 RH	0.4	1.5	★	—	—	—	—	—
 NF Insert		VCMW 110302 NF	0.2	3.2	—	★	★	—	—	—
		VCMW 110304 NF	0.4	2.8	—	★	★	—	—	—
		VCMW 110302 RH	0.2	2.1	★	—	—	—	—	—
		VCMW 110304 RH	0.4	1.7	★	—	—	—	—	—
 NF Insert		VCMT 110301 NF	0.1	3.5	—	—	—	—	★	▲
		VCMT 110302 NF	0.2	3.4	—	—	—	—	★	▲
		VCMT 110304 NF	0.4	3.0	—	—	—	—	★	▲
 BREAK MASTER		VCMT 110302 NLD NF	0.2	3.8	—	—	—	—	★	—
		VCMT 110304 NLD NF	0.4	3.4	—	—	—	—	★	—
 BREAK MASTER		VCMT 110302 NGD NF	0.2	3.8	—	—	—	—	★	—
		VCMT 110304 NGD NF	0.4	3.4	—	—	—	—	★	—
 NF Insert		VCMW 160402 NF	0.2	3.7	—	★	★	—	—	—
		VCMW 160404 NF	0.4	3.3	—	★	★	—	—	—
		VCMW 160408 NF	0.8	2.4	—	★	★	—	—	—
		VCMW 160412 NF	1.2	2.1	—	★	★	—	—	—
		VCMW 160402 RH	0.2	2.1	★	—	—	—	—	—
		VCMW 160404 RH	0.4	1.7	★	—	—	—	—	—
		VCMW 160408 RH	0.8	1.8	★	—	—	—	—	—
		VCMW 160412 RH	1.2	1.5	★	—	—	—	—	—
 NF Insert		VCMT 160404 NF	0.4	6.5	—	—	—	—	★	▲
		VCMT 160408 NF	0.8	5.6	—	—	—	—	★	▲
		VCMT 160412 NF	1.2	4.6	—	—	—	—	★	▲

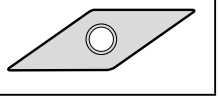
★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

V 35° Diamond type



7° Positive

VCMT 1604●●

Dimensions (mm)	Inscribed Circle IC	9.525	Hole Dia.	4.4
	Thickness S	4.76		

Applicable External Holders ☞C42 to C43
Applicable Boring Bars ☞E56, E59

VCMT 2205●●

Dimensions (mm)	Inscribed Circle IC	12.70	Hole Dia.	5.5
	Thickness S	5.56		

Applicable External Holders ☞C47

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ❍: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					❍	
	Carbide/Hard Brittle Materials	●	❍				

Dimensions (mm)

Shape	ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 BREAK MASTER	**VCMT 160404 NLD NF**	0.4	6.5	—	—	—	—	★	—
	VCMT 160408 NLD NF	0.8	5.6	—	—	—	—	★	—
	VCMT 160412 NLD NF	1.2	4.8	—	—	—	—	★	—
 BREAK MASTER	**VCMT 160404 NGD NF**	0.4	6.5	—	—	—	—	★	—
	VCMT 160408 NGD NF	0.8	5.6	—	—	—	—	★	—
	VCMT 160412 NGD NF	1.2	4.8	—	—	—	—	★	—
	**VCMT 160408**	0.8	5.8	—				★	▲
	VCMT 160412	1.2	4.9	—				★	▲
	VCMT 160412 WF	1.2	4.9	—				★	▲
	**VCMT 220520**	2.0	5.0	—				★	▲
	VCMT 220530	3.0	5.0	—				★	▲

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

W Trigon type



5° Positive

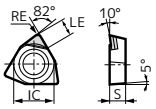
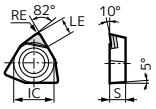
WBMT 0601●●

Dimensions (mm)	Inscribed Circle IC	3.97	Hole Dia.	2.2
	Thickness S	1.59		

Applicable Boring Bars E64

(Legend) Continuous Cutting ●: 1st Recommendation General Machining ◕: 1st Recommendation

Recommended Application							
	N Non-Ferrous Metal					◕	
	Carbide/Hard Brittle Materials	●	◕				

Shape		ISO Cat. No.	Corner Radius RE	Cutting Edge Length LE	Dimensions (mm) SUMIDIA NPD10	DA1090	DA90	DA150	DA1000	DA2200
 NF Insert		**WBMT 060101 L NF**	0.1	1.8	—	—	—	—	★	
		WBMT 060102 L NF	0.2	1.8	—	—	—	—	★	
		WBMT 060104 L NF	0.4	1.7	—	—	—	—	★	
		**WBMT 060101 L**	0.1	1.8	—	—	—	—		▲
		WBMT 060102 L	0.2	1.8	—	—	—	—		▲
		WBMT 060104 L	0.4	1.7	—	—	—	—		▲

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

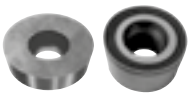
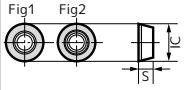
Blank: Made-to-order item
— mark: Not available

SUMIDIA Inserts

For Turning

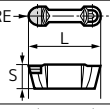
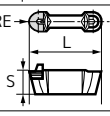
Round Insert

Dimensions (mm)

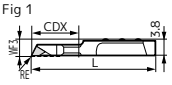
Shape		ISO Cat. No.	SUMIDIA DA1090	DA90	DA150	DA1000	DA2200	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Corner Radius RE	Hole Dia.	Fig	Applicable Holder
	Fig1 Fig2 	**RPGW 0803 M0**				★	▲	8.0	3.18	—	—	3.3	1	Aluminum Wheel Turning SEC-RP Profiling Holder (RP02 series (Made-to-order item))
		RPGT 0803 M0 WF						8.0	3.18	—	—	3.3	2	

Part number suffix WF: Edge with Special Land for Aluminum Wheel Gloss Finishing

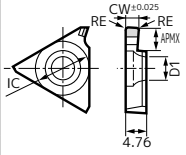
Dogbone Insert

Shape		ISO Cat. No.	DA1090	DA90	DA150	DA1000	DA2200	Overall Length L	Thickness S	Corner Radius RE			Fig	Applicable Holder
	Fig 1 	**MDE 3 R**					★	26	8.5	3.0			1	Aluminum Wheel Turning SEC-GD Profiling Holder (GDE series) → C48 to C49
		MDE 4 R					★	30	8.5	4.0			1	
	Fig 1 	**MDE 3 R AW**					★	26	8.5	3.0			1	
		MDE 4 R AW					★	30	8.5	4.0			1	

Very Small Dia. Boring Insert

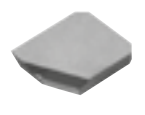
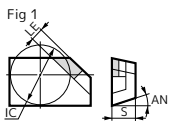
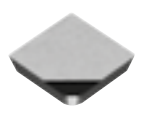
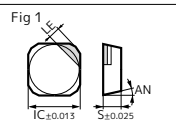
Shape		ISO Cat. No.	DA2200					Min. Bore Dia. DMIN	WF3	Corner Radius RE	L	CDX	Fig	Applicable Holder
	Fig 1 	**KBMX R 0311-10**	★					3.0	4.1	0.1	28.5	11.0	1	Very Small Dia. Boring Bar (CKB series) → M33
		KBMX R 0411-10	★					4.0	4.3	0.1	28.5	11.0	1	
		KBMX R 0511-10	★					5.0	4.5	0.1	28.5	11.0	1	

Grooving Insert

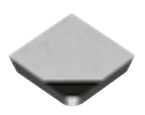
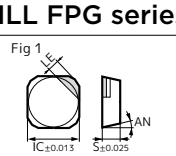
Shape		ISO Cat. No.	DA2200 R	DA2200 L	Inscribed Circle IC	Width of Cut CW	Corner Radius RE	Maximum Groove Depth APMX	Hole Dia. D1	Fig	Applicable Holder
	Fig 1 	**TGA R/L 4125**	★		12.70	1.25	0.1	2.0	5.5	1	SEC-Grooving Tools (GWC series, GWCS series, GWCI series) → F4 to F5
		TGA R/L 4150	★		12.70	1.50	0.1	3.5	5.5	1	
		TGA R/L 4200	★		12.70	2.00	0.1	3.5	5.5	1	
		TGA R/L 4250	★		12.70	2.50	0.1	4.0	5.5	1	
		TGA R/L 4300	★		12.70	3.00	0.1	4.0	5.5	1	
		TGA R/L 4350	★		12.70	3.50	0.1	5.0	5.5	1	
		TGA R/L 4400	★		12.70	4.00	0.1	5.0	5.5	1	

For Milling

For SEC-ACE MILL APG series

Shape		ISO Cat. No.	SUMIDIA DA150	DA1000	DA2200	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter/ Endmill
	Fig 1 	**APW 4 R**		★	▲	12.70	3.18	2.0	15	1	APG series → H46
		APW 5 R				15.875	4.76	2.0	15	1	
	Fig 1 	**SDC 42 R NF**	—	★	▲	12.70	3.18	3.0	15	1	
		SDC 42 R	★	★	▲	12.70	3.18	3.0	15	1	
		SDC 53 R				15.88	4.76	3.0	15	1	

For SEC-ACE MILL FPG series / SEC-Multi Use Endmill FPE series

	Fig 1 	**SDKN 42 M NF**	—	★	▲	12.70	3.18	3.0	15	1	FPG series → H39 FPE series → H40
		SDKN 42 M	★			12.70	3.18	3.0	15	1	
		SDKN 53 M				15.88	4.76	3.0	15	1	

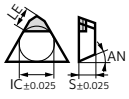
★ mark: Global stocked item
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Blank: Made-to-order item
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SUMIDIA Inserts

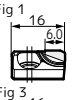
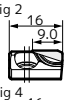
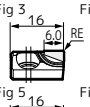
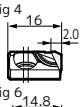
For Milling

Dimensions (mm)

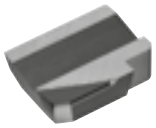
For SEC-ACE MILL CHG series / SEC-Multi Use Endmill CHE series

Shape		ISO ISO Cat. No.	SUMIDIA DA1090	DA90	DA150	DA1000	DA2200	SUMICRYSTAL SC10*1	SCV10*1	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
	Fig 1 	**TEEN 22 NFR**	—	—	—	★	▲	—	—	6.35	3.18	4.9	20	1	CHG series → H156 CHE series →H157 to H159
		TEEN 32 NFR	—	—	—	★	▲	—	—	9.525	3.18	4.9	20	1	
		TEEN 43 NFR	—	—	—	★	▲	—	—	12.70	4.76	4.8	20	1	
		TEEN 22 R	—	—	★		—	—	—	6.35	3.18	4.9	20	1	
		TEEN 32 R	—	—	★		—	—	—	9.525	3.18	4.9	20	1	
		TEEN 43 R	—	—	★		—	—	—	12.70	4.76	4.8	20	1	

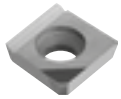
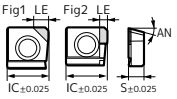
For High-efficiency Cutter for Aluminum Alloys ALNEX ANX series (Blade)

	Fig 1  Fig 2  Fig 3  Fig 4  Fig 5  Fig 6 	**ANB 1600 R L**			—	★	—	—	—	—	—	6.0	—	1	ANX series →M36 to M46
		ANB 1600 R G			—	★	—	—	—	—	—	6.0	—	1	
		ANB 1600 R GB	★	★	—		—	—	—	—	—	6.0	—	1	
		ANB 1600 R H	—	—	—	★	—	—	—	—	—	6.0	—	1	
		ANB 1600 R GX			—	★	—	—	—	—	—	9.0	—	2	
		ANB 1604 R			—	★	—	—	—	—	—	6.0	—	3	
		ANB 1608 R			—	★	—	—	—	—	—	6.0	—	3	
		ANB 1600 R W			—	★	—	—	—	—	—	—	—	4	
		ANB 1600 R WS	—	—	—	—	—	—	★	—	—	—	—	5	
		ANBD	—	—	—	—	—	—	★*2	—	—	—	—	6	

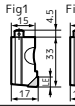
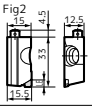
For High-efficiency Cutter for Aluminum Alloys HF series (Blade)

	Fig 1  Fig 2  Fig 3 	**LDEN 12T3 ZDFR L NF**	—	—	—	★	—	—	—	—	—	6.0	—	1	HF series →M48 to M53
		LDEN 12T3 ZDFR G NF	—	—	—	★	—	—	—	—	—	6.0	—	1	
		LDEN 12T3 ZDTR H NF	—	—	—	★	—	—	—	—	—	6.0	—	1	
		LDEN 12T3 ZDFR GX NF	—	—	—	★	—	—	—	—	—	9.0	—	2	
		LDEN 12T3 ZDFR W NF	—	—	—	★	—	—	—	—	—	—	—	3	

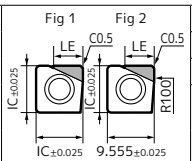
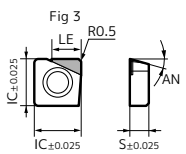
For High-Speed Cutter for Aluminum Alloys RF series (Insert)

	Fig1 LE Fig2 LE 	**SNEW 1204 ADFR NF**	—	—	—	★	▲	—	—	12.70	4.76	4.7	15	1	RF series →M54 to M55
		SNEW 1204 ADFR H NF	—	—	—	★	—	—	—	12.70	4.76	9.5	15	1	
		SNEW 1204 ADFR W NF	—	—	—	★	▲	—	—	12.70	4.76	2.3	15	2	
		SNEW 1204 ADFR WS	—	—	—	—	—	★	—	12.70	4.76	1.0	20	2	

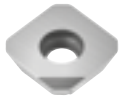
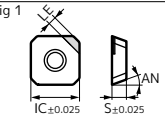
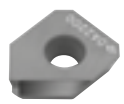
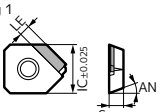
For High-Speed Cutter for Aluminum Alloys RF series (Blade)

	Fig1  Fig2 	**RFB**	—	—	—		★	—	—	—	—	6.5	—	1	RF series →M54 to M55
		RFBW	—	—	—		★	—	—	—	—	4.5	—	2	

For Small Diameter Cutter for Aluminum Alloys SRF series

	Fig 1 Fig 2  Fig 3 	**SNEW 09T3 ADTR NF**	—	—	—	★	▲	—	—	9.525	3.96	6.0	15	1	SRF series →M56 to M57
		SNEW 09T3 ADTR U NF	—	—	—	★	▲	—	—	9.525	3.96	6.0	15	2	
		SNEW 09T3 ADTR R NF	—	—	—	★	▲	—	—	9.525	3.96	6.0	15	3	

For SEC-WaveMill WGC series

	Fig 1 	**SECW 13T3 AGTN N NF**	—	—	—	★	▲	—	—	13.40	3.97	2.1	20	1	WGC series →H26 to H28
	Fig 1 	**XEEW 13T3 AGFR W NF**	—	—	—	★	▲	—	—	13.40	3.97	2.5	20	1	WGC series →H26 to H28

*1: SC10 is SUMICRYSTAL and SCV10 is CVD single-crystal diamond *2: Dummy blade (cemented carbide) for use with WS type

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

SUMIDIA/SUMIDIA BINDERLESS Inserts

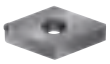
Indexable Inserts

■ SUMIDIA BINDERLESS NPD10 Negative

(Legend) Continuous Cutting ●: 1st Recommendation

Recommended Application: Carbide/Hard Brittle Materials ●

Dimensions (mm)

Shape	ISO Cat. No.	NPD10	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Corner Radius RE
	DNMA 150408 RH	★	1.8	12.7	4.76	5.16	0.8
	DNMA 150412 RH	★	1.8	12.7	4.76	5.16	1.2
	SNMA 120408 RH	★	1.7	12.7	4.76	5.16	0.8
	SNMA 120412 RH	★	1.7	12.7	4.76	5.16	1.2
	VNMA 160408 RH	★	1.8	9.525	4.76	3.81	0.8
	VNMA 160412 RH	★	1.5	9.525	4.76	3.81	1.2

■ SUMIDIA DA90 Neg. NF

(Legend) General Machining ●: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ●; Carbide/Hard Brittle Materials

Dimensions (mm)

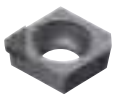
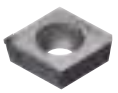
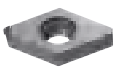
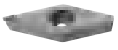
Shape	ISO Cat. No.	DA1090	DA90	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Corner Radius RE
	DNMA 150408 NF	★	★	2.0	12.7	4.76	5.16	0.8
	DNMA 150412 NF	★	★	2.0	12.7	4.76	5.16	1.2
	SNMA 120408 NF	★	★	2.4	12.7	4.76	5.16	0.8
	SNMA 120412 NF	★	★	2.4	12.7	4.76	5.16	1.2
	VNMA 160408 NF	★	★	1.9	9.525	4.76	3.81	0.8
	VNMA 160412 NF	★	★	1.7	9.525	4.76	3.81	1.2

Positive

(Legend) Continuous Cutting ●: 1st Recommendation

Recommended Application: Carbide/Hard Brittle Materials ●

Dimensions (mm)

Shape	Relief Angle	ISO Cat. No.	NPD10	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Corner Radius RE
	7°	CCMW 03X102 RH	★	1.3	3.5	1.4	1.9	0.2
		CCMW 03X104 RH	★	1.3	3.5	1.4	1.9	0.4
		CCMW 04X102 RH	★	1.7	4.3	1.8	2.3	0.2
		CCMW 04X104 RH	★	1.7	4.3	1.8	2.3	0.4
		CCMW 060202 RH	★	1.7	6.35	2.38	2.8	0.2
		CCMW 060204 RH	★	1.7	6.35	2.38	2.8	0.4
		CCMW 09T302 RH	★	1.7	9.525	3.97	4.4	0.2
		CCMW 09T304 RH	★	1.7	9.525	3.97	4.4	0.4
		CCMW 09T308 RH	★	1.6	9.525	3.97	4.4	0.8
	7°	DCMW 070202 RH	★	2.1	6.35	2.38	2.8	0.2
		CCMW 070204 RH	★	2.0	6.35	2.38	2.8	0.4
		DCMW 11T302 RH	★	2.1	9.525	3.97	4.4	0.2
		CCMW 11T304 RH	★	1.9	9.525	3.97	4.4	0.4
		CCMW 11T308 RH	★	1.6	9.525	3.97	4.4	0.8
	11°	TPMW 080202 RH	★	1.2	4.76	2.38	2.3	0.2
		TPMW 080204 RH	★	1.0	4.76	2.38	2.3	0.4
		TPMW 110302 RH	★	1.5	6.35	3.18	3.4	0.2
		TPMW 110304 RH	★	1.3	6.35	3.18	3.4	0.4
		TPMW 110308 RH	★	1.0	6.35	3.18	3.4	0.8
		TPMW 160402 RH	★	2.2	9.525	4.76	4.4	0.2
		TPMW 160404 RH	★	2.0	9.525	4.76	4.4	0.4
		TPMW 160408 RH	★	1.6	9.525	4.76	4.4	0.8
	7°	VCMW 080201 RH	★	2.2	4.76	2.38	2.3	0.1
		VCMW 080202 RH	★	1.9	4.76	2.38	2.3	0.2
		VCMW 080204 RH	★	1.5	4.76	2.38	2.3	0.4
		VCMW 110302 RH	★	2.1	6.35	3.18	2.8	0.2
		VCMW 110304 RH	★	1.7	6.35	3.18	2.8	0.4
		VCMW 160402 RH	★	2.1	9.525	4.76	4.4	0.2
		VCMW 160404 RH	★	1.7	9.525	4.76	4.4	0.4
		VCMW 160408 RH	★	1.8	9.525	4.76	4.4	0.8
		VCMW 160412 RH	★	1.5	9.525	4.76	4.4	1.2

The R portion of the cutting edge is cylindrical shaped.

Pos. NF

(Legend) General Machining ●: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ●; Carbide/Hard Brittle Materials

Dimensions (mm)

Shape	Relief Angle	ISO Cat. No.	DA1090	DA90	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Corner Radius RE
	7°	CCMW 03X102 NF	★	★	1.1	3.5	1.4	1.9	0.2
		CCMW 03X104 NF	★	★	1.1	3.5	1.4	1.9	0.4
		CCMW 04X102 NF	★	★	1.5	4.3	1.8	2.3	0.2
		CCMW 04X104 NF	★	★	1.5	4.3	1.8	2.3	0.4
		CCMW 060202 NF	★	★	2.4	6.35	2.38	2.8	0.2
		CCMW 060204 NF	★	★	2.4	6.35	2.38	2.8	0.4
		CCMW 09T302 NF	★	★	2.4	9.525	3.97	4.4	0.2
		CCMW 09T304 NF	★	★	2.4	9.525	3.97	4.4	0.4
		CCMW 09T308 NF	★	★	2.3	9.525	3.97	4.4	0.8
	7°	DCMW 070202 NF	★	★	2.6	6.35	2.38	2.8	0.2
		DCMW 070204 NF	★	★	2.4	6.35	2.38	2.8	0.4
		DCMW 11T302 NF	★	★	2.6	9.525	3.97	4.4	0.2
		DCMW 11T304 NF	★	★	2.4	9.525	3.97	4.4	0.4
		DCMW 11T308 NF	★	★	2.0	9.525	3.97	4.4	0.8
	11°	TPMW 080202 NF	★	★	2.5	4.76	2.38	2.3	0.2
		TPMW 080204 NF	★	★	2.4	4.76	2.38	2.3	0.4
		TPMW 110302 NF	★	★	2.5	6.35	3.18	3.4	0.2
		TPMW 110304 NF	★	★	2.4	6.35	3.18	3.4	0.4
		TPMW 110308 NF	★	★	2.1	6.35	3.18	3.4	0.8
		TPMW 160402 NF	★	★	2.5	9.525	4.76	4.4	0.2
		TPMW 160404 NF	★	★	2.4	9.525	4.76	4.4	0.4
		TPMW 160408 NF	★	★	2.1	9.525	4.76	4.4	0.8
	7°	VCMW 080202 NF	★	★	3.2	4.76	2.38	2.3	0.2
		VCMW 080204 NF	★	★	2.8	4.76	2.38	2.3	0.4
		VCMW 110302 NF	★	★	3.2	6.35	3.18	2.8	0.2
		VCMW 110304 NF	★	★	2.8	6.35	3.18	2.8	0.4
		VCMW 160402 NF	★	★	3.7	9.525	4.76	4.4	0.2
		VCMW 160404 NF	★	★	3.3	9.525	4.76	4.4	0.4
		VCMW 160408 NF	★	★	2.4	9.525	4.76	4.4	0.8
		VCMW 160412 NF	★	★	2.1	9.525	4.76	4.4	1.2

Page for Applicable Holders

Cat. No.	Applicable Holder	Cat. No.	Applicable Holder	Cat. No.	Applicable Holder
(NF-) DNMA1504●●(RH)	C14-C16 E15,E33-E35	(NF-) CCMW03X1●●(RH)	E18,E22	(NF-) TPMW0802●●(RH)	E44-E47
(NF-) SNMA1204●●(RH)	C22-C28 E39-E41	(NF-) CCMW04X1●●(RH)	E18,E22	(NF-) TPMW1103●●(RH)	E14,E44-E48
(NF-) VNMA1604●●(RH)	C40-C41	(NF-) CCMW0602●●(RH)	C13,D26,D30,D31,D42 E18-E22	(NF-) TPMW1604●●(RH)	E14,E44-E46
		(NF-) CCMW09T3●●(RH)	C13,D26,D30,D31,D42 E12,E18-E22	(NF-) VCMW0802●●(RH)	E53,E56,E59,E62
		(NF-) DCMW0702●●(RH)	C17,D27,D28,D32,D33,D43 E12,E28-E32	(NF-) VCMW1103●●(RH)	E56,E59,E62
		(NF-) DCMW11T3●●(RH)	C17,D27,D28,D32,D33,D43 E28-E32	(NF-) VCMW1604●●(RH)	E56,E59

: External Turning : Internal Boring

★mark: Global stocked item

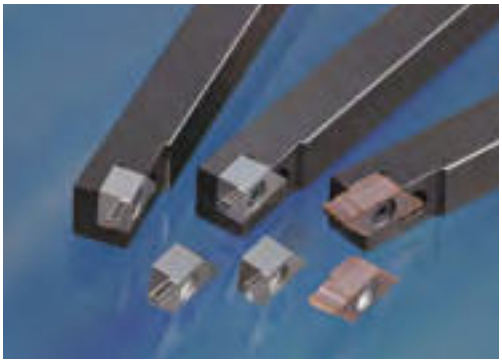
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

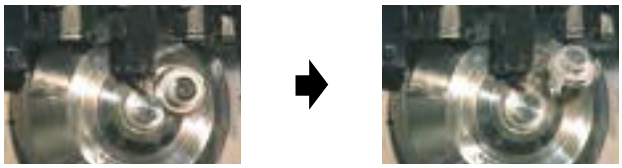
SGW series

VIDEO OF CUTTING



■ Features

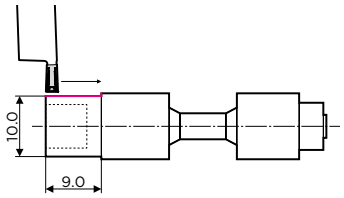
- Enables high-efficiency roughing of long parts
- Coin-shaped chips are less likely to tangle with work material or machinery



■ SUMIDIA Multi-Function Tool with Chipbreaker SUMIDIA BREAK MASTER LD type

- Provides excellent chip control in traverse cutting and grooving of aluminum alloys.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing high-toughness grade SUMIDIA DA1000.

■ Application Examples



Work Material: Valve (A6061), Tool ISO Cat. No.: KGV R2004-LD (DA1000)
Cutting Conditions: vc = 250m/min, f = 0.10mm/rev, ap = 0.5mm Wet

SGW
External Turning

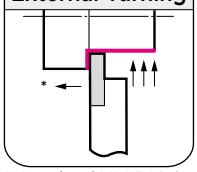
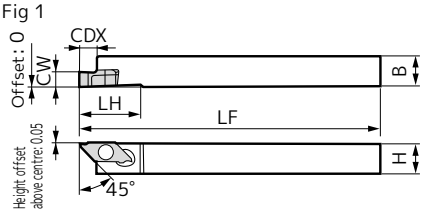
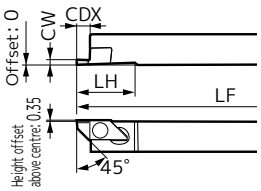


Fig 1



Dimensions with SUMIDIA insert mounted



External Multi-purpose type (Grooving/Traverse Cutting) Screw-on

*Use the SUMIDIA insert for traverse cutting.

Holder

Parts

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)
SGW R1212	★	12	12	120	7.0	24.5	1	BFTX0410T8R	**1.1**	TRX08
SGW R1616	★	16	16	120	7.0	24.5	1			

The above dimensions for LF, CDX and LH are values with a carbide insert mounted. (Refer to the table below for dimensions with SUMIDIA insert mounted)

Insert (SUMIDIA) (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA1000	Width of Cut CW	Overall Length L	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Effective Length	Fig
KGV R2004 LD	★	2.0	19.7	118.7	5.0	23.2	4.0	1
KGV R2504 LD	★	2.5	19.7	118.7	5.0	23.2	4.0	1
KGV R2506 LD	★	2.5	21.2	120.2	6.5	24.7	5.5	1

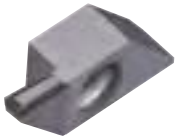
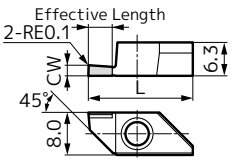


Fig 1



The above dimensions for LF, CDX and LH are the holder dimensions with insert mounted.

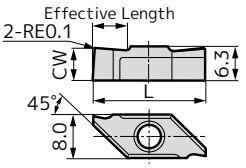
Insert (Carbide) (Coated Carbide)

Dimensions (mm)

ISO Cat. No.	AC1030U	AC530U	Width of Cut CW	Overall Length L	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Effective Length	Fig
KGV R400	★	★	4.0	21.0	120	7.0	24.5	6.3	1
KGV R500	★	★	5.0	21.0	120	7.0	24.5	6.3	1
KGV R600	★	★	6.0	21.0	120	7.0	24.5	6.3	1



Fig 1



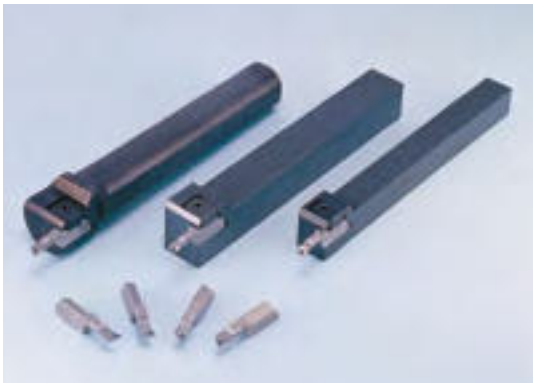
Recommended Cutting Conditions

Work Material	P Steel M Stainless Steel N Non-Ferrous Metal	N Non-Ferrous Metal	
Insert Grade	AC1030U	DA1000	
Machining Details	Grooving	Grooving	Traverse Cutting
Spindle Speed n (min-1)	4,000 to 6,000	4,500 to 8,000	4,500 to 8,000
Feed Rate f (mm/rev)	0.05 to 0.15	0.07 to 0.15	0.07 to 0.15
Coolant	Wet (oil-based)		

Be careful with spindle power during use. For small lathes, insufficient spindle power during machining may cause the machine to stop.
Be careful when machining carbon steel and stainless steel in particular.

N·m Recommended Tightening Torque (N·m) Note: Regrinding the SUMIDIA BREAK MASTER LD type will adversely affect chip evacuation performance.

CKB series

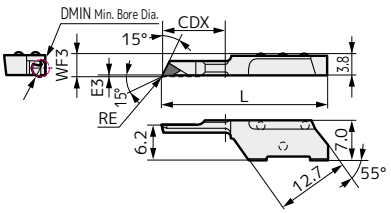


SumiSmall

■ Features

- High indexing accuracy with simple structure design and one-touch clamping.
- Utilises DA2200 grade with excellent edge sharpness.

■ Insert



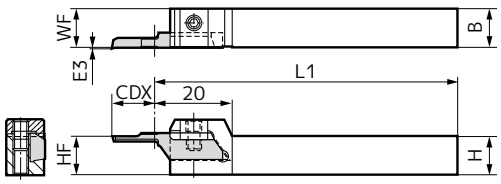
(SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	Cutting Edge Position WF3	Offset E3	Corner Radius RE	Overall Length L	Depth of Cut CDX
KBMX R0311 10	★	**3.0**	4.1	0.3	0.1	28.5	11
KBMX R0411 10	★	**4.0**	4.3	0.5	0.1	28.5	11
KBMX R0511 10	★	**5.0**	4.5	0.7	0.1	28.5	11

■ Square Shank

Fig 1



For E3 and CDX, refer to the insert section

Holder

Dimensions (mm)

ISO Cat. No.	Stock	Height H	Width B	Overall Length L1	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp Plate	Double Screw	Wrench
CKB R1010 16	★	10	10	100	10	10	1	CKBW16	WB4-8	LH020
CKB R1212 16	★	12	12	125	12	12	1			
CKB R1616 16	★	16	16	125	16	16	1			
CKB R2020 16	★	20	20	125	20	20	1			
CKB R2525 16		25	25	150	25	25	1			

Parts

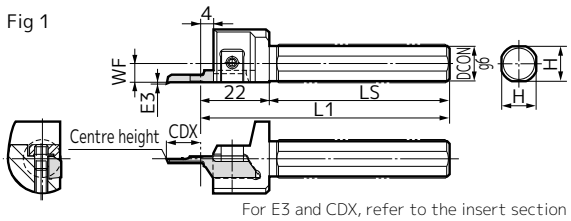



(For Hexagonal hole)

*Inserts are not included in the tool holders.

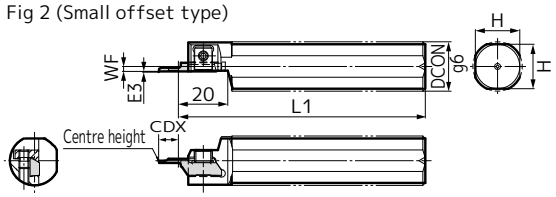
■ Round Shank

Fig 1



For E3 and CDX, refer to the insert section

Fig 2 (Small offset type)



Parts




(For Hexagonal hole)

Holder

Dimensions (mm)

ISO Cat. No.	Stock	Diameter DCON	Height H	Overall Length L1	Length LS	Cutting Edge Distance WF	Fig	Clamp Plate	Double Screw	Wrench
S10F CKB R 16	★	10	9	80	58	5	1	CKBW16	WB4-8	LH020
S12F CKB R 16	★	12	11	80	58	6	1			
S16H CKB R 16	★	16	15	100	78	8	1			
S19K CKB R 16	★	19.05	17	125	103	8	1			
S20K CKB R 16	★	20	18	125	103	10	1			
S1905H CKB RS 16	★	19.05	17	100	—	2	2			
S20H CKB RS 16	★	20	18	100	—	2	2			
S22K CKB RS 16	★	22	19	125	—	2	2			
S25K CKB RS 16	★	25	23	125	—	2	2			
S254K CKB RS 16	★	25.4	23	125	—	2	2			

*Inserts are not included in the tool holders.

■ Recommended Cutting Conditions

Work Material	Spindle Speed	Depth of Cut ap	Feed Rate f	Coolant
N Aluminum Alloy	Above 2,000 min^{-1}	0.1mm or below	0.1mm/rev or below	Wet

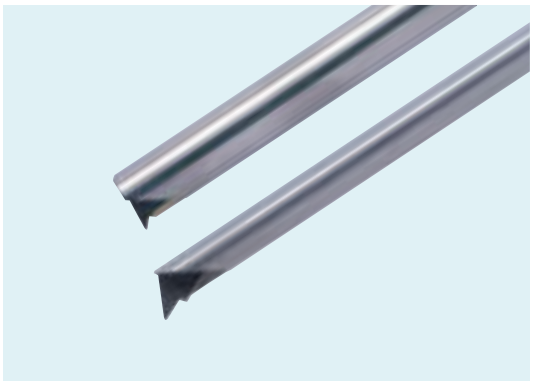
★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

DABB series



■ Features

SumiSmall

- **Small Diameter Boring Bars for Aluminum Alloy**
  Supports general boring and necking operations with a minimum machining diameter of ø3.0mm.
- **Utilises High Strength PCD Grade DA2200 for Cutting Edge**

For general boring with minimum bore diameter ø10 to ø22mm range, use the BNB series small diameter Boring Bar + SUMIDIA Insert (See page L138 for details)

PCD

DABB-C

Stop-Boring, Through-Boring and Back Chamfering

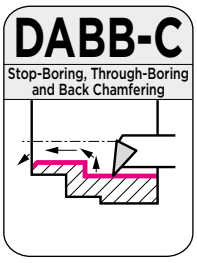
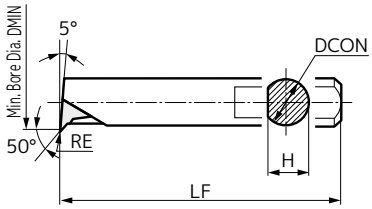


Fig 1



SumiSmall

Holder (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
DABB 025 CR	★	**3.0**	2.5	2.2	60	0.1	HBB 2516	1
DABB 035 CR	★	**4.0**	3.5	3.2	60	0.1	HBB 3516	1
DABB 045 CR	★	**5.0**	4.5	4.1	80	0.1	HBB 4516	1
DABB 060 CR	★	**7.0**	6.0	5.2	80	0.1	HBB 616	1

PCD

DABB-N

Stop-Boring, Through-Boring and Necking

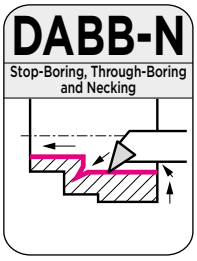
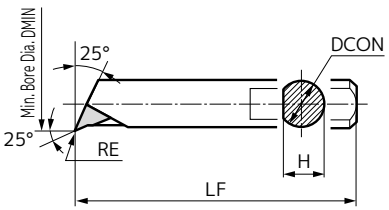


Fig 1



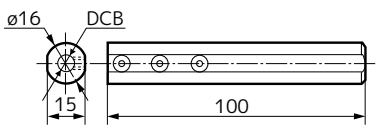
SumiSmall

Holder (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
DABB 025 NR	★	**3.0**	2.5	2.2	60	0.1	HBB 2516	1
DABB 035 NR	★	**4.0**	3.5	3.2	60	0.1	HBB 3516	1
DABB 045 NR	★	**5.0**	4.5	4.1	80	0.1	HBB 4516	1
DABB 060 NR	★	**7.0**	6.0	5.2	80	0.1	HBB 616	1

Fig 1



Adapter Sleeve

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Fig	Set Screw	Wrench
					 (For Hexagonal hole)
HBB 2516	★	2.5	1	BT0404	LH020
HBB 3516	★	3.5	1		
HBB 4516	★	4.5	1		
HBB 616	★	6.0	1		

HBX type adapter sleeve can also be used.

■ Recommended Cutting Conditions

Work Material	Spindle Speed	Depth of Cut ap	Feed Rate f	Coolant
N Aluminum Alloy	Above 2,000min^{-1}	0.1mm or below	0.1mm/rev or below	Wet

DABX series



■ Features

- **Utilising a high-rigidity shank design and nano-polycrystalline diamond for high-precision small diameter boring of cemented carbides**

SUMIDIA BINDERLESS
Brazed

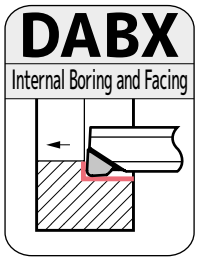
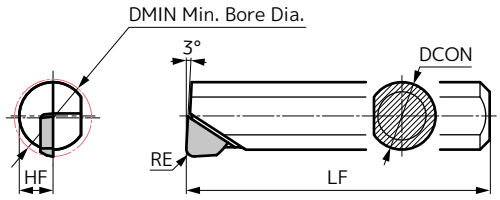


Fig 1



Holder (SUMIDIA)

Dimensions (mm)

ISO Cat. No.	NPD10	Min. Bore Dia. DMIN	Diameter DCON	Cutting Edge Height HF	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
DABX 025R-01	★	**3**	2.5	1.25	40	0.1	HBX2516	1
DABX 025R-02	★	**3**	2.5	1.25	40	0.2	HBX2516	1
DABX 025R-04	★	**3**	2.5	1.25	40	0.4	HBX2516	1
DABX 035R-01	★	**4**	3.5	1.75	40	0.1	HBX3516	1
DABX 035R-02	★	**4**	3.5	1.75	40	0.2	HBX3516	1
DABX 035R-04	★	**4**	3.5	1.75	40	0.4	HBX3516	1

DABX bars can be used with HBB type adapter sleeves, but HBX type adapter sleeves are recommended for machining when rigidity is required.

Fig 1

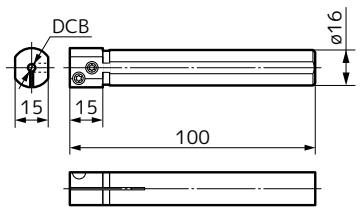
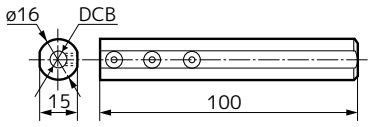


Fig 2



Adapter Sleeve (HBX type)

Dimensions (mm)

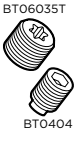
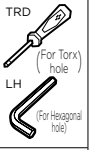
ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2516	★	2.5	DABX 025R	1
HBX 3516	★	3.5	DABX 035R	1

Adapter Sleeve (HBB type)

Dimensions (mm)

ISO Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBB 2516	★	2.5	DABX 025R	2
HBB 3516	★	3.5	DABX 035R	2

Parts (for Adapter Sleeve)

Applicable Adapter Sleeve	Flat Insert Screw		Set Screw	Wrench
		N·m		
HBX 2516	BFTX0409N	**1.5**	BT06035T	TRD15
HBX 3516	BFTX0409N	**3.0**	BT06035T	TRD15
HBB ○○○○	—	—	BT0404	LH020

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Expansion



■ Features

- **Drastically Reduced Runout Adjustment Time**
  Simple screw-fastening structure enables fine adjustments to be made easily
- **Through-Blade Coolant**
  Ensures coolant supply to the cutting edge and breaks chips
- **Lightweight Aluminum Alloy Body (ANXA type)**
  Utilises aluminum alloy to achieve a total weight of less than 1.3kg for a ø125mm cutter with 22 teeth
- **High-strength CVD Single Crystal Diamond SCV10**
  Wiper Blade WS type lineup

■ Product Range

Type	Cat. No.	Body Material	Max. Diameter (mm) ø25	ø30	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	ANXA 16000R (Inch)	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
Shell	ANXA 16000RS	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
Shell	ANXS 16000R (Inch)	Steel						6 8 12	6 10 14	8 12 18	10 14 22	
Shell	ANXS 16000RS	Steel				4 6	4 6 9	6 8 12	6 10 14	8 12 18	10 14 22	
Shank	ANXS 16000E	Steel	2	3 4	3 4	4 6	4 6 9					
Modular	ANXS 16000M	Steel	2	3 4	3 4	4 6						

Number in ●●● shows the number of teeth (Inch) Inch Bore

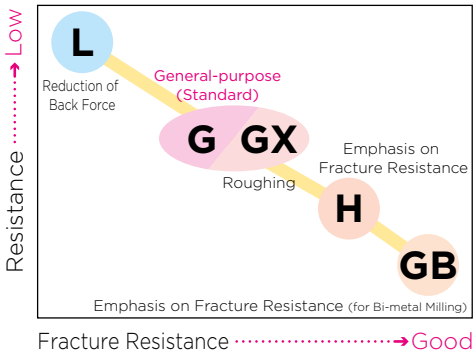
Modular type ☞M46

■ Blade Selection Guide

Work Material	N								
Applications	Finishing/ Light Cutting	General-purpose	Roughing		Composite Milling *1	Corner Radius Milling	Corner Radius Milling	Finishing	Burr-free Mirror Finish
Features	Low Cutting Force	Standard	Long Edge	High Strength	High Strength	Corner Radius 0.4	Corner Radius 0.8	Wiper	Wiper
Cutting Edge Shape	L	G	GX	H	GB	—	—	W	WS
Edge Length (*2)	6.0mm	6.0mm	9.0mm	6.0mm	6.0mm	6.0mm	6.0mm	2.0mm	1.0mm

*1 Machining of components combining aluminum alloy and cast iron. W type and WS type cannot be used together.

■ Blade Selection Reference

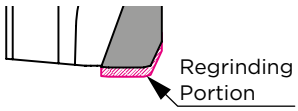


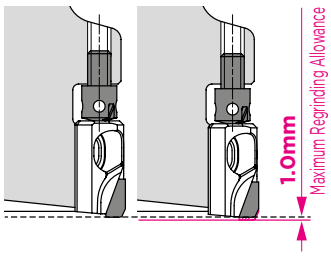


*2 Edge length

● Regrinding possible up to 1.0mm. Reduced running costs

Assuming 0.2mm of regrinding each time, an edge can be used up to 6 times.
(Peripheral cutting edge and WS type cannot be reground.)





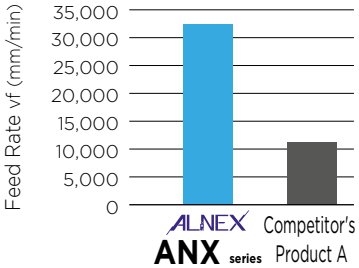
■ High-speed, High-efficiency Cutting

Realises ultra-high-efficiency machining with vf = 30,000mm/min



Cutter diameter ø100mm comparison

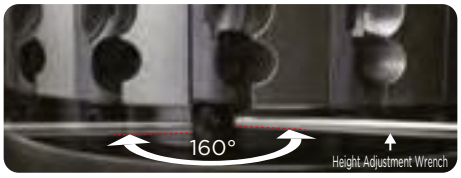
	Spindle Speed min⁻¹	Number of Teeth	Feed Rate vf(mm/min)
ALNEX ANX series	18,000	18	32,400
Competitor's Product A	9,500	12	11,400



■ Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body (reduces deformation due to tightening)

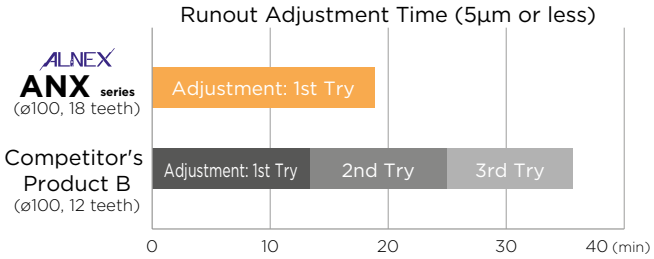




Adjustment is easy thanks to the large movable range of the height adjustment wrench.



We recommend keeping cutting edge height variation during runout adjustment to within 5µm.

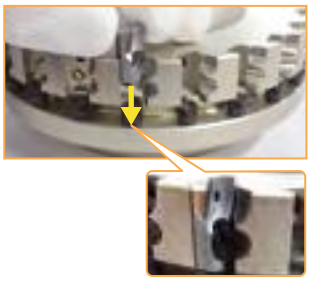


Completed on 1st Try, Adjustment Time Reduced

* Because the cutting edge chips off easily, care is required when mounting on the cutter body. Use a non-contact tool presetter.

■ Blade Mounting/Runout Adjustment

(1)



(1) Slide the blade into the cutter teeth groove.

(2)



(2) Lightly tighten the cap screw while pressing the blade against the restraining face. (1N·m)

(3)



(3) Adjust the blade to the required height by using the dedicated wrench to turn the height adjustment screw.

(4)

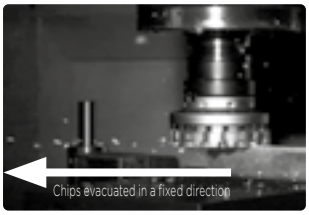


(4) Perform final tightening of the cap screw. (2N·m)

■ Chip Control

Through-Blade Coolant chip breaking





Controls the chips' scatter direction.



The chip pocket catches the chips and suppresses damage to the body.



ALNEX ANX series



Competitor's Product C

Work Material: G-AlSi12(Cu) Cutting Conditions: vc = 2,500m/min, fz = 0.05mm/t, ap = 0.5mm, Wet

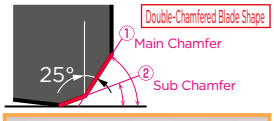
■ Burr Control

Reduces burrs by using a double-chamfered cutting edge (L/G/GX/H/GB type)

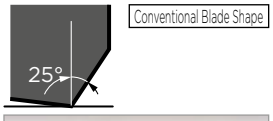


Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material: AlMg1SiCu Rolled Steel
Cutting Conditions: vc = 3,142m/min,
fz = 0.10mm/t ap = 0.5mm, Dry



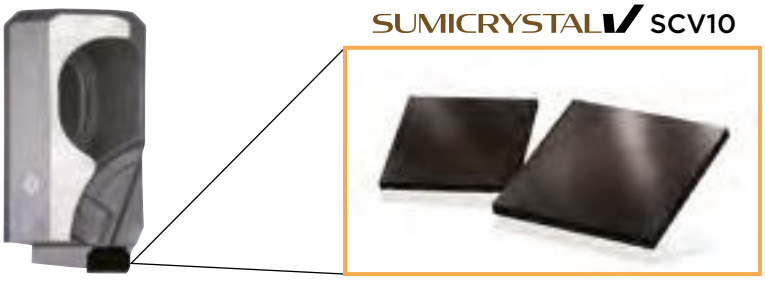
ALNEX ANX series



Conventional Tool

CVD Single Crystal Diamond SCV10 Wiper Blade WS type

- Wiper blade adopts high-strength single-crystal diamond using Sumitomo Electric Hardmetal's vapour phase synthesis technology
- Sharp cutting edge achieves burr-free mirror finish in aluminum alloy machining
- Superior wear resistance maintains cutting edge sharpness for a long time, reducing total tool costs



Conventional single-crystal diamond

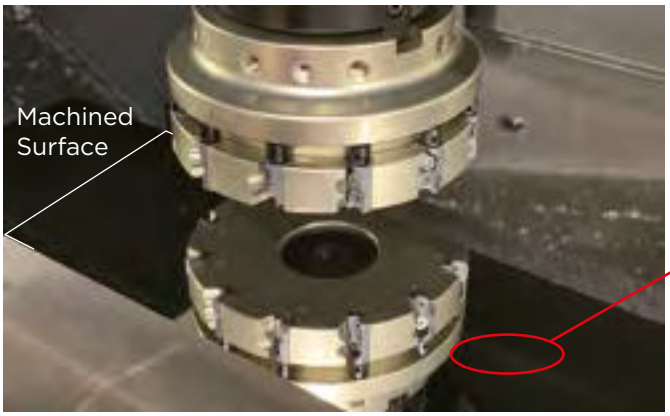


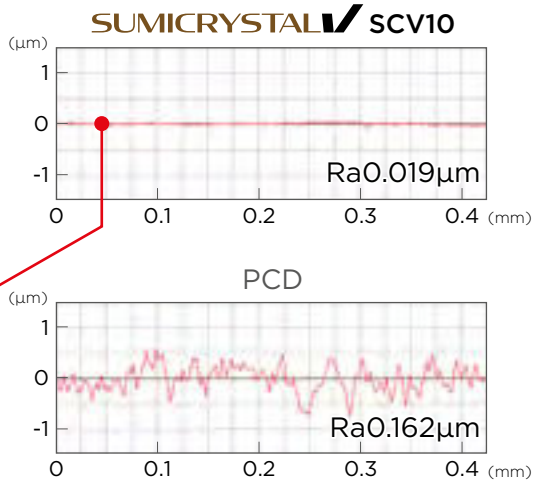
◆ Superb mirror surface and burr control through sharp cutting edge

Realizes a mirror finish in milling of aluminum alloys, copper alloys, and other non-ferrous metals, with long-term burr control

■ Mirror Finish (Wiper Blade WS type)

Sharp cutting edge achieves mirror finish with cutting alone

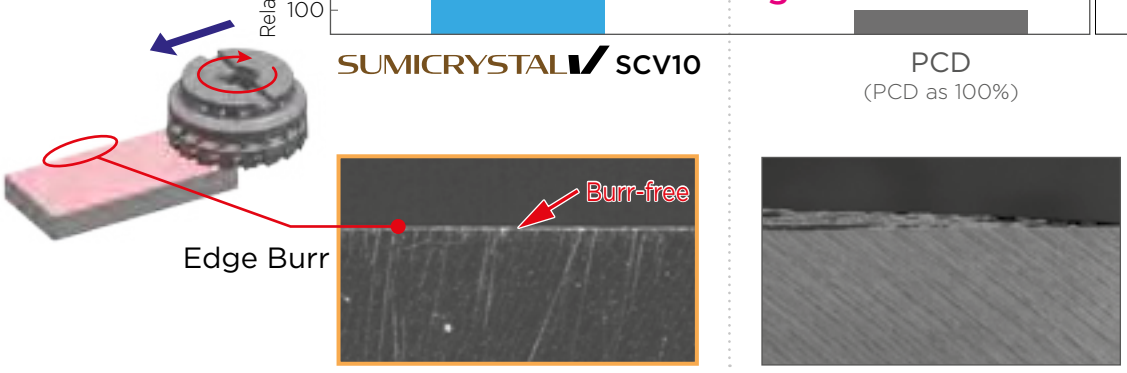




■ Burr-Free (Wiper Blade WS type)

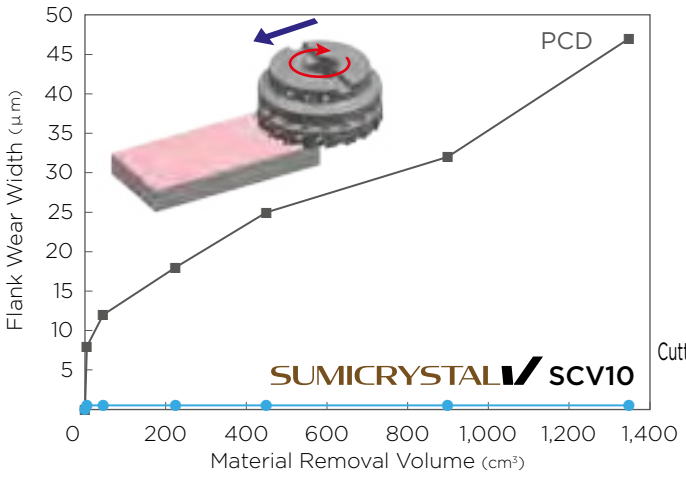
Sharp cutting edge and excellent wear resistance suppress burrs over a long period





◆ Superior wear resistance maintains cutting edge sharpness for a long time

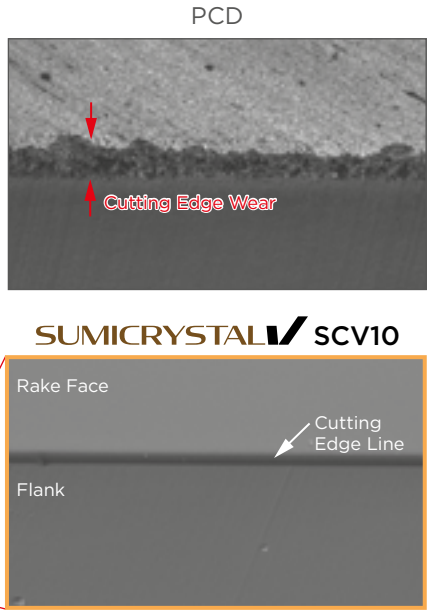
Wear resistance evaluation in high-silicon aluminum alloy machining



Work Material: Al-17wt.% Si alloy
Cutting Conditions: vc = 800m/min, fz = 1.0mm/t, ap = 0.03mm
Wet (water soluble)
*Evaluated with 1 wiper blade (dummy blade used in opposite position)

Cutting Edge Photo (After use)





No progression of flank wear, consistent mirror finish with burr suppression

◆ Jet-black high-strength single-crystal diamond grade

Fracture resistance evaluation in machining aluminum alloy-ceramic composite



Cutting Edge Photo (after evaluation)

Work Material: Aluminum Alloy + Ceramic Composite
Cutting Conditions: vc = 2,500m/min, fz = 1.0mm/t, ap = 0.03mm
Wet (water soluble)
*Evaluated with 1 wiper blade (dummy blade used in opposite position)

10x or more fracture resistance compared to PCD in finishing at low depths of cut (0.05 mm or less)

ANXA 16000 R(S) type

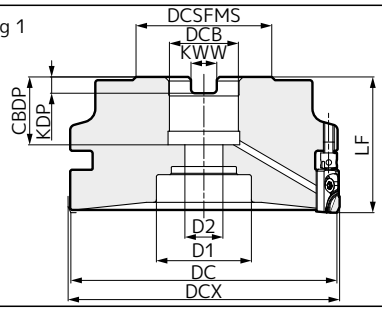
Rake Angle		
Radial	+5°	
Axial	+5°	

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1



Body (Aluminum Alloy)

Dimensions (mm)

	ISO Cat. No..	Stock	Max. Dia. DCX	Dia. DC	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXA 16080 RS06**	★	**80**	78	50	50	**27**	12.4	7	22	35	14	6	0.5	1
	ANXA 16080 RS10	★	**80**	78	50	50	**27**	12.4	7	22	35	14	10	0.5	1
	ANXA 16080 RS14	★	**80**	78	50	50	**27**	12.4	7	22	35	14	14	0.5	1
	ANXA 16100 RS08	★	**100**	98	50	50	**27**	12.4	7	22	35	14	8	0.8	1
	ANXA 16100 RS12	★	**100**	98	50	50	**27**	12.4	7	22	35	14	12	0.8	1
	ANXA 16100 RS18	★	**100**	98	50	50	**27**	12.4	7	22	35	14	18	0.8	1
	ANXA 16125 RS10	★	**125**	123	50	50	**27**	12.4	7	22	35	14	10	1.2	1
	ANXA 16125 RS14	★	**125**	123	50	50	**27**	12.4	7	22	35	14	14	1.2	1
	ANXA 16125 RS22	★	**125**	123	50	50	**27**	12.4	7	22	35	14	22	1.3	1
	ANXA 16160 RS12	★	**160**	158	80	63	**40**	16.4	9	29	52	29	12	2.6	1
	ANXA 16160 RS20	★	**160**	158	80	63	**40**	16.4	9	29	52	29	20	2.6	1
	ANXA 16160 RS28	★	**160**	158	80	63	**40**	16.4	9	29	52	29	28	2.6	1
Inch	**ANXA 16080 R06**	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	6	0.5	1
	ANXA 16080 R10	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	10	0.5	1
	ANXA 16080 R14	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	14	0.5	1
	ANXA 16100 R08	★	**100**	98	50	50	**25.4**	9.5	6	25	35	14	8	0.8	1
	ANXA 16100 R12	★	**100**	98	50	50	**25.4**	9.5	6	25	35	14	12	0.9	1
	ANXA 16100 R18	★	**100**	98	50	50	**25.4**	9.5	6	25	35	14	18	0.9	1
	ANXA 16125 R10	★	**125**	123	50	50	**25.4**	9.5	6	25	35	14	10	1.2	1
	ANXA 16125 R14	★	**125**	123	50	50	**25.4**	9.5	6	25	35	14	14	1.2	1
	ANXA 16125 R22	★	**125**	123	50	50	**25.4**	9.5	6	25	35	14	22	1.3	1
	ANXA 16160 R12	★	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	12	2.3	1
	ANXA 16160 R20	★	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	20	2.4	1
	ANXA 16160 R28	★	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	28	2.6	1

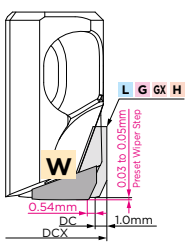
Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).
All aluminum alloy cutter bodies from (DCX) ø80 to ø125 have similar bore diameter (DCB) (metric ø27/inch ø25.4).

Identification Code

ANX Series Code | **A** Aluminum Alloy Body | **16** Blade Size | **100** Max. Dia. | **R** Feed Direction | **S** Metric Bore | **18** Number of Teeth

■ Precautions When Using Wiper Blades

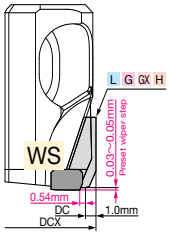
· W type Setting



⚠ Precautions

In order to maintain cutter balance when using the W type wiper blade, use a cutter with an even-number of cutting teeth and place another W type wiper blade at the opposite teeth position.

· WS type Setting



⚠ Precautions

(For more details, refer to the instruction manual included with the product)

In order to maintain cutter balance when using the WS type (SCV10 wiper blade), use a cutter with an even-number of cutting teeth and place another WS type wiper blade (or dummy blade ANBD) at opposite teeth positions.

*The dummy blade is dedicated for use with WS type.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

ANXA 16000 R(S) type

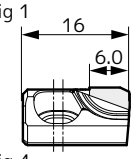
Expansion

Blade

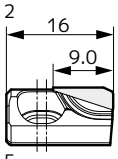
Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

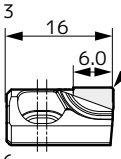
ISO Cat. No..	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600 R-L	★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600 R-G	★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600 R-GB		★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600 R-H	★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600 R-GX	★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604 R	★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608 R	★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600 R-W	★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600 R-WS	—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1 

Wiper Blade

Fig 2 

Wiper Blade

Fig 3 

Dummy Blade

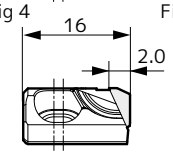
Fig 4 

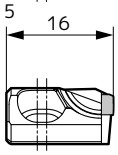
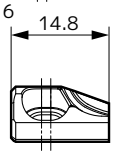
Fig 5 

Fig 6 

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page M40 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, see the table below for the feed rate.

Maximum Allowable Spindle Speed

ISO Cat. No..	n max(min^{-1})
ANXA 16080 RS06	20,000
ANXA 16080 RS10	20,000
ANXA 16080 RS14	20,000
ANXA 16100 RS08	18,000
ANXA 16100 RS12	18,000
ANXA 16100 RS18	18,000
ANXA 16125 RS10	16,000
ANXA 16125 RS14	16,000
ANXA 16125 RS22	16,000
ANXA 16160 RS12	14,000
ANXA 16160 RS20	14,000
ANXA 16160 RS28	14,000
ANXA 16080 R06	20,000
ANXA 16080 R10	20,000
ANXA 16080 R14	20,000
ANXA 16100 R08	18,000
ANXA 16100 R12	18,000
ANXA 16100 R18	18,000
ANXA 16125 R10	16,000
ANXA 16125 R14	16,000
ANXA 16125 R22	16,000
ANXA 16160 R12	14,000
ANXA 16160 R20	14,000
ANXA 16160 R28	14,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

Parts

Applicable Cutter	Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	
		N·m					N·m
ANXA 16080 R(S)○○ ANXA 16100 R(S)○○ ANXA 16125 R(S)○○	BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT	BXH1235-D33	**50**
ANXA 16160 R(S)○○						BXH2036-D50	**200**

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

■ Wiper Blade WS type Recommended Feed Rate

WS Cutting Edge Feed Rate per Tooth*1 fzws (mm/tws)	D ≤ 0.5	0.5 < D ≤ 1.7	1.7 < D
Burr-free Finish	◎ Excellent		Impossible
Mirror Finishing	◎ Excellent	○ Good	
Target Surface Roughness Ra (μm)	0.015 to 0.05	up to 0.6	

*1 Feed Rate per WS Cutting Edge Tooth f_{zws}

$$f_{zws}\ (mm/t_{ws}) = \frac{f_z \times (\text{Total No. of Teeth})^{*2}}{(\text{WS type No. of Teeth})^{*3}}$$

Feed Rate per Tooth fz

$$f_z\ (mm/t) = \frac{\text{Feed Rate (vf) (mm/min)}}{\text{Spindle Speed n (min}^{-1}\text{)} \times (\text{Total No. of Teeth})}$$

*2 Total number of teeth includes dummy blade and wiper blade (WS type).

*3 WS type number of teeth does not include dummy blade.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ANXS 16000 R(S) type

Rake Angle	Radial	+5°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1

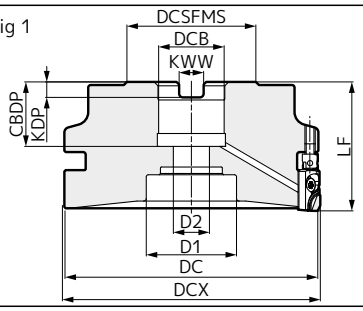
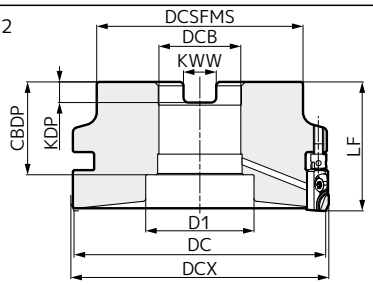


Fig 2



Body (Steel)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16040 RS04**	★	**40**	38	38.5	40	**16**	8.4	5.6	18	14	9	4	0.3	1
	ANXS 16040 RS06	★	**40**	38	38.5	40	**16**	8.4	5.6	18	14	9	6	0.3	1
	ANXS 16050 RS04	★	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	ANXS 16050 RS06	★	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	ANXS 16050 RS09	★	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	9	0.4	1
	ANXS 16063 RS06	★	**63**	61	50	40	**22**	10.4	6.3	20	18	11	6	0.7	1
	ANXS 16063 RS08	★	**63**	61	50	40	**22**	10.4	6.3	20	18	11	8	0.7	1
	ANXS 16063 RS12	★	**63**	61	50	40	**22**	10.4	6.3	20	18	11	12	0.7	1
	ANXS 16080 RS06	★	**80**	78	50	50	**27**	12.4	7	22	35	14	6	1.2	1
	ANXS 16080 RS10	★	**80**	78	50	50	**27**	12.4	7	22	35	14	10	1.2	1
	ANXS 16080 RS14	★	**80**	78	50	50	**27**	12.4	7	22	35	14	14	1.2	1
	ANXS 16100 RS08	★	**100**	98	80	50	**32**	14.4	8	32	46	—	8	1.9	2
	ANXS 16100 RS12	★	**100**	98	80	50	**32**	14.4	8	32	46	—	12	2.0	2
	ANXS 16100 RS18	★	**100**	98	80	50	**32**	14.4	8	32	46	—	18	2.0	2
	ANXS 16125 RS10	★	**125**	123	80	63	**40**	16.4	9	29	52	29	10	3.8	1
	ANXS 16125 RS14	★	**125**	123	80	63	**40**	16.4	9	29	52	29	14	3.9	1
	ANXS 16125 RS22	★	**125**	123	80	63	**40**	16.4	9	29	52	29	22	3.9	1
Inch	**ANXS 16063 R06**	★	**63**	61	50	50	**25.4**	9.5	6	25	20	14	6	0.9	1
	ANXS 16063 R08	★	**63**	61	50	50	**25.4**	9.5	6	25	20	14	8	0.9	1
	ANXS 16063 R12	★	**63**	61	50	50	**25.4**	9.5	6	25	20	14	12	0.9	1
	ANXS 16080 R06	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	6	1.2	1
	ANXS 16080 R10	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	10	1.2	1
	ANXS 16080 R14	★	**80**	78	50	50	**25.4**	9.5	6	25	35	14	14	1.2	1
	ANXS 16100 R08	★	**100**	98	80	50	**31.75**	12.7	8	36	42	—	8	1.9	2
	ANXS 16100 R12	★	**100**	98	80	50	**31.75**	12.7	8	36	42	—	12	2.0	2
	ANXS 16100 R18	★	**100**	98	80	50	**31.75**	12.7	8	36	42	—	18	2.0	2
	ANXS 16125 R10	★	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	10	3.9	1
	ANXS 16125 R14	★	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	14	3.9	1
	ANXS 16125 R22	★	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	22	3.9	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).

Identification Code

ANX	S	16	100	R	S	18
Series Code	Steel Body	Blade Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

ANXS 16000 R(S) type

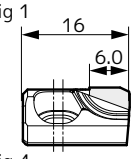
Expansion

Blade

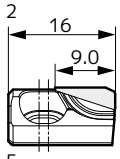
Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

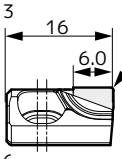
ISO Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600 R L	★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600 R G	★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600 R GB		★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600 R H	★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600 R GX	★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604 R	★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608 R	★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600 R W	★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600 R WS	—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANB D	—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1 

Wiper Blade

Fig 2 

Wiper Blade

Fig 3 

Dummy Blade

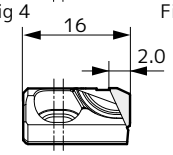
Fig 4 

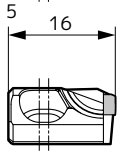
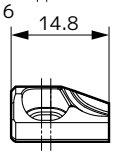
Fig 5 

Fig 6 

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page M40 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
KN	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, refer to page M41.

Maximum Allowable Spindle Speed

ISO Cat. No.	n max(min^{-1})
ANXS 16040 RS04	25,000
ANXS 16040 RS06	25,000
ANXS 16050 RS04	25,000
ANXS 16050 RS06	25,000
ANXS 16050 RS09	25,000
ANXS 16063 RS06	22,000
ANXS 16063 RS08	22,000
ANXS 16063 RS12	22,000
ANXS 16080 RS06	20,000
ANXS 16080 RS10	20,000
ANXS 16080 RS14	20,000
ANXS 16100 RS08	18,000
ANXS 16100 RS12	18,000
ANXS 16100 RS18	18,000
ANXS 16125 RS10	16,000
ANXS 16125 RS14	16,000
ANXS 16125 RS22	16,000
ANXS 16063 R06	22,000
ANXS 16063 R08	22,000
ANXS 16063 R12	22,000
ANXS 16080 R06	20,000
ANXS 16080 R10	20,000
ANXS 16080 R14	20,000
ANXS 16100 R08	18,000
ANXS 16100 R12	18,000
ANXS 16100 R18	18,000
ANXS 16125 R10	16,000
ANXS 16125 R14	16,000
ANXS 16125 R22	16,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

Parts

Applicable Cutter	Cap Screw	N·m	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	N·m
ANXS 16040 RSOO	BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT	BXH0825-D13	**15**
ANXS 16050 RSOO						BXH1030-D16	**25**
ANXS 16063 RSOO							
ANXS 16080 RSOO						BXH1235-D33	**50**
ANXS 16100 RSOO						BXH1635-D40	**100**
ANXS 16125 RSOO						BXH2036-D50	**200**
ANXS 16063 ROO	BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT	BXH1235-D18	**40**
ANXS 16080 ROO						BXH1235-D33	**50**
ANXS 16100 ROO						BXH1635-D40	**100**
ANXS 16125 ROO						BXH2036-D50	**200**

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ANXS 16000 E type

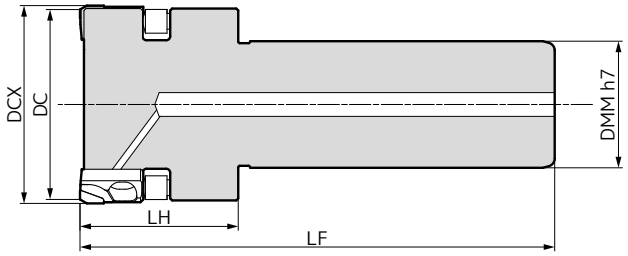
Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1



Body (Steel)

Dimensions (mm)

ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
ANXS 16025 E02	★	**25**	23	20	35	95	2	0.2	1
ANXS 16030 E03	★	**30**	28	20	35	95	3	0.3	1
ANXS 16030 E04	★	**30**	28	20	35	95	4	0.3	1
ANXS 16032 E03	★	**32**	30	20	35	95	3	0.3	1
ANXS 16032 E04	★	**32**	30	20	35	95	4	0.3	1
ANXS 16040 E04	★	**40**	38	20	40	100	4	0.4	1
ANXS 16040 E06	★	**40**	38	20	40	100	6	0.5	1
ANXS 16050 E04	★	**50**	48	32	40	120	4	1.0	1
ANXS 16050 E06	★	**50**	48	32	40	120	6	1.0	1
ANXS 16050 E09	★	**50**	48	32	40	120	9	1.0	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Identification Code

ANX	S	16	032	E	04
Series Code	Steel Body	Blade Size	Max. Dia.	Shank type	Number of Teeth

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

ANXS 16000 E type

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V					
Process	High-speed/Light Cutting	N	KN	KN	N					
	Medium Cutting	N	KN	KN						
	Roughing	N	KN	KN						
ISO Cat. No.		DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600 R L		★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600 R G		★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600 R GB			★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600 R H		★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600 R GX		★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604 R		★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608 R		★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600 R W		★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600 R WS		—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANB D		—	—	—	★*2	—	—	—	Dummy Blade	6

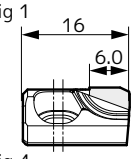
Fig 1 

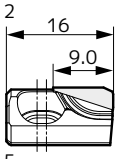
Fig 2 

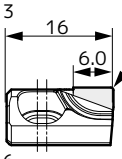
Fig 3 

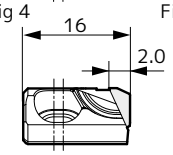
Fig 4 

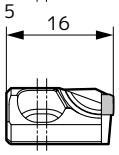
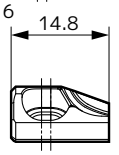
Fig 5 

Fig 6 

Wiper Blade | Wiper Blade | Dummy Blade

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page M40 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The above are the recommended conditions for ANX series overall. Use within the maximum allowable spindle speed.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, refer to page M41.

Maximum Allowable Spindle Speed

ISO Cat. No.	n max(min^{-1})
ANXS 16025 E02	10,000
ANXS 16030 E03	10,000
ANXS 16030 E04	10,000
ANXS 16032 E03	10,000
ANXS 16032 E04	10,000
ANXS 16040 E04	10,000
ANXS 16040 E06	10,000
ANXS 16050 E04	10,000
ANXS 16050 E06	10,000
ANXS 16050 E09	10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

Parts

Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench
	N·m			
BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

ANXS 16000 M type

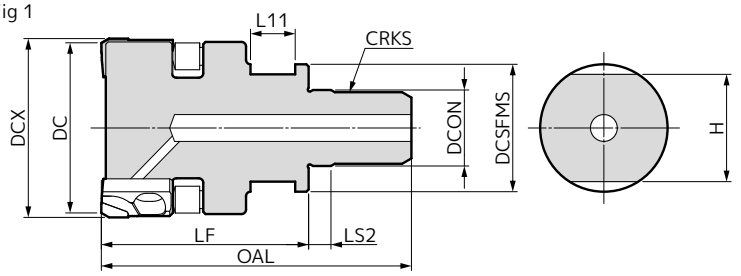
Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1



Body (Steel)

Dimensions (mm)

	ISO Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16025 M12Z02**	★	**25**	23	23.0	12.5	**M12**	61	40	5	10	19	2	0.1	1
	ANXS 16030 M16Z03	★	**30**	28	28.5	17.0	**M16**	70	47	5	10	24	3	0.2	1
	ANXS 16030 M16Z04	★	**30**	28	28.5	17.0	**M16**	70	47	5	10	24	4	0.2	1
	ANXS 16032 M16Z03	★	**32**	30	28.5	17.0	**M16**	70	47	5	10	24	3	0.3	1
	ANXS 16032 M16Z04	★	**32**	30	28.5	17.0	**M16**	70	47	5	10	24	4	0.3	1
	ANXS 16040 M16Z04	★	**40**	38	28.5	17.0	**M16**	70	47	5	10	24	4	0.4	1
	ANXS 16040 M16Z06	★	**40**	38	28.5	17.0	**M16**	70	47	5	10	24	6	0.4	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Arbors H253

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

ISO Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600 R L	★			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600 R G	★			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600 R GB		★	★	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600 R H	★	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600 R GX	★			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604 R	★			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608 R	★			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600 R W	★			—	—	—	Arc-Shaped	Wiper	4
ANB 1600 R WS	—	—	—	★	—	—	Arc-Shaped	Wiper	5
ANB D	—	—	—	★*2	—	—	—	Dummy Blade	6

Fig 1 / Fig 2 / Fig 3

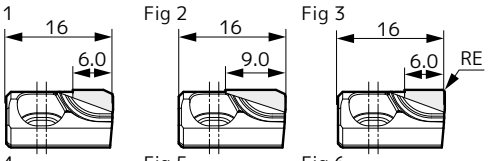
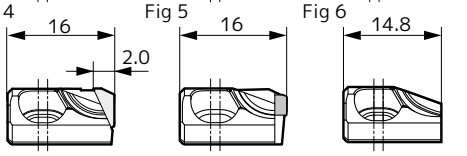


Fig 4 / Fig 5 / Fig 6



Wiper Blade | Wiper Blade | Dummy Blade

*1 Cast iron/aluminum alloy
*2 Dummy blade (cemented carbide) for use with WS type, refer to page M40 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions M45

Identification Code

ANX Series Code | **S** Steel Body | **16** Blade Size | **032** Max. Dia. | **M16** Screw Size | **Z03** Number of Teeth

Parts

Cap Screw		Adjustment Screw	Wrench	Adjustment Wrench
	N·m			
BXA0310IP	**2.0**	HFJ	TRXW10IP	ANT

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

Maximum Allowable Spindle Speed

ISO Cat. No.	n max(min^{-1})
ANXS 16025 M12Z02	10,000
ANXS 16030 M16Z03	10,000
ANXS 16030 M16Z04	10,000
ANXS 16032 M16Z03	10,000
ANXS 16032 M16Z04	10,000
ANXS 16040 M16Z04	10,000
ANXS 16040 M16Z06	10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

HF series

VIDEO OF CUTTING



■ Features

The HF series high-efficiency cutter for aluminum alloys employs a unique blade design to achieve machining without burrs.
HFFH type with coolant holes is now available as a BBT30 (BIG-PLUS™) arbor integrated version.

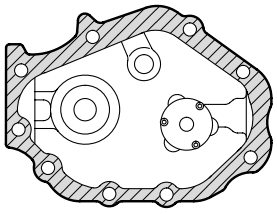
Work Material

· Aluminum and aluminum alloys
· Other non-ferrous metals
(Not suited for cast iron or steel.)

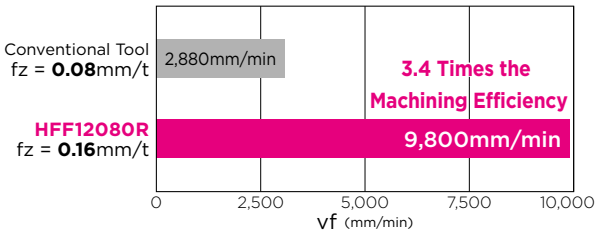


● Achieves high-efficiency milling with vf **of over 20,000 mm/min** thanks to its multi-blade design (3 teeth per inch)

High-feed, High-efficiency Milling with Multi-blade Design



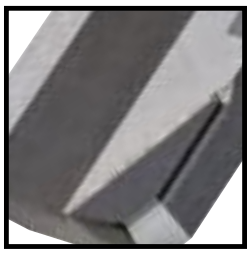
Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-tooth),
Conventional Tool (ø80 6-tooth)



● Maximum Allowable Spindle Speed and Feed Rate

Cutter Dia. (mm)	nmax (min⁻¹)	vc (m/min)	fz (mm/t)	Max. No. of Teeth (pcs.)	vf (mm/min)
ø80	11,000	2,763	up to 0.2	10	up to 22,000
ø100	9,500	2,983	up to 0.2	12	up to 22,800
ø125	7,500	2,944	up to 0.2	15	up to 22,500

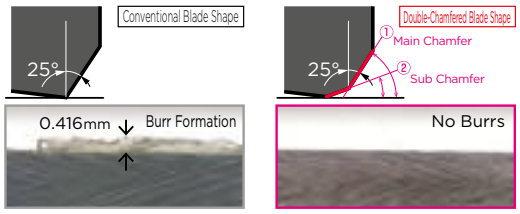
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.



● Reduces burrs by using a double-chamfered blade type

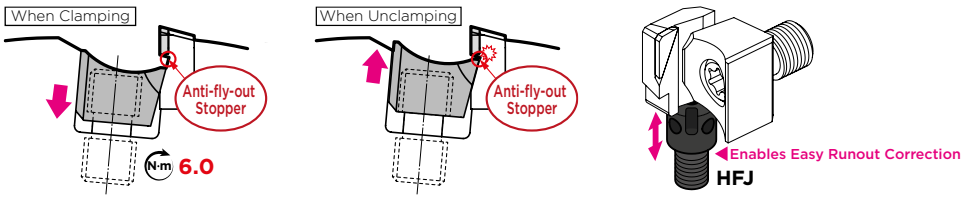
Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material: **A6061** Rolled Steel
Cutting Conditions: vc = **3,142**m/min,
fz = **0.10**mm/t,
ap = **0.5**mm, Dry





● Wedge clamp with anti-fly-out mechanism ensures safety and operability

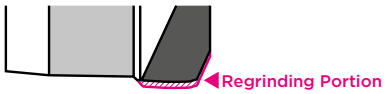


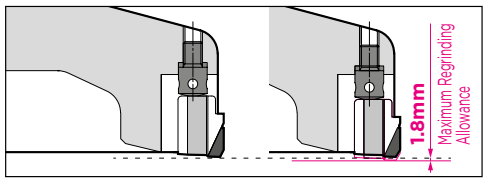
Ensure that the maximum allowable spindle speed (n max) specified for each cutter diameter is not exceeded. (See the table at upper right)



● Reduces running costs by drastically increasing blade regrinding allowance (to 1.8mm)

Assuming 0.2mm of regrinding each time, an edge can be used up to 10 times.
(Given conditions of normal wear with ap = **1.4**mm or less)





The regrinding allowance has been drastically increased compared to conventional screw-lock types.



● Internal coolant improves chip evacuation performance (HFFH type, HFFH-BBT30 type)

The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

*1: BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2: Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

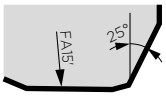
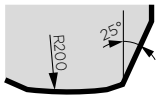
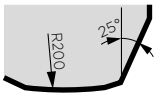
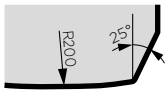
HF series

■ Product Range

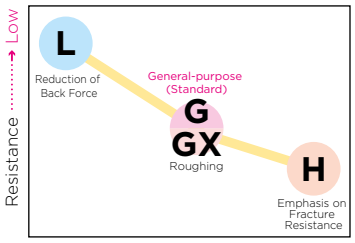
Type	ISO Cat. No.	Dia. (mm) ø80	ø100	ø125
Shell	HFM 12000 RS	6*	8	10*
	HFM 12000 R (inch)	6	8*	10*
	HFF 12000 RS	10*	12	15*
	HFF 12000 R (inch)	10	12*	15*
	HFFH 12000 RS	10*	12	15*
	HFFH 12000 R (inch)	10	12*	15*
	HFFH 12000 R BBT30	10	12	15

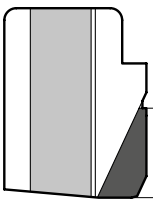
Number in ● shows the number of teeth (inch) Inch Bore *mark: Different diameter shanks available

■ Blade Selection Guide

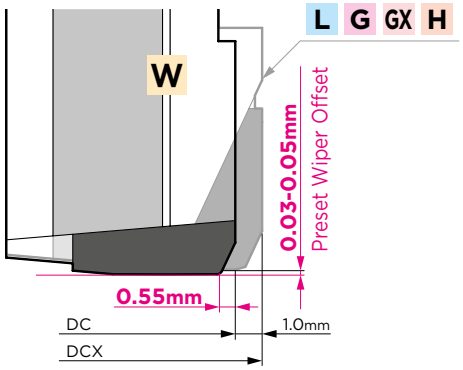
Work Material	N				
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	Finishing
Features	Low Cutting Force	Standard	Long Edge	High Strength	Wiper
Type	L type	G type	GX type	H type	W type
Cutting Edge Shape					
Edge Length (*)	6.0mm	6.0mm	9.0mm	6.0mm	2.0mm

■ Blade Selection Reference



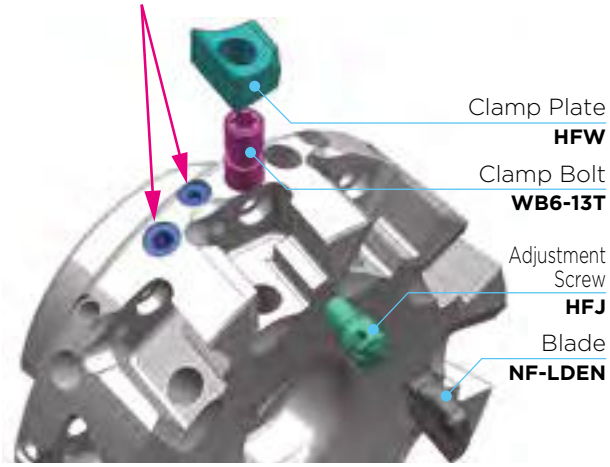


■ Wiper Blade Offset Position



■ Structure of HF series

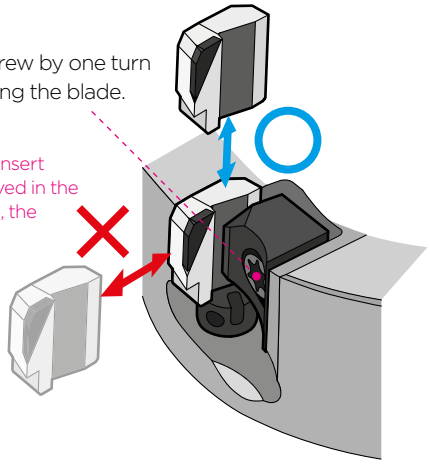
The axial set screw and balance adjustment screw hole have an embedded special material that prevents the insertion of screwdrivers or hex wrenches.



■ Blade Mounting Direction

Loosen the screw by one turn before removing the blade.

⚠ Note that if the insert is forcibly removed in the wrong direction, the part may break.



High-efficiency Cutter for Aluminum Alloys

HFM 12000 RS/R type

Rake Angle		
Radial	4°	
Axial	10°	

3mm 90°

Face Milling



Fig 1

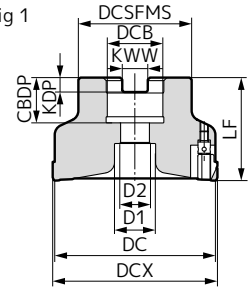


Fig 2

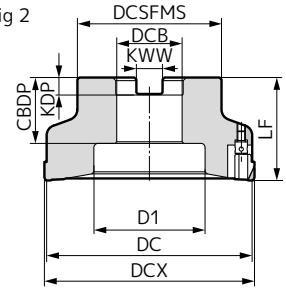
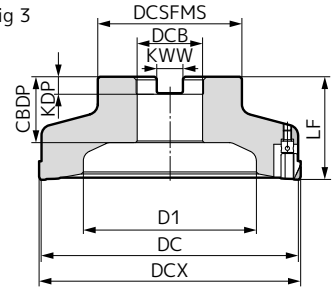


Fig 3



Body (Fine Pitch: 2-teeth/Inch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFM 12080 RS 22**	★	**80**	82	50	40	**22**	10.4	6.3	20	18	11	6	1.0	1
	HFM 12080 RS 27	★	**80**	82	55	50	**27**	12.4	7	22	20	14	6	1.2	1
	HFM 12100 RS 32	★	**100**	102	70	50	**32**	14.4	8	32	54	—	8	1.7	2
	HFM 12125 RS 32	★	**125**	127	70	50	**32**	14.4	8	32	84	—	10	2.2	3
	HFM 12125 RS 40	★	**125**	127	90	63	**40**	16.4	9	35	84	—	10	2.8	3
Inch	**HFM 12080 R 25.4**	★	**80**	82	50	50	**25.4**	9.5	6	30	35	—	6	1.0	2
	HFM 12100 R 25.4	★	**100**	102	50	50	**25.4**	9.5	6	30	54	—	8	1.5	2
	HFM 12100 R 31.75	★	**100**	102	70	50	**31.75**	12.7	8	32	54	—	8	1.7	2
	HFM 12125 R 25.4	★	**125**	127	50	50	**25.4**	9.5	6	30	84	—	10	2.0	3
	HFM 12125 R 31.75	★	**125**	127	70	50	**31.75**	12.7	8	32	84	—	10	2.2	3
	HFM 12125 R 38.1	★	**125**	127	80	63	**38.1**	15.9	10	36	84	—	10	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
LDEN 12T3 ZDFR L NF	★	6.0	Linear	Low Cutting Force	1
LDEN 12T3 ZDFR G NF	★	6.0	Arc-Shaped	General-purpose	1
LDEN 12T3 ZDTR H NF	★	6.0	Arc-Shaped	Strong Edge	1
LDEN 12T3 ZDFR GX NF	★	9.0	Arc-Shaped	Long Edge	2
LDEN 12T3 ZDFR W NF	★	2.0	Arc-Shaped	Wiper	3

Fig 1

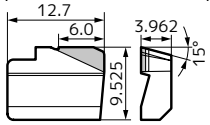


Fig 2

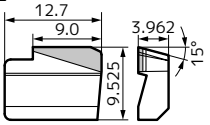
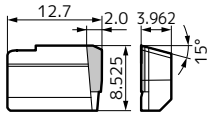


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
						
HFW	WB6-13T	**6.0**	HFJ	TTX20	RFT	HFVT

Identification Code

HF	M	12	080	R	S	22
Series Code	Fine Pitch	Blade Size	Dia.	Feed Direction	Metric Bore	Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05-**0.13**-0.20	DA1000

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400-**600**-800	0.05-**0.13**-0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFF 12000 RS/R type

Rake Angle	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1

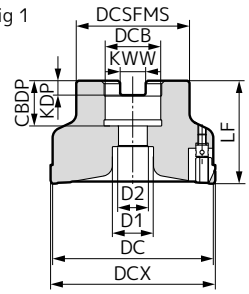


Fig 2

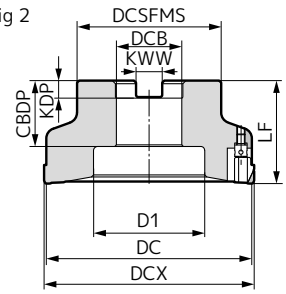
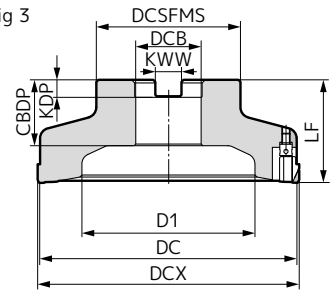


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch)

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFF 12080 RS 22**	★	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	HFF 12080 RS 27	★	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	HFF 12100 RS 32	★	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	HFF 12125 RS 32	★	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	HFF 12125 RS 40	★	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFF 12080 R 25.4**	★	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	HFF 12100 R 25.4	★	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	HFF 12100 R 31.75	★	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	HFF 12125 R 25.4	★	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	HFF 12125 R 31.75	★	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	HFF 12125 R 38.1	★	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
LDEN 12T3 ZDFR L NF	★	6.0	Linear	Low Cutting Force	1
LDEN 12T3 ZDFR G NF	★	6.0	Arc-Shaped	General-purpose	1
LDEN 12T3 ZDTR H NF	★	6.0	Arc-Shaped	Strong Edge	1
LDEN 12T3 ZDFR GX NF	★	9.0	Arc-Shaped	Long Edge	2
LDEN 12T3 ZDFR W NF	★	2.0	Arc-Shaped	Wiper	3

Fig 1

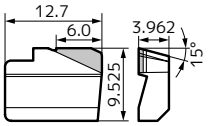


Fig 2

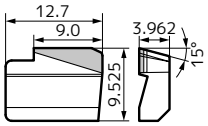
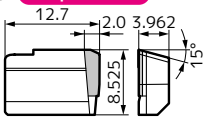


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.s0**	HFJ	TTX20	RFT	HFVT

Identification Code

HF **F** **12** **080** **R** **S** **22**

Series Code	Extra Fine Pitch	Blade Size	Dia.	Feed Direction	Metric Bore	Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05-**0.13**-0.20	DA1000

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- For groove milling, adjust the feed rate to around 70% of the above values.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400-**600**-800	0.05-**0.13**-0.20	DA1000

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- For groove milling, adjust the feed rate to around 70% of the above values.

★ mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFFH 12000 RS/R type

Rake Angle		
Rake Angle	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1

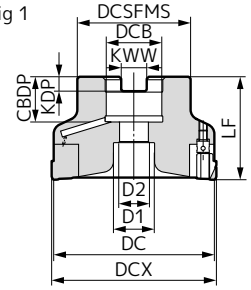


Fig 2

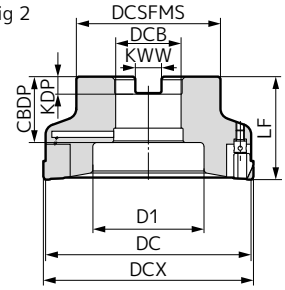
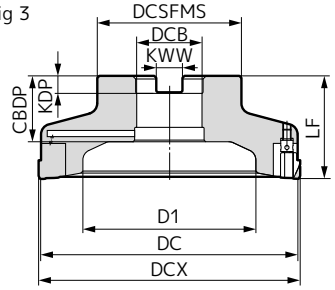


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFFH 12080 RS 22**	★	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	HFFH 12080 RS 27	★	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	HFFH 12100 RS 32	★	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	HFFH 12125 RS 32	★	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	HFFH 12125 RS 40	★	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFFH 12080 R 25.4**	★	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	HFFH 12100 R 25.4	★	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	HFFH 12100 R 31.75	★	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	HFFH 12125 R 25.4	★	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	HFFH 12125 R 31.75	★	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	HFFH 12125 R 38.1	★	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
LDEN 12T3 ZDFR L NF	★	6.0	Linear	Low Cutting Force	1
LDEN 12T3 ZDFR G NF	★	6.0	Arc-Shaped	General-purpose	1
LDEN 12T3 ZDTR H NF	★	6.0	Arc-Shaped	Strong Edge	1
LDEN 12T3 ZDFR GX NF	★	9.0	Arc-Shaped	Long Edge	2
LDEN 12T3 ZDFR W NF	★	2.0	Arc-Shaped	Wiper	3

Fig 1

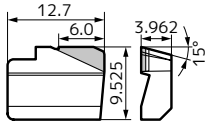


Fig 2

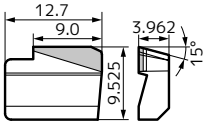
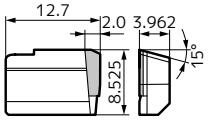


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	TTX20	HFJ	RFT	HFVT

Identification Code

HF	F	H	12	080	R	S	22
Series Code	Extra Fine Pitch	With Oil Hole	Blade Size	Dia.	Feed Direction	Metric Bore	Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05-**0.13**-0.20	DA1000

Note
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400-**600**-800	0.05-**0.13**-0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFFH 12000 R BBT30 type

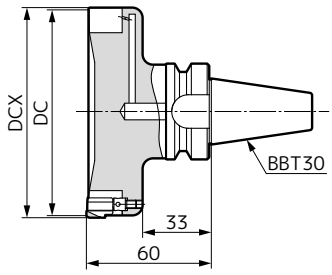
Rake Angle	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Number of Teeth	Weight (kg)	Fig
Inch	**HFFH 12080 R BBT30**	★	**80**	82	10	1.6	1
	HFFH 12100 R BBT30	★	**100**	102	12	2.4	1
	HFFH 12125 R BBT30	★	**125**	127	15	2.6	1

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

ISO Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
LDEN 12T3 ZDFR L NF	★	6.0	Linear	Low Cutting Force	1
LDEN 12T3 ZDFR G NF	★	6.0	Arc-Shaped	General-purpose	1
LDEN 12T3 ZDTR H NF	★	6.0	Arc-Shaped	Strong Edge	1
LDEN 12T3 ZDFR GX NF	★	9.0	Arc-Shaped	Long Edge	2
LDEN 12T3 ZDFR W NF	★	2.0	Arc-Shaped	Wiper	3

Fig 1

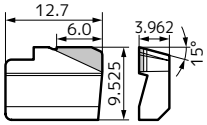


Fig 2

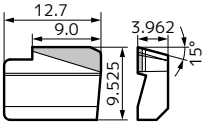
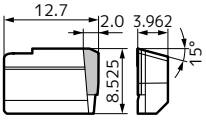


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	TTX20	HFJ	RFT	HFVT

Identification Code

HF Series Code | **F** Extra Fine Pitch | **H** With Oil Hole | **12** Blade Size | **080** Dia. | **R** Feed Direction | **BBT30** Supported Arbor Symbol

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05-**0.13**-0.20	DA1000

Note
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400-**600**-800	0.05-**0.13**-0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

* BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
* Can also be used with BT30 spindle machines.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

RF series



■ Features

The RF series cutter has a lightweight body designed for high-speed, high-performance roughing to finish milling of aluminum alloys and other non-ferrous metals.

■ Work Material

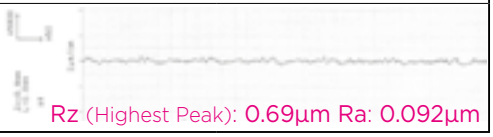
- Aluminum and aluminum alloys
- Other Non-Ferrous Metals

(Not suited for cast iron or steel.)

- **From Roughing to Finishing Processes:** Roughing: Economical carbide insert / Finishing: High-precision SUMIDIA insert
- **Strong and Lightweight Body:** Special aluminum alloy body. 40% lighter than steel cutters. Hard anodizing. Improved efficiency with higher spindle speeds, lower spindle loads and shorter tool change time
- **Safety Design:** Prevents inserts from dislodging from cutter due to centrifugal force. (Speeds must be within max. recommended conditions)
  To prevent warping, wedges are not used in the cutter construction
- **Easy Runout Adjustment:** External setting gauge is used for easy tool presetting. High-precision cutter construction - units fitted are within 10µm runout even before setting

■ Surface Finish

· Process: Finish Milling	· vc = 4,990m/min
· Machine: Vertical Machining Centre	· n = 15,900min^{-1}
· Arbor: HSK63A	· vf = 11,400mm/min
· Work Material: Si 10 to 12% Al Alloy	· fz = 0.12mm/t
· Cutter: RF4100R 6-teeth (1 Wiper)	· ap = 0.5mm, Wiper ap = 0.03mm, Dry
· Grade: SUMIDIA (DA1000)	



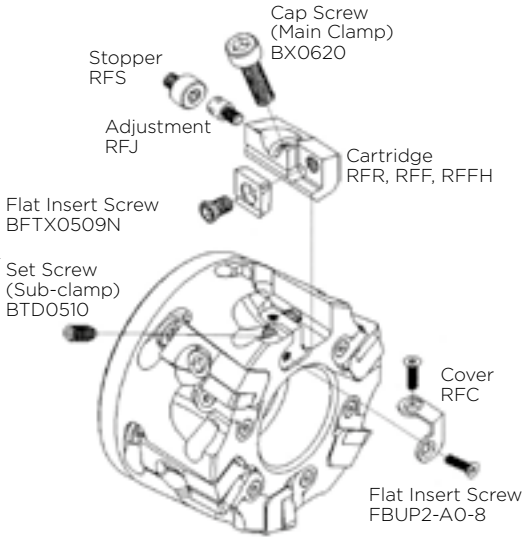
Rz (Highest Peak): 0.69µm Ra: 0.092µm

● Maximum Allowable Spindle Speed

ISO Cat. No.	n max (min $^{-1}$)
RF 4080 R	17,000
RF 4100 R	15,900
RF 4125 R	13,500
RF 4160 R	11,000
RF 4200 R	9,000
RF 4250 R	7,600
RF 4315 R	6,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Structure of RF series



■ Recommended Cutting Conditions

Si Content of 12% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05-**0.13**-0.20	DA1000 DA2200
		300-**650**-1,000	0.05-**0.13**-0.20	H1

Note
- The above are the recommended conditions for RF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12%

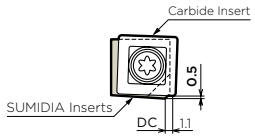
ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000 DA2200
		200- **300** -400	0.05- **0.13** -0.20	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

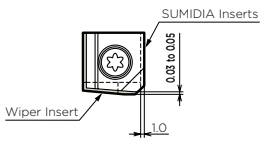
● Recommended Cutting Edge Position

We recommend positioning as in the figure below when mounting carbide inserts or SUMIDIA inserts (blades).

● When roughing and finishing in the same process



● When using wiper edge



■ Product Range

Type	ISO Cat. No.	Dia. (mm)						
		ø80	ø100	ø125	ø160	ø200	ø250	ø315
Shell	**RF 4000 R** Inch	6	6	8	10	12	16	18

Number in ●○ shows the number of teeth Inch Inch Bore

⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

As it is possible to mix different types of inserts/blades, it is important to take note of the following.

- Do not mix reground and new inserts or inserts with a different regrinding allowance on the same cutter.
- Carbide and SUMIDIA inserts must be arranged alternately.
- When using a combination of SUMIDIA blades and inserts, ensure proper balance by mounting the same type of cutting edges on opposite sides of the cutter.

High-Speed Cutter for Aluminum Alloys

RF 4000 R type

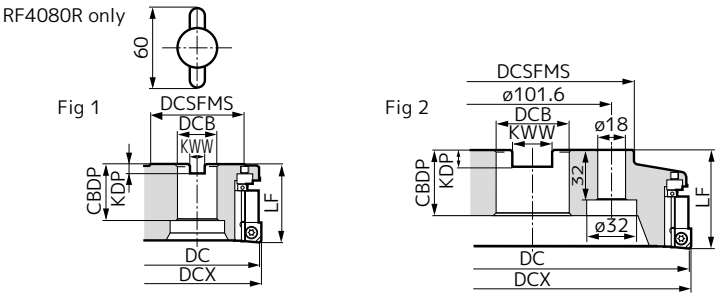
Rake Angle		
Radial	4°	
Axial	10°	

3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)

Face Milling





Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**RF 4080 R**	★	**80**	82	60	50	**25.4**	9.5	6	30	6	0.7	1
	RF 4100 R	★	**100**	102	75	50	**31.75**	12.7	8	38	6	1.0	1
	RF 4125 R	★	**125**	127	75	63	**38.1**	15.9	10	38	8	1.6	1
	RF 4160 R	★	**160**	162	100	63	**50.8**	19.1	11	38	10	2.6	1
	RF 4200 R	★	**200**	202	130	63	**47.625**	25.4	14	42	12	3.6	2
	RF 4250 R		**250**	252	130	63	**47.625**	25.4	14	42	16	6.0	2
	RF 4315 R		**315**	317	240	80	**47.625**	25.4	14	42	18	11.0	2

Cartridges, blades and inserts are sold separately.
Use a flanged bolt to mount the cutter to the arbor.

Insert/Cartridge

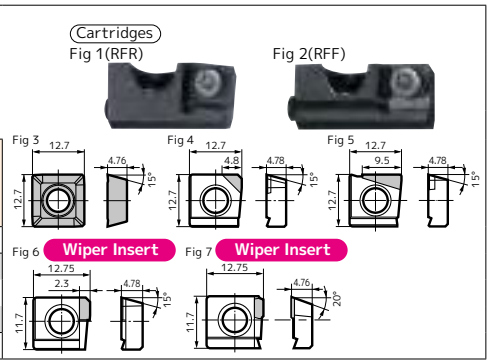
Dimensions (mm)

Grade Classification		Cemented Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed/Light Cutting	N	N	N	N	N
	Medium Cutting	N	N	N	N	
	Roughing	N	N	N	N	

Refer to page M68 for details of SUMICRYSTAL.

*When using large depth of cut (ap = 3mm or longer) with RF4080R, use the RFFH cartridge. (RFF is possible for normal cutting.)

ISO Cat. No.	H1	DL1000	DA1000	DA2200	SC10	Fig	Cartridges ISO Cat. No.	Cartridges Stock	Fig
SDET 1204 ZDFR	★	★	—	—	—	3	RFR	★	1
SNEW 1204 ADFR NF	—	—	★	▲	—	4	RFF	★	2
SNEW 120404 ADFR H NF	—	—	★	—	—	5	RFF (Others) *RFFH(RF4080R)	★	2
SNEW 1204 ADFR W NF	—	—	★	▲	—	6	RFF	★	2
SNEW 1204 ADFR WS	—	—	—	—	★	7	RFF	★	2



An "H" at the end of the part number indicates large depth of cut type, while "W" or "WS" indicates a wiper insert.

Parts

Cover	Stopper	Cap Screw		Set Screw		Flat Insert Screw	Adjustment	Flat Insert Screw		Wrench	Wrench
		Main Clamp	N·m	Sub-clamp	N·m	Cover Mounting			N·m	TH050 TH025 RFT	
RFC	RFS	BX0620	**10.0**	BTD0510	**3.0**	FBUP2-A0-8	RFJ	BFTX0509N	**5.0**	TH050 TH025 RFT	TTX20

Blades/Dummy Blades



Product Name	ISO Cat. No.	SUMIDIA DA2200
SUMIDIA Blade	RFB	★
SUMIDIA Wiper Blade	RFBW	★
Dummy Blade	RFD	★(Steel)

Use dummy blades for unused teeth to protect the body as well as maintaining balance.

Setting Parts

Inserts can be set in the cartridge with high precision outside the machine in advance.



Setting Gauge
RF-SET
(Sold Separately/ Standard Stock)
*Dial gauge is not included.

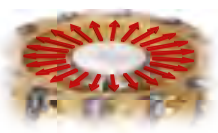


Clamp Jig
RF-JIG
(Sold Separately/ Standard Stock)

Internal Coolant Attachments

For internal coolant supply, use an internal coolant holder or a commercially available clamp bolt with coolant holes. Typical examples are given in the table below. For specifications, contact each manufacturer directly.

Body ISO Cat. No.	Internal Coolant Holder	Standard Clamp Bolt with Coolant Hole (Example) MST Corporation	BIG DAISHOWA
RF 4080R	—	MBC-M12	TMBA-M12
RF 4100R	—	MBC-M16	TMBA-M16
RF 4125R	—	MBC-M20	TMBA-M20
RF 4160R	—	MBC-M24	TMBA-M24
RF 4200R	RF-CLT	—	—
RF 4250R	RF-CLT	—	—
RF 4315R	RF-CLT	—	—



Direction of Coolant Streams



Internal Coolant Holders
RF-CLT (Standard Stock)



Standard Clamp Bolt with Coolant Hole [Typical Example]
MBC-M12 to M24 (Sold Separately)

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

SRF series



■ Features

The SRF series is ideal for aluminum alloy machining on high-performance small machines.

- **Ideal for small machines**
  Especially reliable on BT30 class small machines.
- **From roughing to finishing processes**
  Utilises SUMIDIA DA1000 inserts with effective cutting edge length of 5mm.
- **Economical NF type inserts:**
  NF type SUMIDIA inserts with tough DA1000 grade lower tooling costs.
- **High-speed cutting with SUMIDIA:**
  Maximum spindle speeds of up to n = 20,000min^{-1}
  (Please operate within the maximum allowable spindle speed of the machine and holder used)
  *The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.
- **Simple runout adjustment mechanism:**
  Simple direct insert mounting design with easy fine-adjustment for runout precision.

■ Recommended Cutting Conditions

Si Content of 12% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	2,000- **3,000** -4,000	0.05-**0.13**-0.20	DA1000

Note
- The above are the recommended conditions for SRF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400-**600**-800	0.05-**0.13**-0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

SRF series

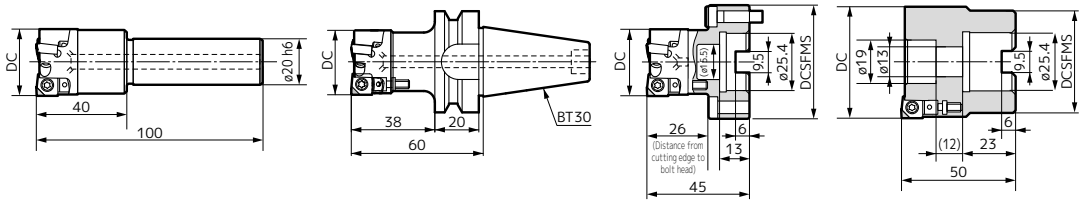
Rake Angle	Radial	-2° to 4°
	Axial	6°

5mm 90°

Face Milling Shoulder Milling

Fig 1 Fig 2 Fig 3 Fig 4





Body

Dimensions (mm)

	ISO Cat. No.	Stock	Dia. DC	Boss DCSFMS	Number of Teeth	Weight (kg)	Fig
Inch	**SRF 30 R ST**	★	**30**	—	3	0.34	1
	SRF 40 R ST	★	**40**	—	4	0.50	1
	SRF 30 R BT30	★	**30**	—	3	0.57	2
	SRF 40 R BT30	★	**40**	—	4	0.72	2
	SRF 30 R	★	**30**	**50.0**	3	0.27	3
	SRF 40 R	★	**40**	**50.0**	4	0.35	3
	SRF 50 R	★	*50	**46.5**	5	0.59	4
	SRF 63 R	★	*63	**45.0**	6	0.67	4

Inserts are sold separately.

■ Product Range

Type	ISO Cat. No.	Dia. (mm) ø30	ø40	ø50	ø63
Shell	**SRF 30 R(ST)**	3			
	SRF 40 R(ST)		4		
	SRF 30 R BT30	3			
	SRF 40 R BT30		4		
	SRF 50 R inch			5	
	SRF 63 R inch				6

Number in ● shows the number of teeth inch Inch Bore

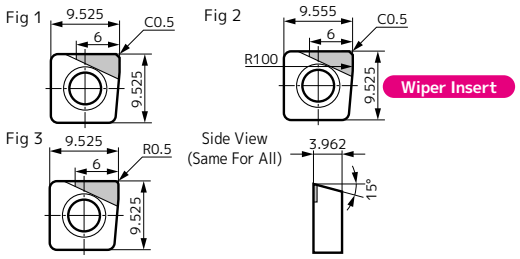
Note For mounting the cutters marked with * to an arbor, use a hex socket bolt (JIS B1176) M12 x 30 to 35mm.

Insert

Dimensions (mm)

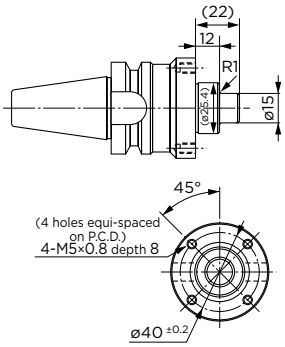
Grade Classification		SUMIDIA	
Process	High-speed/Light Cutting	N	N
	Medium Cutting	N	N
	Roughing	N	N

ISO Cat. No.	DA1000	DA2200	Cutting Edge Shape	Fig
SNEW 09T3 ADTR NF	★	▲	Standard	1
SNEW 09T3 ADTR U NF	★	▲	Wiper Flat	2
SNEW 09T3 ADTR R NF	★	▲	Corner Radius	3



Recommended Cutting Conditions H240

- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with corner radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 9.225mm), but the cutting edge height changes by the reground amount.
- Do not mix new and reground inserts or inserts with different regrind amounts on the same cutter.
- When using reground inserts, it is advisable to re-confirm cutting edge position with a tool pre-setter.
- Arbor for SRF30R, SRF40R



When using SRF30R and SRF40R cutters, the arbor needs to be modified as shown above.
(1. Reduce part of the arbor's adapter shaft length from ø25.4 to ø15.
2. Add 4 tap holes for (M5) mounting bolts.) Use hex socket bolts M5 × 20mm for securing the body.

Maximum Depth of Cut (SRF50R, 5-teeth)

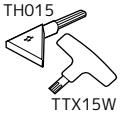
The table below contains guidelines on the maximum depth of cut, determined from internal tests. 'O' marks indicate the possible application range. Actual cutting conditions should be set based on the actual machine and workpiece characteristics.

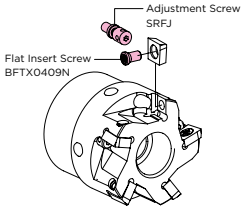
Depth of Cut ap (mm) \ Feed Rate	Feed Rate (vf) (mm/min) 2,500	4,000	5,000
	Feed Rate Per Tooth (fz) (mm/t) 0.05	0.08	0.10
0.5	○	○	○
1.0	○	○	○
1.5	○	○	○
2.0	○	○	○
2.5	○	○	○
3.0	○	○	○
3.5	○	○	—
4.0	○	—	—
4.5	○	—	—
5.0	○	—	—

Cutting Conditions
Cutter : SRF50R
Insert : NF-SNEW 09T3ADTR (DA1000)
n = 10,000min^{-1}
Arbor : BT30 FMA25.4-45
Workpiece : A-5052
Width : Maximum depth of cut at 35mm



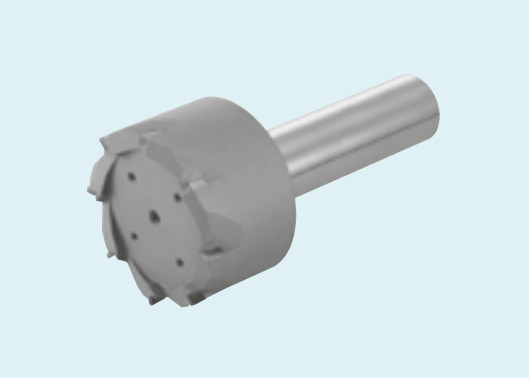
Parts

Flat Insert Screw		Adjustment Screw	Wrench
	N·m		 TH015 TTX15W
BFTX0409N	**4.0**	SRFJ	TH015 TTX15W



★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

DFE series



■ Features

- Supports small machines. Small diameter shank type cutter.
- Multiple brazed teeth for high feed milling.
- With excellent fracture resistance and sharpness, DA2200 is optimal for milling of aluminum and non-ferrous metals.
- Through-tool oil holes for high speed machining.

■ Body

Fig 1



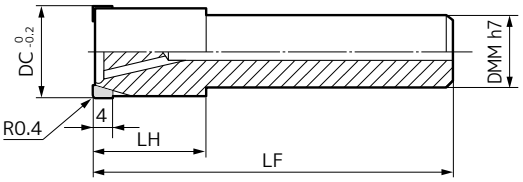
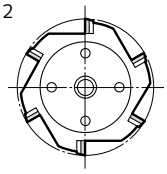


Fig 2



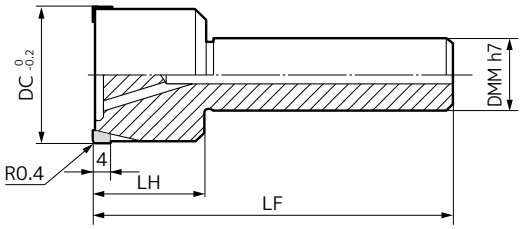
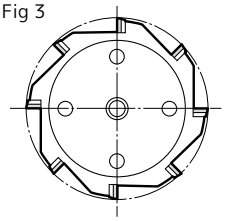
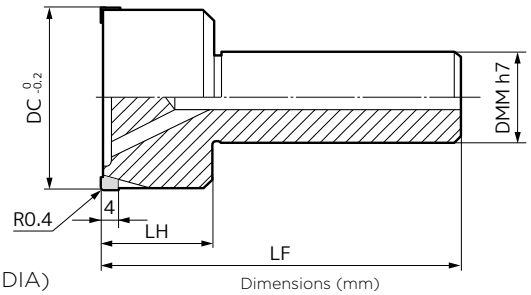


Fig 3





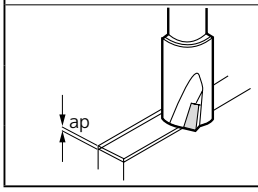
(SUMIDIA)

Dimensions (mm)

ISO Cat. No.	DA2200	Dia. DC	Overall Length LF	Head LH	Shank Dia. DMM	Number of Teeth	Fig
DFE 4200 GS	★	**20**	80	25	16	4	1
DFE 6250 GS	★	**25**	80	25	16	6	2
DFE 6300 GS	★	**30**	80	25	16	6	2
DFE 8400 GS	★	**40**	80	25	16	8	3
DFE 8500 GS	★	**50**	80	25	20	8	3

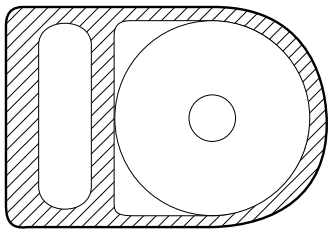
■ Recommended Cutting Conditions

Tooling



ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	200-**800**-2,000	0.02-**0.05**-0.10	DA2200

■ Application Examples



Work Material	Cutting Conditions	Results
ADC12 Aluminum Alloy Motor Casing Part	Tool: DFE8400GS Cutting Conditions: vc = 1,500m/min n = 11,940min^{-1} fz = 0.03mm/t vf = 2,865mm/min ap = 0.5mm Wet	· Good machined surface as burrs do not occur. · More cutting teeth than indexable type cutters, and cycle time is much shorter.

★mark: Global stocked item

▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

SUMIDIA BINDERLESS Endmill series

VIDEO OF CUTTING



■ General Features

SUMIDIA BINDERLESS is polycrystalline diamond that directly binds nano-sized diamond particles with high strength without using any binders. Harder than single-crystal diamond, it has no cleavability, enabling machining of hard brittle materials such as cemented carbide and making new machining methods possible.

■ Features

● **Ideal for Finishing of Hard Brittle Materials Including Cemented Carbide**
Provides excellent machined surface quality thanks to a sharp cutting edge and optimised edge treatment.

● **Enables High-precision Machining and Achieves Long Tool life.**
Maintains excellent dimensional tolerance for a long time thanks to the high contour accuracy of the cutting edge and excellent wear resistance of the diamond material.

SUMIDIA BINDERLESS Radius Endmills

NPDRS type

Corner r



For Side Milling and Rounded Base Milling

SUMIDIA BINDERLESS Ballnose Endmills

NPDBS type/NPDB type

Ballnose R



For Spherical Milling

● **Pocketing**



Work Material	: Cemented Carbide AF1 (Ultra-fine Grained Carbide)
Tool Used	: NPDRS1100R005-030
Cutting Conditions	: 10mm × 10mm × Depth 2mm
Cutting Conditions	: n = 40,000min^{-1}, vf = 200mm/min pf = 0.005mm, Oil Mist
Surface Roughness	: Ra 0.015μm
Cutting Time	: 2 Hours

● **Application to Optical Use (Fly-Eye Lens Mold)**



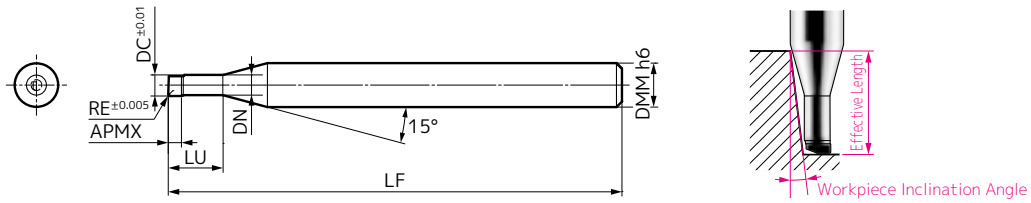
Work Material	: Cemented Carbide AF1 (Ultra-fine Grained Carbide)
Tool	: Finishing NPDB 1050-020 (R0.5) Roughing: Diamond-Coated Endmill (R0.5)
Cutting Conditions	: n = 60,000min^{-1}, vf = 300mm/min pf = 0.005mm, Oil Mist
Surface Roughness	: Ra 0.015μm
Cutting Time	: Finishing 2 Hours 40 Minutes Roughing 55 Minutes

NPDRS type

Cemented Carbide | Hard Brittle Materials

1 Flute | Binderless PCD | Corner R | Shoulder Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Effective Length for Workpiece Inclination Angle 0.5°	1°	1.5°	2°	3°	Wiper Edge	Fig
NPDRS 1020 R002 006	★	0.2	0.02	0.1	0.6	40	0.175	4	0.63	0.65	0.67	0.70	0.75	No	1
NPDRS 1020 R005 006	★	0.2	0.05	0.1	0.6	40	0.175	4	0.63	0.65	0.67	0.69	0.74	No	1
NPDRS 1030 R002 010	★	0.3	0.02	0.15	1.0	40	0.27	4	1.04	1.08	1.11	1.15	1.24	No	1
NPDRS 1030 R005 010	★	0.3	0.05	0.15	1.0	40	0.27	4	1.04	1.08	1.11	1.15	1.23	No	1
NPDRS 1050 R005 015	★	0.5	0.05	0.25	1.5	40	0.47	4	1.56	1.61	1.66	1.72	1.84	No	1
NPDRS 1050 R010 015	★	0.5	0.10	0.25	1.5	40	0.47	4	1.56	1.60	1.65	1.71	1.83	No	1
NPDRS 1100 R005 030	★	1.0	0.05	0.55	3.0	40	0.95	4	3.14	3.24	3.35	3.46	3.72	No	1
NPDRS 1100 R010 030	★	1.0	0.10	0.55	3.0	40	0.95	4	3.14	3.24	3.34	3.46	3.71	No	1
NPDRS 1100 R020 030	★	1.0	0.20	0.55	3.0	40	0.95	4	3.14	3.23	3.33	3.44	3.69	No	1
NPDRS 1200 R005 040	★	2.0	0.05	0.55	4.0	40	1.95	4	4.17	4.31	4.45	4.60	4.94	No	1
NPDRS 1200 R010 040	★	2.0	0.10	0.55	4.0	40	1.95	4	4.17	4.30	4.44	4.60	4.93	No	1
NPDRS 1200 R020 040	★	2.0	0.20	0.55	4.0	40	1.95	4	4.17	4.30	4.43	4.58	4.91	No	1

Grade: NPD10

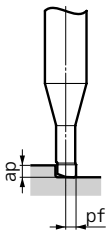
Identification Code

NPDR S 1 020 R002 - 006

NPDR	S	1	020	R002	006
Series Code	For Standard Finishing	No. of Flutes	Dia.	Corner Radius	Neck Length

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
DC (mm)	LU (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.2	0.6	40,000	100	0.001	0.001
0.3	1.0	40,000	150	0.002	0.001
0.5	1.5	40,000	200	0.003	0.001
1.0	3.0	40,000	400	0.005	0.003
2.0	4.0	40,000	600	0.010	0.005

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)

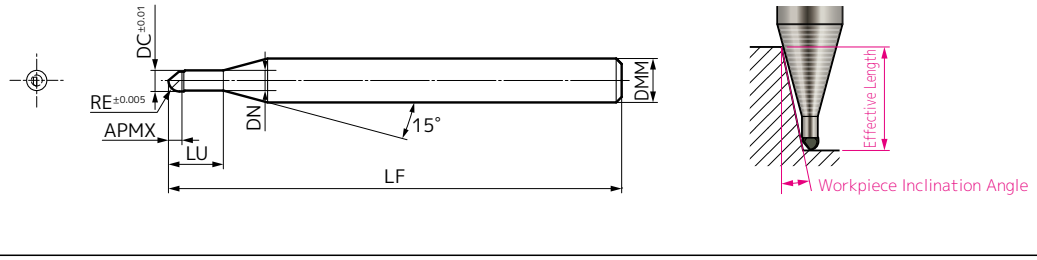
Blank: Made-to-order item
— mark: Not available

NPDBS type

Cemented Carbide | Hard Brittle Materials

1 Flute | Binderless PCD | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body (for Standard Finishing)

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Effective Length for Workpiece Inclination Angle 0.5°	1°	1.5°	2°	3°	Fig
NPDBS 1010 004	★	**0.1**	**0.2**	0.1	0.4	40	0.18	4	0.42	0.43	0.44	0.46	0.48	1
NPDBS 1020 008	★	**0.2**	**0.4**	0.2	0.8	40	0.38	4	0.83	0.85	0.87	0.90	0.95	1
NPDBS 1030 010	★	**0.3**	**0.6**	0.3	1.0	40	0.58	4	1.03	1.06	1.08	1.11	1.17	1
NPDBS 1050 020	★	**0.5**	**1.0**	0.5	2.0	40	0.95	4	2.10	2.15	2.20	2.26	2.39	1
NPDBS 1100 030	★	**1.0**	**2.0**	1.0	3.0	40	1.95	4	3.11	3.18	3.25	3.33	3.51	1

Grade: NPD10

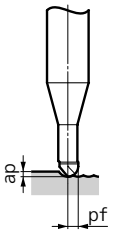
Identification Code

NPDB S 1 010 - 004

Series Code	For Standard Finishing	No. of Flutes	Ballnose Radius	Neck Length

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.1	0.4	40,000	100	0.001	0.001
0.2	0.8	40,000	150	0.002	0.001
0.3	1.0	40,000	200	0.003	0.001
0.5	2.0	40,000	400	0.005	0.003
1.0	3.0	40,000	600	0.010	0.005

*Radius accuracy inspection report is included inside the case. I129
*Long neck type is also available depending on the size. Please consult us separately.

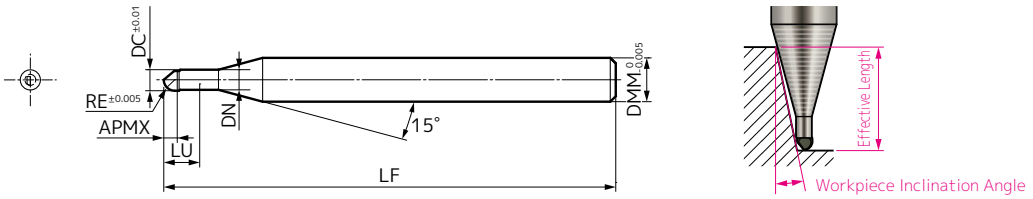
★ mark: Global stocked item
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Blank: Made-to-order item
— mark: Not available

NPDB type

Cemented Carbide | Hard Brittle Materials

1 Flute | Binderless PCD | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body (for Precise Finishing)

Dimensions (mm)

ISO Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Effective Length for Workpiece Inclination Angle 0.5°	1°	1.5°	2°	3°	Fig
NPDB 1010 004	★	**0.1**	**0.2**	0.1	0.4	40	0.18	4	0.42	0.43	0.44	0.46	0.48	1
NPDB 1020 008	★	**0.2**	**0.4**	0.2	0.8	40	0.38	4	0.83	0.85	0.87	0.90	0.95	1
NPDB 1030 010	★	**0.3**	**0.6**	0.3	1.0	40	0.58	4	1.03	1.06	1.08	1.11	1.17	1
NPDB 1050 020	★	**0.5**	**1.0**	0.5	2.0	40	0.95	4	2.10	2.15	2.20	2.26	2.39	1
NPDB 1100 030	★	**1.0**	**2.0**	1.0	3.0	40	1.95	4	3.11	3.18	3.25	3.33	3.51	1

Grade: NPD10

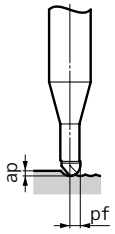
Identification Code

NPDB 1 010 - 004

Series Code	No. of Flutes	Ballnose Radius	Neck Length

Recommended Cutting Conditions

1. Use a machine with high accuracy for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply. As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine specs and other conditions may vary.
5. The cutting parameters shown are for reference only. Adjust the cutting conditions to the desired machined surface finish.



Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.1	0.4	40,000	100	0.001	0.001
0.2	0.8	40,000	150	0.002	0.001
0.3	1.0	40,000	200	0.003	0.001
0.5	2.0	40,000	400	0.005	0.003
1.0	3.0	40,000	600	0.010	0.005

*Radius accuracy inspection report is included inside the case. I129
*Long neck type is also available depending on the size. Please consult us separately.

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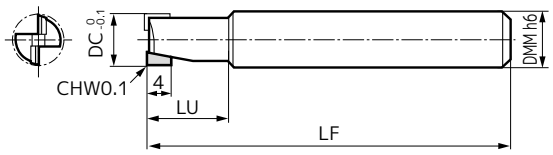
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DFE series

Aluminum Alloy | Copper Alloy | Graphite

2 Flutes | PCD | Shoulder Milling | Face Milling

Fig 1



Body

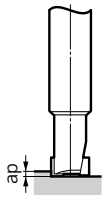
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
DFE 2040 S	★	**4.0**	15	50	6	1
DFE 2050 S	★	**5.0**	15	50	6	1
DFE 2080 S	★	**8.0**	15	60	10	1
DFE 2090 S	★	**9.0**	15	70	10	1
DFE 2100 S	★	**10.0**	15	70	10	1

Grade: DA2200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Face Milling (2 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.0		40,000	4,000
5.0		32,000	3,200
8.0		20,000	2,000
9.0		17,800	1,780
10.0		16,000	1,600
Standard Depth of Cut	ap	0.4DC	

4 Flutes | PCD | Shoulder Milling | Face Milling

Fig 1

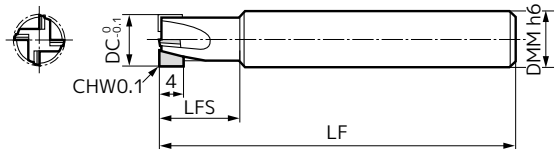
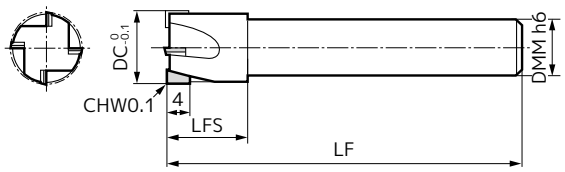


Fig 2



Body

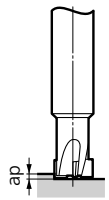
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DFE 4090 S	★	**9.0**	15	70	10	1
DFE 4100 S	★	**10.0**	15	70	10	1
DFE 4130 GS	★	**13.0**	15	70	10	2

Grade: DA2200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Face Milling (4 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)
9.0		17,800	3,560
10.0		16,000	3,200
13.0		12,300	2,460
Standard Depth of Cut	ap	0.4DC	

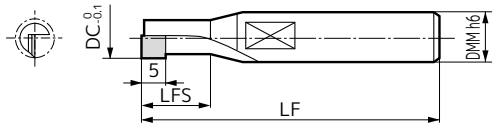
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

DAE series

Aluminum Alloy | Copper Alloy | Graphite

1 Flute | PCD | Shoulder Milling | Face Milling

Fig 1



Body

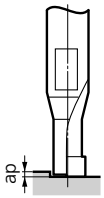
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DAE 1040	★	**4.0**	10	45	6	1
DAE 1050	★	**5.0**	12	50	6	1

Grade: DA200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

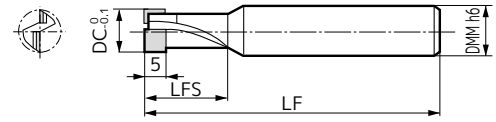


Face Milling (1 Flute)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)
4.0		6,000	210
5.0		5,000	175
Standard Depth of Cut	ap	0.4DC	

2 Flutes | PCD | Shoulder Milling | Face Milling

Fig 1



Body (2 Flutes)

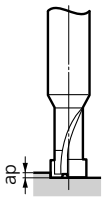
Dimensions (mm)

ISO Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DAE 2060	★	**6.0**	20	50	6	1
DAE 2070	★	**7.0**	20	60	8	1
DAE 2080	★	**8.0**	20	60	8	1
DAE 2090	★	**9.0**	25	71	10	1
DAE 2100	★	**10.0**	25	71	10	1
DAE 2110	★	**11.0**	25	75	12	1
DAE 2120	★	**12.0**	25	75	12	1

Grade: DA200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Face Milling (2 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC(mm)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)
6.0		6,400	580
7.0		5,500	500
8.0		5,400	500
9.0		5,300	480
10.0		4,800	440
11.0		4,400	400
12.0		4,000	360
Standard Depth of Cut	ap	0.4DC	

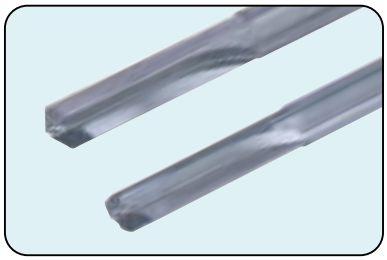
★ mark: Global stocked item
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Blank: Made-to-order item
— mark: Not available

DAL / DDL series

Aluminum Alloy | Composite CFRP

PCD 3D



From General to High Precision Drilling of Aluminum Alloys

- High precision DAL series is able to produce holes of IT Class of 7 to 8.
- General DDL series is able to produce holes of IT class 11 to 12, mainly for pre-tap hole drilling.

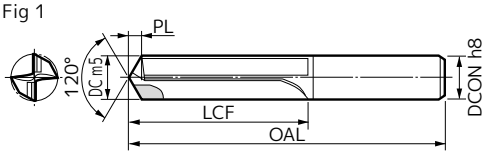
DAL series

*For tolerances, refer to Chapter N - References. Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	
	Roughing	

ISO Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DAL 0500H to 0600H		ø5 ≤ DC ≤ ø6	31.6	81.6	1.6	1
DAL 0601H to 0700H		ø6 < DC ≤ ø7	36.9	91.9	1.9	1
DAL 0701H to 0800H		ø7 < DC ≤ ø8	37.2	92.2	2.2	1
DAL 0801H to 0900H		ø8 < DC ≤ ø9	42.5	102.5	2.5	1
DAL 0901H to 1000H		ø9 < DC ≤ ø10	42.8	102.8	2.8	1
DAL 1001H to 1100H		ø10 < DC ≤ ø11	53.1	113.1	3.1	1
DAL 1101H to 1200H		ø11 < DC ≤ ø12	53.4	113.4	3.4	1

Fig 1



Ordering numbers should be handled according to this example: ø6.05mm drill → DAL0605H.

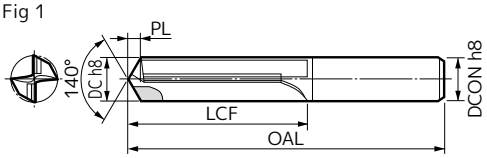
DDL series

*For tolerances, refer to Chapter N - References. Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	
	Roughing	

ISO Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DDL 050V to 060V		ø5 ≤ DC ≤ ø6	31.5	81.0	1.0	1
DDL 061V to 070V		ø6 < DC ≤ ø7	36.2	91.2	1.2	1
DDL 071V to 080V		ø7 < DC ≤ ø8	36.4	91.4	1.4	1
DDL 081V to 090V		ø8 < DC ≤ ø9	41.6	101.6	1.6	1
DDL 091V to 100V		ø9 < DC ≤ ø10	41.7	101.7	1.7	1
DDL 101V to 110V		ø10 < DC ≤ ø11	51.9	111.9	1.9	1
DDL 111V to 120V		ø11 < DC ≤ ø12	52.1	112.1	2.1	1

Fig 1



Ordering numbers should be handled according to this example: ø10.5mm drill → DDL105V.

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	DAL series	DDL series	Depth of Cut	Oil
ø8.0	n	4,000	8,000	L/D= Below 3	Emulsion type
	vc	80 - **100** - 150	150 - **200** - 250		
	f	0.05 - **0.1** - 0.15	0.1 - **0.15** - 0.25		
ø12.0	n	2,700	5,300		
	vc	80 - **100** - 150	150 - **200** - 250		
	f	0.08 - **0.13** - 0.2	0.15 - **0.2** - 0.3		

Min. - **Optimum** - Max.

Important Notes

- When using DAL series for high-precision machining, select a high rigidity machine and high precision holder.
- Supply coolant generously at the entrance of the hole.

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SUMICRYSTAL M

M67 to M73

SUMICRYSTAL

SUMICRYSTAL M68
SUMICRYSTAL PD/PDX M69
SUMICRYSTAL UP M70
SUMICRYSTAL UP (Half Cut) M71
SUMICRYSTAL UPT.....M72
SUMICRYSTAL CD.....M73

■ General Features

SUMICRYSTAL is the world's first commercially available large single-crystal synthetic diamond, developed by Sumitomo. Thorough quality control has achieved stable quality, making SUMICRYSTAL ideal as an industrial material.

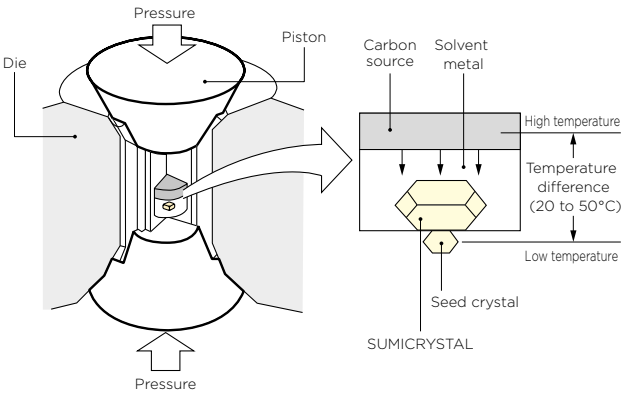


■ Production Method

The synthetic single-crystal diamond SUMICRYSTAL is synthesised in a super high pressure chamber from 5 to 6GPa and high temperatures from 1,300 to 1,600°C. The temperature difference between the raw carbon and the seed crystal is used to grow the diamond on the seed crystal. Through this stringent control of pressures and temperatures, a more stable structure with minimal impurities can be obtained.

● Inside a super high pressure chamber

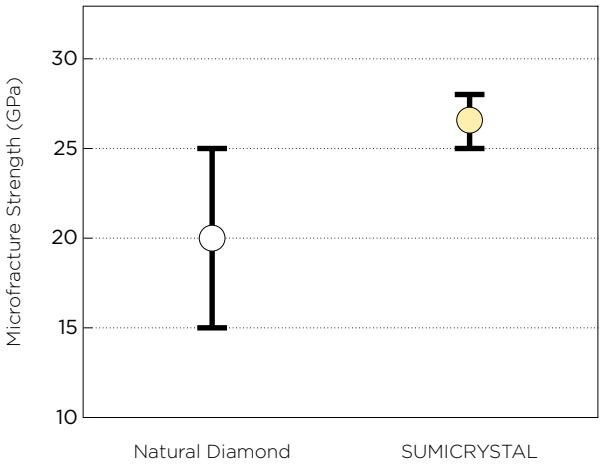
Synthetic Conditions
Pressure: 5 to 6GPa
Temperature: 1,300 to 1,600°C



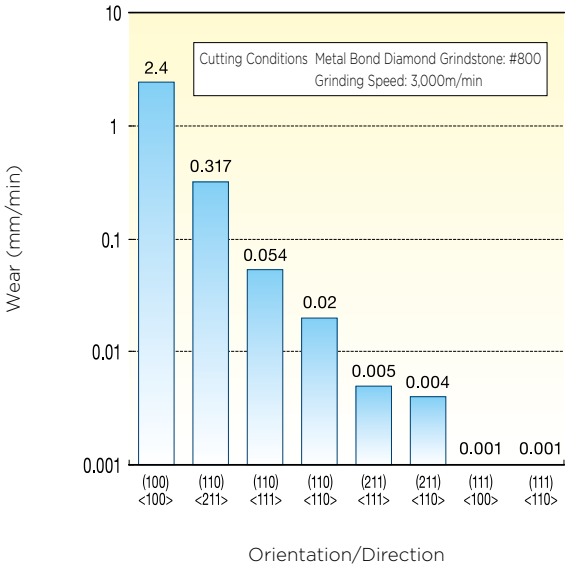
■ Properties

SUMICRYSTAL has 4 main advantages over natural diamond.
1) Structural advantage: Natural diamond is rounded and the crystal orientation is difficult to determine with the naked eye. SUMICRYSTAL, however, has a distinct crystal face which makes the identification much easier.
2) Uniformity: Due to the strictly controlled conditions in which the crystals are grown, uniform quality is obtained consistently.
3) Availability: Unlike the limited supply of natural diamonds, SUMICRYSTAL can be mass produced.
4) SUMICRYSTAL diamond type Ib, which is used for tools, has mechanical and thermal properties equal to or even greater than natural diamond, while containing small amounts of nitrogen.

● Microfracture Strength of Synthetic Diamond



● Orientation and Wear Resistance



PD/PDX



■ General Features

SUMICRYSTAL PD and PDX are single-crystal synthetic diamonds processed into thin prism shapes for use as dresser blanks. Their stable performance and long tool life improve dressing precision.

SUMICRYSTAL PD

■ Features

● Revolutionary elongated shape

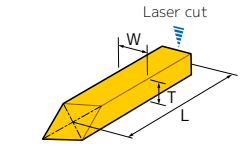
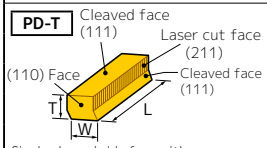
(1) Improves holding power and prevents falling out.

(2) Consistent cross section prevents deterioration.

(3) Uniform crystal orientation promotes stable tool life.

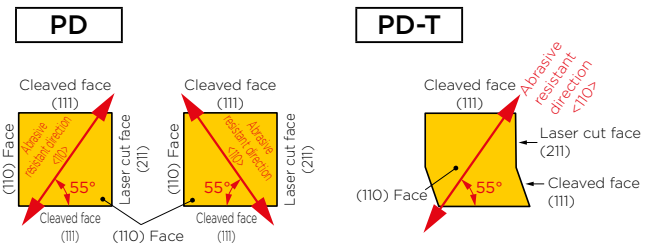
■ Standard ISO Cat. No. (PD)

Dimensions (mm)

Shape	ISO Cat. No.	Stock	T	W	L
PD  · Dimension L is the distance between the centre points of both ends. · Both upper and lower (111) faces are cleaved.	PD 0220	★	0.2 ± 0.05	0.2 ± 0.05	2.0 to 2.5
	PD 0420	★	0.4 ± 0.05	0.4 ± 0.05	2.0 to 2.5
	PD 0630 K	★	0.6 ± 0.1	0.6 ± 0.1	3.0 to 4.0
	PD 0640 K	★			4.0 to 5.0
	PD 0650 K	★			5.0 up
	PD 0830 K	★	0.8 ± 0.1	0.8 ± 0.1	3.0 to 4.0
	PD 0840 K	★			4.0 to 5.0
	PD 0850 K	★			5.0 up
	PD 1130 K	★	1.1 ± 0.1	1.1 ± 0.1	3.0 to 4.0
	PD 1140 K	★			4.0 to 5.0
PD-T  Single cleaved side face with pre-determined abrasive resistant direction.	PD 0630 TK	★	0.6 ± 0.1	0.6 ± 0.1	3.0 to 4.0
	PD 0640 TK	★			4.0 to 5.0
	PD 0830 TK	★	0.8 ± 0.1	0.8 ± 0.1	3.0 to 4.0
	PD 0840 TK	★			4.0 to 5.0
	PD 1130 TK	★	1.1 ± 0.1	1.1 ± 0.1	3.0 to 4.0
	PD 1140 TK	★			4.0 to 5.0

*1: Sizes other than those indicated above can be ordered.
*2: These products may have fine impurities within Sumitomo's prescribed range.
*3: The laser cut faces among other product areas may have chipping within Sumitomo's prescribed range.

■ PD Crystal Orientation

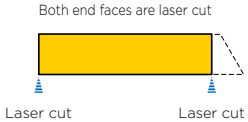


· The two types above both exist in the wear-resistant direction.

· Single cleaved side face with pre-determined abrasive resistant direction.

■ KK type

Apart from the standard items listed above, PD is also available in the KK type with both end faces laser-cut.



· When ordering, please include "K" behind the standard catalogue no.
(Example: PDOOOOKK, PDOOOOTKK)

· PD0220 and PD0420 are not available in the KK type.

SUMICRYSTAL PDX

■ Features

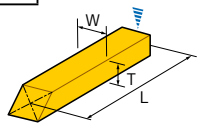
● Compared to SUMICRYSTAL PD, the product has different face crystal orientation.

(1) Crystal orientation (211) provides better tool life than PD blanks.

(2) Parallel abrasive resistant faces (111) facilitate blank setting during manufacturing of dressers.

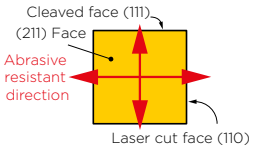
■ Standard ISO Cat. No. (PDX)

Dimensions (mm)

Shape	ISO Cat. No.	Stock	T	W	L
PDX Laser cut  · Dimension L is the distance between the centre points of both ends. · Both upper and lower (111) faces are cleaved.	PDX 0220	★	0.2 ± 0.05	0.2 ± 0.05	2.0 ± 0.1
	PDX 0320	★	0.3 ± 0.05	0.3 ± 0.05	2.0 ± 0.1
	PDX 0420	★	0.4 ± 0.05	0.4 ± 0.05	2.0 ± 0.1
	PDX 0630	★	0.6 ± 0.1	0.6 ± 0.1	3.0 ± 0.5
	PDX 0640	★			4.0 ± 0.5
	PDX 0830	★	0.8 ± 0.1	0.8 ± 0.1	3.0 ± 0.5
	PDX 0840	★			4.0 ± 0.5
	PDX 1130	★	1.1 ± 0.1	1.1 ± 0.1	3.0 ± 0.5
	PDX 1140	★			4.0 ± 0.5

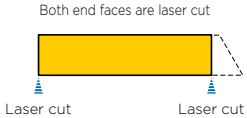
*1: Sizes other than those indicated above can be ordered.
*2: These products may have fine impurities within Sumitomo's prescribed range.
*3: The laser cut faces among other product areas may have chipping within Sumitomo's prescribed range.

■ PDX Crystal Orientation



■ K type

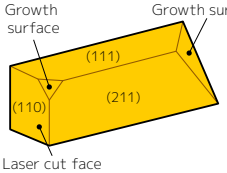
Apart from the standard items listed above, PDX is also available in the K type with both end faces laser-cut.



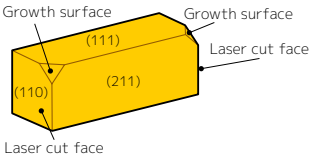
· When ordering, please include "K" behind the standard catalogue no.
(Example: PDXOOOOK)

· PDX0220, PDX0320 and PDX0420 are not available for K type.

PD one-end cut-off type



PD both ends cut-off type



For both PD and PDX, the corners have a growth surface within the Sumitomo prescribed range.

The orientation in the shape diagram is a typical value with deviations in actual products.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

UP



■ General Features

Of today's sophisticated cutting-edge technologies, ultra-precision machining processes such as those used for optical element molds are seeing particularly rapid development. SUMICRYSTAL UP blanks have high performance and reliability, making them optimally suited to these applications.

■ Features

(1) High quality with very low variance.
Stable wear resistance with excellent resistance to cutting edge chipping.
(2) Minimal stock removal during cutting edge formation.
Uniform shape facilitates cutting edge formation.

■ Standard type

Rectangular parallel type with 6 (100) faces.

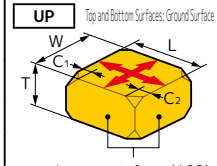
■ Economy type

Peripheral growth faces and top (100) are not cut. Benefits include large volume and low cost.

■ Standard ISO Cat. No. (Standard type)

Dimensions (mm)

Shape	ISO Cat. No.	Stock	L	W	C_1,C_2	T
UP (Top and Bottom Surfaces: Ground Surface)	**UP 282512**		2.8 to 3.5	2.5 to 3.5	up to 0.8	1.2 ± 0.1
	UP 282515		2.8 to 3.5	2.5 to 3.5	up to 0.8	1.5 ± 0.1
	UP 303015		3.0 to 3.5	3.0 to 3.5	up to 0.3	1.5 ± 0.1
	UP 301415		3.0 to 3.5	1.4 to 1.7	up to 0.3	1.5 ± 0.1
	UP 333014		3.3 to 4.0	3.0 to 4.0	up to 0.9	1.4 ± 0.1
	UP 333017		3.3 to 4.0	3.0 to 4.0	up to 0.9	1.7 ± 0.1
	UP 353514		3.5 to 4.0	3.5 to 4.0	up to 0.4	1.4 ± 0.1
	UP 353517		3.5 to 4.0	3.5 to 4.0	up to 0.4	1.7 ± 0.1
	UP 351717		3.5 to 4.0	1.7 to 2.0	up to 0.4	1.7 ± 0.1

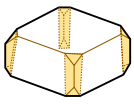


Laser cut face (100)

The red arrows indicate the direction for easy grinding. Crystal face orientations are all (100) except the corners.

*1: Sizes other than those indicated above can be ordered.
*2: These products may have fine impurities, chipping, etc. within Sumitomo's prescribed range.
*3: Impurities, cracks, etc. outside the inspection range may be present at the product corner (C surface) interior.

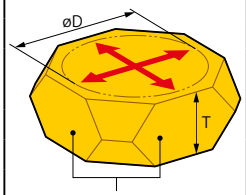
Corner (C surface) Interior



■ Standard ISO Cat. No. (Economy type)

Dimensions (mm)

Shape	ISO Cat. No.	Stock	øD Minimum guaranteed dimensions	T
UP Economy type	**UP 2010**		2.0	1.0 +0.2 -0.0
	UP 2012		2.0	1.2 +0.3 -0.0
	UP 2510		2.5	1.0 +0.2 -0.0
	UP 2512		2.5	1.2 +0.3 -0.0
	UP 2515		2.5	1.5 +0.3 -0.0
	UP 3010		3.0	1.0 +0.2 -0.0
	UP 3012		3.0	1.2 +0.3 -0.0
	UP 3015		3.0	1.5 +0.3 -0.0
	UP 3510		3.5	1.0 +0.2 -0.0
	UP 3512		3.5	1.2 +0.3 -0.0
	UP 3515		3.5	1.5 +0.3 -0.0
	UP 4010		4.0	1.0 +0.2 -0.0
	UP 4012		4.0	1.2 +0.3 -0.0
	UP 4015		4.0	1.5 +0.3 -0.0
	UP 4020		4.0	2.0 +0.3 -0.0
	UP 4510		4.5	1.0 +0.2 -0.0
	UP 4512		4.5	1.2 +0.3 -0.0
	UP 4515		4.5	1.5 +0.3 -0.0
	UP 4520		4.5	2.0 +0.3 -0.0
	UP 5010		5.0	1.0 +0.2 -0.0
	UP 5012		5.0	1.2 +0.3 -0.0
	UP 5015		5.0	1.5 +0.3 -0.0
	UP 5020		5.0	2.0 +0.3 -0.0



Growth Surface

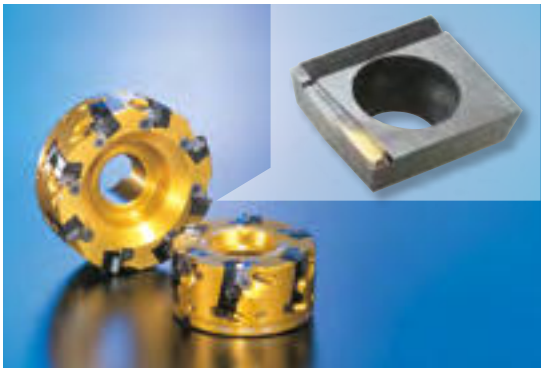
Top Surface: Growth Surface or Ground Surface
Bottom Surface: Ground Surface

The red arrows indicate the direction for easy grinding.

*1: Sizes other than those indicated above can be ordered.
*2: Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*3: Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.

● Cutting Tools Using SUMICRYSTAL UP

Wiper Insert for High-efficiency Cutter for Aluminum Alloys RF series



* This product was jointly developed with A.L.M.T. Corp.

SUMICRYSTAL SC10 (Wiper Insert)

H239 M55

- Utilises Sumitomo Electric Hardmetal's SUMICRYSTAL as a cutting edge. SUMICRYSTAL is a single-crystal diamond produced using a unique super-high-pressure technology.
- SUMICRYSTAL can maintain its edge sharpness better than sintered diamonds, greatly reducing burr formation.



SUMICRYSTAL (Single-crystal Diamond)
SC10 Wiper Blade Machined Surface



SUMIDIA (Sintered Diamond)
Wiper Blade Machined Surface

The orientation in the shape diagram is a typical value with deviations in actual products.

UP (Half-Cut Product)

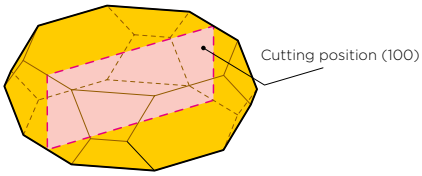
■ General Features

SUMICRYSTAL UP Half Cut products are materials for holders consisting of the UP Economy type material cut in half along the (100) or (110) faces.

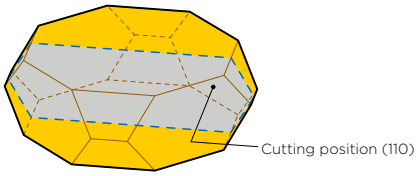
■ Features

(1) Machining loss is reduced because volume removed by grinding during tool production is reduced.
(2) Similar shape to the completed tool, reducing material costs.
(3) The cut surface is a smooth laser surface.

■ Type cut along (100) face

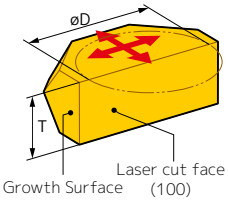


■ Type cut along (110) face



■ Standard ISO Cat. No. (Cutting Position 100 type) Dimensions (mm)

Shape	ISO Cat. No.	Stock	øD Minimum guaranteed dimensions	T
UP Half-Cut (100) type	UP 2010 (100) 1/2		2.0	$1.0^{+0.2}_{-0.0}$
	UP 2012 (100) 1/2		2.0	$1.2^{+0.3}_{-0.0}$
	UP 2510 (100) 1/2		2.5	$1.0^{+0.2}_{-0.0}$
	UP 2512 (100) 1/2		2.5	$1.2^{+0.3}_{-0.0}$
	UP 2515 (100) 1/2		2.5	$1.5^{+0.3}_{-0.0}$
	UP 3010 (100) 1/2		3.0	$1.0^{+0.2}_{-0.0}$
	UP 3012 (100) 1/2		3.0	$1.2^{+0.3}_{-0.0}$
	UP 3015 (100) 1/2		3.0	$1.5^{+0.3}_{-0.0}$
	UP 3510 (100) 1/2		3.5	$1.0^{+0.2}_{-0.0}$
	UP 3512 (100) 1/2		3.5	$1.2^{+0.3}_{-0.0}$
	UP 3515 (100) 1/2		3.5	$1.5^{+0.3}_{-0.0}$
	UP 4010 (100) 1/2		4.0	$1.0^{+0.2}_{-0.0}$
	UP 4012 (100) 1/2		4.0	$1.2^{+0.3}_{-0.0}$
	UP 4015 (100) 1/2		4.0	$1.5^{+0.3}_{-0.0}$
	UP 4020 (100) 1/2		4.0	$2.0^{+0.3}_{-0.0}$
	UP 4510 (100) 1/2		4.5	$1.0^{+0.2}_{-0.0}$
	UP 4512 (100) 1/2		4.5	$1.2^{+0.3}_{-0.0}$
	UP 4515 (100) 1/2		4.5	$1.5^{+0.3}_{-0.0}$
	UP 4520 (100) 1/2		4.5	$2.0^{+0.3}_{-0.0}$
	UP 5010 (100) 1/2		5.0	$1.0^{+0.2}_{-0.0}$
	UP 5012 (100) 1/2		5.0	$1.2^{+0.3}_{-0.0}$
	UP 5015 (100) 1/2		5.0	$1.5^{+0.3}_{-0.0}$
	UP 5020 (100) 1/2		5.0	$2.0^{+0.3}_{-0.0}$



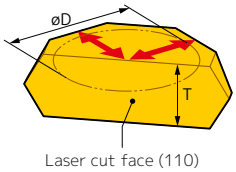
Top Surface: Growth Surface or Ground Surface
Bottom Surface: Ground Surface

The red arrows indicate the direction for easy grinding.

*1: Sizes other than those indicated above can be ordered.
*2: Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*3: Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.

■ Standard ISO Cat. No. (Cutting Position 110 type) Dimensions (mm)

Shape	ISO Cat. No.	Stock	øD Minimum guaranteed dimensions	T
UP Half-Cut (110) type	UP 2010 (110) 1/2		2.0	$1.0^{+0.2}_{-0.0}$
	UP 2012 (110) 1/2		2.0	$1.2^{+0.3}_{-0.0}$
	UP 2510 (110) 1/2		2.5	$1.0^{+0.2}_{-0.0}$
	UP 2512 (110) 1/2		2.5	$1.2^{+0.3}_{-0.0}$
	UP 2515 (110) 1/2		2.5	$1.5^{+0.3}_{-0.0}$
	UP 3010 (110) 1/2		3.0	$1.0^{+0.2}_{-0.0}$
	UP 3012 (110) 1/2		3.0	$1.2^{+0.3}_{-0.0}$
	UP 3015 (110) 1/2		3.0	$1.5^{+0.3}_{-0.0}$
	UP 3510 (110) 1/2		3.5	$1.0^{+0.2}_{-0.0}$
	UP 3512 (110) 1/2		3.5	$1.2^{+0.3}_{-0.0}$
	UP 3515 (110) 1/2		3.5	$1.5^{+0.3}_{-0.0}$
	UP 4010 (110) 1/2		4.0	$1.0^{+0.2}_{-0.0}$
	UP 4012 (110) 1/2		4.0	$1.2^{+0.3}_{-0.0}$
	UP 4015 (110) 1/2		4.0	$1.5^{+0.3}_{-0.0}$
	UP 4020 (110) 1/2		4.0	$2.0^{+0.3}_{-0.0}$
	UP 4510 (110) 1/2		4.5	$1.0^{+0.2}_{-0.0}$
	UP 4512 (110) 1/2		4.5	$1.2^{+0.3}_{-0.0}$
	UP 4515 (110) 1/2		4.5	$1.5^{+0.3}_{-0.0}$
	UP 4520 (110) 1/2		4.5	$2.0^{+0.3}_{-0.0}$
	UP 5010 (110) 1/2		5.0	$1.0^{+0.2}_{-0.0}$
	UP 5012 (110) 1/2		5.0	$1.2^{+0.3}_{-0.0}$
	UP 5015 (110) 1/2		5.0	$1.5^{+0.3}_{-0.0}$
	UP 5020 (110) 1/2		5.0	$2.0^{+0.3}_{-0.0}$



Top Surface: Growth Surface or Ground Surface
Bottom Surface: Ground Surface

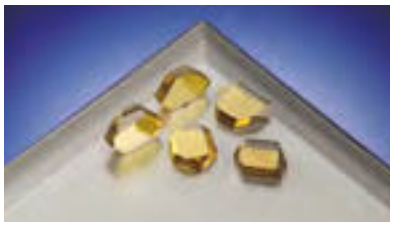
The red arrows indicate the direction for easy grinding.

*1: Sizes other than those indicated above can be ordered.
*2: Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*3: Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.

The orientation in the shape diagram is a typical value with deviations in actual products.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

UPT



■ General Features

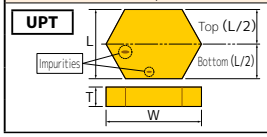
SUMICRYSTAL UPT is a material for bites with a 2-point surface ((110) surface) as the main surface.

■ Features

(1) 2-point surface ((110) face) enables use for the same applications as with bites using conventional natural diamonds.
(2) Distinctive shape minimises the volume removed to make the cutting edge, enabling efficient machining.

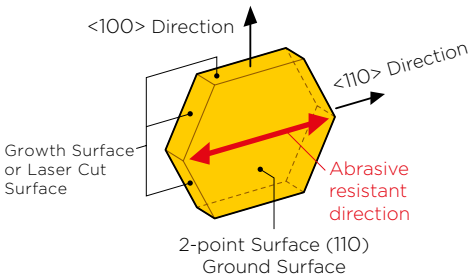
■ Standard Items

Dimensions (mm)

Shape	ISO Cat. No.	Stock	W	L	T
	**UPT 2510**		≥ 2.5	≥ 2.5	1.0 ± 0.1
	UPT 2512				1.2 ± 0.1
	UPT 3010		≥ 3.0	≥ 2.5	1.0 ± 0.1
	UPT 3012				1.2 ± 0.1

*1: Sizes other than those indicated above can be ordered.
*2: Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present at the top (L/2).
*3: Impurities, chipping, etc. outside the inspection range may be present at the bottom (L/2).

■ UPT Crystal Orientation

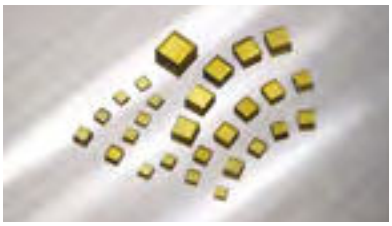


The orientation in the shape diagram is a typical value with deviations in actual products.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Blank: Made-to-order item
— mark: Not available

CD



■ General Features

SUMICRYSTAL CD has optimised crystal orientation and shape as a material for wire drawing dies. Realising excellent performance through high quality and stability.

■ Features

(1) High quality with very low variance.
High-quality crystal with minimal impurities, chipping and distortion is used to achieve high, stable wear resistance. It also eliminates the need for inspection and selection of raw stones as required for natural diamond.

(2) High fracture strength
Resistant to fracture and cracking during wire drawing.

(3) Accurate crystal orientation
(111) is used on the top and bottom surface, limiting crystal misorientation, which causes variance in tool life, to within 1°.

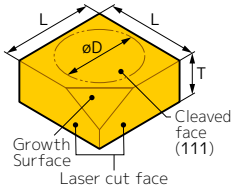
(4) No grinding needed for top and bottom surface
The top and bottom surface are cleaved to form parallel surfaces, eliminating the need for grinding of the top and bottom surface.

■ Standard type

The outside is machined by laser, achieving a consistent shape for easy setting. Mounting pressure is applied evenly, ensuring sufficient strength even for small volume. Ideal for applications with limited dimensions, such as nozzles and wire guides.

■ Standard Items

Dimensions (mm)

Shape	ISO Cat. No.	Stock	øD Minimum guaranteed dimensions	L	T
 The laser cutting surface orientation is undetermined.	**CD 1006 (111)**	★	0.9	1.0 ±0.1	0.6 ±0.1
	CD 1008 (111)	★	0.9	1.0 ±0.1	0.8 ±0.1
	CD 1210 (111)	★	1.1	1.2 ±0.1	1.0 ±0.1
	CD 1411 (111)	★	1.3	1.4 ±0.1	1.1 ±0.1
	CD 1512 (111)	★	1.4	1.5 ±0.1	1.2 ±0.1
	CD 1814 (111)		1.7	1.8 ±0.1	1.4 ±0.1
	CD 2016 (111)		1.9	2.0 ±0.1	1.6 ±0.1
	CD 2318 (111)		2.2	2.3 ±0.1	1.8 ±0.1
	CD 2520 (111)		2.4	2.5 ±0.1	2.0 ±0.1

*1: Sizes other than those indicated above can be ordered.
*2: Dimension L is guaranteed on the small side surface of the volume.
*3: Cleaved steps within Sumitomo's prescribed range may be present on the cleaved surface.
*4: Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*5: Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.

The orientation in the shape diagram is a typical value with deviations in actual products.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Parts N

N1 to N18



Screws N2
Springs / Covers / Cassettes / Eccentric Shafts N6
Eccentric Shafts / Lever Pins / Clamp Plates N7
Clamp Plates N8
Clamp Plates / Adjustment Wedges N10
Chipbreakers / Shims N11
Shims N12
Shims / Seats / Supports N13
Locators / Retaining Rings / Hoses / Connectors / O-rings N14
Coolant Nozzles / C-rings / Washers / Pins / Nuts N15
Drawing Pins / Alignment Jigs / Sleeves / Stoppers / Wrenches N16
Wrenches / Anti-seizure Cream N17

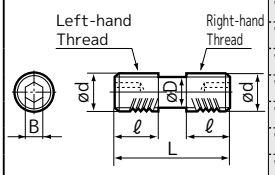
Stock Markings and Symbols

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

Screws

■ Screws

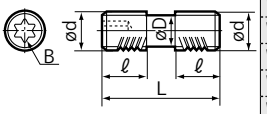
Double Screw



*: Wrench hole on the left-hand thread side only.

	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
	WB4-8	★	M4	0.7	7.5	3	3.0	2	—
	WB5-10	★	M5	0.8	10	4	3.8	2.5	—
	WB5-12	★	M5	0.8	12	5	3.8	2.5	—
	WB5-18	★	M5	0.8	18	6	3.8	2.5	—
	WB6-10	★	M6	1.0	10	3.5	4.5	3	—
	WB6-13	★	M6	1.0	13	5	4.5	3	—
	WB6-16	★	M6	1.0	16	6	4.5	3	—
	WB6-20	★	M6	1.0	20	8.5	4.5	3	—
	WB6-30	★	M6	1.0	30	12	4.5	3	—
	WB8-20	★	M8	1.25	20	8.5	6.2	4	—
	WB8-24	★	M8	1.25	24	8.5	6.2	4	—
	WB8-30	★	M8	1.25	30	11.5	6.2	4	—
	WB8F-30		M8	1.0	30	11.5	6.2	4	—

Double Screw (Single Torx)

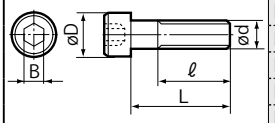


Torx Hole Position
Part number suffix: T indicates left-hand thread side, TL indicates right-hand thread side

Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
WB6-13T	★	M6	1.0	13	5	4.5	T20	—
WB6-16T	★	M6	1.0	16	6	4.5	T20	—
WB6-20T	★	M6	1.0	20	8.5	4.5	T20	—
WB6-20TL	★	M6	1.0	20	8.5	4.5	T20	—
WB7-15T	★	M7	1.0	15	5.5	5	T25	—
WB7F-15T	★	M7	0.75	15	5.5	5	T25	—
WB7F-20TL	★	M7	0.75	20	8.5	5.5	T25	—
WB8-22T	★	M8	1.25	22	8.5	6.2	T27	—
WB8-22TL	★	M8	1.25	22	8.5	6.2	T27	—
WB8-30T	★	M8	1.25	30	11.5	6.2	T27	—
WB8-30TL		M8	1.25	30	11.5	6.2	T27	—
WB8R-16T	★	M8	1.25	14	5.5	6.2	T27	—
WB8L-16T	★	M8	1.25	14	5.5	6.2	T27	—

Cap Screw

Fig 1

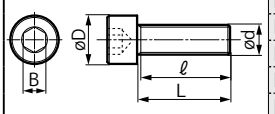


Torx Hole



*: With Torx hole

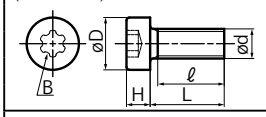
Fig 2



	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	Fig	N·m
	BX0304	★	M3	0.5	4	Full thread	5.5	2.5	1	—
	BX0308	★	M3	0.5	8	Full thread	5.5	2.5	1	—
	BX0315	★	M3	0.5	15	Full thread	5.5	2.5	1	—
	BX0408	★	M4	0.7	8	Full thread	7	3	1	—
	BX0410	★	M4	0.7	10	Full thread	7	3	1	—
	BX0430	★	M4	0.7	30	20	7	3	1	—
	BX0414	★	M4	0.7	14	Full thread	7	3	1	—
	BX0418	★	M4	0.7	18	—	7	3	1	—
	BX0425	★	M4	0.7	25	20	7	3	1	—
	BX0508	★	M5	0.8	8	Full thread	8.5	4	1	—
	BX0510	★	M5	0.8	10	Full thread	8.5	4	1	—
	BX0512	★	M5	0.8	12	Full thread	8.5	4	1	—
	BX0515	★	M5	0.8	15	Full thread	8.5	4	1	—
	BX0520	★	M5	0.8	20	Full thread	8.5	4	1	**5.0**
*	**BX0520T**	★	M5	0.8	20	16	8.5	T20	1	—
	BX0610	★	M6	1.0	10	Full thread	10	5	1	—
	BX0615	★	M6	1.0	15	Full thread	10	5	1	—
	BX0620	★	M6	1.0	20	Full thread	10	5	1	—
	BX0622	★	M6	1.0	22	18	10	5	1	—
	BX0625	★	M6	1.0	25	18	10	5	1	—
	BX0635	★	M6	1	35		10	5	1	—
	BX0640	★	M6	1	40		10	5	1	—
	BX0820	★	M8	1.25	20	Full thread	13	6	1	—
	BX0840	★	M8	1.25	40		13	6	1	—
	BX0845	★	M8	1.25	45		13	6	1	
	BX0850	★	M8	1.25	50		13	6	1	
	BX1045	★	M10	1.5	45		16	8	1	—
	BX1060	★	M10	1.5	60		16	8	1	
	BX1070	★	M10	1.5	70		16	8	1	—
	BX1240	★	M12	1.75	40		18	10	1	—
	BX1260	★	M12	1.75	60		18	10	1	
	BX1265	★	M12	1.75	66		18	10	1	
	BX1660	★	M16	2.0	60		24	14	1	
	BX2065	★	M20	2.5	65		30	17	1	
	EHBX0512	★	M5	0.8	12	10.5	8	4	1	—
*	**FADR**	★	M7	1.0	10	7	10.5	T25	1	—
	CP-M8-25-1	★	M8	1.25	25	Full thread	13	6	2	—

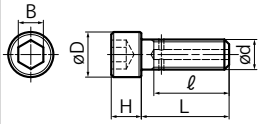
■ Screws

Cap Screw (Torx Plus)



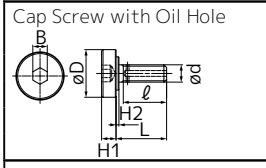
Cat. No.	Stock	d	Pitch	L	ℓ	D	H	B	N·m
BXA0310IP	★	M3	0.5	7.5	Full thread	5.3	2.4	10IP	2.0

Cap Screw with Oil Hole



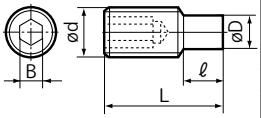
Cat. No.	Stock	d	Pitch	L	ℓ	D	H	B	N·m
BXH0825-D13	★	M8	1.25	25	Full thread	13	8	6	—
BXH1030-D16	★	M10	1.5	30	Full thread	16	10	8	—
BXH1235-D18	★	M12	1.75	35	Full thread	18	12	10	—

Cap Screw with Oil Hole



Cat. No.	Stock	d	Pitch	L	ℓ	D	H1	H2	B	N·m
BXH1235-D33	★	M12	1.75	35	Full thread	33	10	2	10	—
BXH1635-D40	★	M16	2.0	35	30	40	10	—	14	—
BXH2036-D50	★	M20	2.5	36	29	50	14	4	17	—

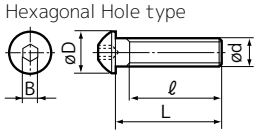
Set Screw



Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
BTD0408	★	M4	0.7	8	2	2.8	2	—
BTD0508	★	M5	0.8	8	2	3.5	2.5	—
BTD05F09	★	M5	0.5	9	2	4	T15	—
BTD0510	★	M5	0.8	10	3	3.5	2.5	—
BTD0609	★	M6	1.0	9	2	4	3	—
BTD0812	★	M8	1.25	12	2	5	4	—
BTD0818	★	M8	1.25	18	6	5	4	—

Button Head Screw

Hexagonal Hole type



Torx Hole

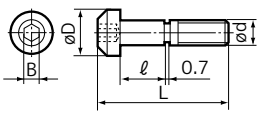


"T" after the part number indicates "Torx hole"

★: Same wrench hole (B) on the screw end
*: Left-hand threads

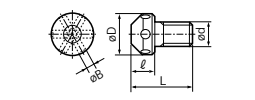
	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
	BH0304	★	M3	0.5	4	Full thread	5.5	2	—
	BH0306	★	M3	0.5	6	Full thread	5.5	2	—
	FBUP3-A0-9 (equiv. BH0308)	★	M3	0.5	8	Full thread	5.5	2	**1.0**
	BH0310	★	M3	0.5	10	Full thread	5.5	2	—
	BH03504	★	M3.5	0.6	4	Full thread	7	2	—
	BH0408	★	M4	0.7	8	Full thread	6	2.5	—
	BH0410T	★	M4	0.7	10	8	7.5	T15	—
	BH0516	★	M5	0.8	16	14.4	9.5	3	—
	BH0615	★	M6	1.0	15	Full thread	10.5	4	—
	BH0616	★	M6	1.0	16	14	10.5	4	—
	BH0620	★	M6	1.0	20	Full thread	10.5	4	—
	BH0824R	★	M8	1.25	24	20	12	4	—
*	**BH0824L**	★	M8	1.25	24	20	12	4	—
	BH0825	★	M8	1.25	25	22.5	14	5	—
	BH0830R	★	M8	1.25	30	26	12	4	—
*	**BH0830L**	★	M8	1.25	30	26	12	4	—
	BH1030R	★	M10	1.5	30	26	14	5	—
*	**BH1030L**	★	M10	1.5	30	26	14	5	—
	BH1036R	★	M10	1.5	36	32	14	5	—
*	**BH1036L**	★	M10	1.5	36	32	14	5	—

Cap Screw



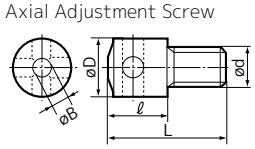
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
BHA0525	★	M5	0.8	25.5	9	8.5	3	—
BHA0625	★	M6	1.0	30	11	10.5	4	—
BHA0834		M8	1.25	34.2	12.7	12	5	—
BHE0407	★	M4	0.7	9.5	2	5.7	2.5	**1.8**
BHE0510	★	M5	0.8	13	3	7.7	3	**2.7**

Axial Adjustment Screw



Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
AJM4F	★	M4	0.5	12	5	8	2	—

Axial Adjustment Screw



Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
RFJ	★	M4	0.7	12	6	6	2	—

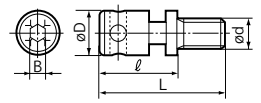
See each product page for the recommended tightening torque (N·m) in use.

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Screws

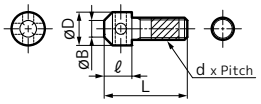
■ Screws

Adjustment Screw



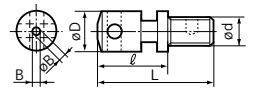
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
SRFJ	★	M4	0.7	17	10.5	6	2	—

Axial Adjustment Screw



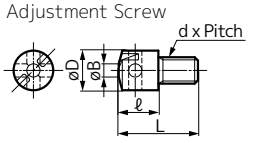
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
FMJ	★	M4	0.5	15	5	6	3	—

Adjustment Bolt



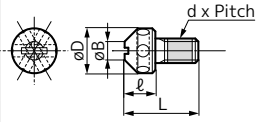
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
FMUJ	★	M4	0.7	17	10.5	6	1	—

Adjustment Screw



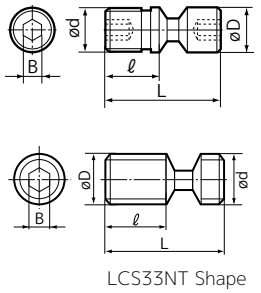
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
HFJ	★	M4	0.7	12	6	6	2	—

Axial Adjustment Screw



Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
AJM4FT	★	M4	0.5	12	5	7.3	3	—

Lever Lock Bolt

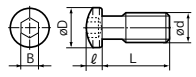


LCS33NT Shape

Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
LCS2B		M3	0.5	10	3.05	3.6	2	
LCS3	★	M6	1.0	17	10	6	2.5	—
LCS3B-SD		M5	0.8	9.5	4.2	5	2	—
LCS3DB-SD		M5	0.8	12	6	5	2	—
LCS3S		M6	1.0	15	10	6	2.5	—
LCS3TB-SD		M6	1.0	16.7	9.6	6	2.5	—
LCS4	★	M8	1.0	21	10	8	3	—
LCS4B-SD		M6	1.0	13.4	9	6	2.5	—
LCS41BS-SD		M8	1.0	17	9.3	8	3	—
LCS42BS-SD	★	M8	1.0	20.7	9.8	8	3	—
LCS5	★	M8	1.0	25	12	8	3	—
LCS5B-SD		M8	1.0	20.5	12.3	8	3	—
LCS5DB-SD		M8	1.0	21.1	11.4	8	3	—
LCS6	★	M10	1.0	27.2	14.4	9.8	4	—
LCS6B-SD	★	M10	1.0	27.2	14.4	10	4	—
LCS4CA	★	M8	1.0	17.5	10	8	3	—
LCS8	★	M12	1.0	36	18.3	11.8	5	—
LCS10	★	M5	0.8	14.5	8.5	5	2	—
LCS12	★	M6	1.0	17	9.6	6	2.5	—
LCS16	★	M6	1.0	21	13.6	6	2.5	—
LCS20	★	M8	1.0	23.5	13.2	8	3.0	—
LCS25	★	M10	1.0	30	17.4	10	4.0	—
LCS32	★	M12	1.0	36	19.3	12	5.0	—
LCS3TE	★	M6	1.0	15.5	8.5	6	2.5	—
LCS33NT	★	M5	0.8	12	6.2	—	2	—

■ Screws

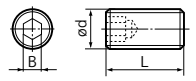
Button Head Screw



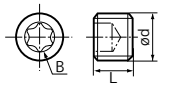
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
FBH0512	★	M5	0.8	12	3.1	7.3	3	—
FBX0811	★	M8	1.25	11.1	4.9	8.5	4	—
FBX0817	★	M8	1.25	17.1	4.9	8.5	4	—

Set Screw

Hexagonal Hole type



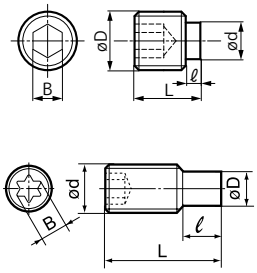
Torx Hole



Shape of BT06035T

Cat. No.	Stock	d	Pitch	L	—	B	—	N·m
BT0306	★	M3	0.5	6	—	1.5	—	—
BT0310		M3	0.5	10	—	1.5	—	—
BT0404	★	M4	0.7	4	—	2	—	—
BT0406	★	M4	0.7	6	—	2	—	—
BT0408	★	M4	0.7	8	—	2	—	—
BT0412	★	M4	0.7	12	—	2	—	—
BT0506	★	M5	0.8	6	—	2.5	—	—
BT0510		M5	0.8	10	—	2.5	—	—
BT06035T	★	M6	1.0	3.5	—	T15	—	—
BT0610	★	M6	1.0	10	—	3	—	—
BT0612		M6	1.0	12	—	3	—	—
BT0620		M6	1.0	20	—	3	—	—

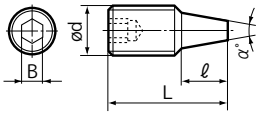
Set Screw (Rod tipped)



BTD0615T

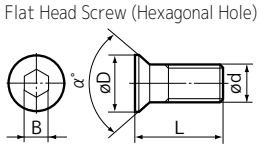
Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
BTD0410		M4	0.7	10	2	2.8	2	—
BTD0412		M4	0.7	12	2	2.8	2	—
BTD0518		M5	0.8	18	4	3.5	2.5	—
BTD0615		M6	1.0	15	5	4	3	—
BTD0618		M6	1.0	18	5	4	3	—
BTD0620		M6	1.0	20	5	4	3	—
BTD0809	★	M8	1.25	9	2	5	4	—
BTD0820		M8	1.25	20	6	5	4	—
BTD0825		M8	1.25	25	8.5	5	4	—
BTD1012	★	M10	1.5	12	2	8	5	—
BTD0615T		M6	1.0	15	5	4.3	T20	—

Set Screw



Cat. No.	Stock	d	Pitch	L	ℓ	—	B	α°	N·m
BTT0407	★	M4	0.5	7	2.6	—	2	60	—
BTT0411	★	M4	0.5	11	2.6	—	2	60	—
BTT0511		M5	0.8	11	5	—	2	20	—
BTT0615		M6	1.0	15	6	—	2,5	20	—

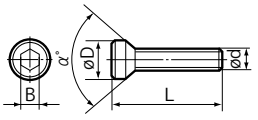
Flat Head Screw (Hexagonal Hole)



*: Left-hand threads *

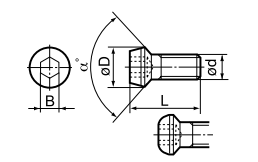
Cat. No.	Stock	d	Pitch	L	D	B	α°	N·m
FBUP2-A0-8	★	M3	0.5	10	5.5	2	82	**1.0**
FBUP3-A0-9	★							
FBUP4-A0-8		M3	0.8	15	9.3	3	82	**2.7**
BFX0410R	★	M4	0.7	9.5	5.8	2.5	90	**1.8**
BFX0410L	★	M4	0.7	9.5	5.8	2.5	90	**1.8**
BFX0511R	★	M5	0.8	10.5	7.5	3	90	**2.7**
* **BFX0511L**	★	M5	0.8	10.5	7.5	3	90	**2.7**

Special Cap Screw

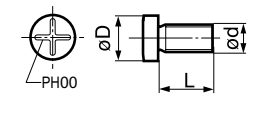


Cat. No.	Stock	d	Pitch	L	D	B	α°	N·m
BXF0520R	★	M5	0.8	25	8.5	4	90	**7.0**
BXF0616	★	M6	1.0	16	9	4	90	—

Button Head Screw



Cat. No.	Stock	d	Pitch	L	D	B	α°	N·m
BHF0203L		M2	0.4	4	3	1.5	90	
BHF0203B		M2	0.4	5.5	3.5	1.5	90	
BHF0306R	★	M3	0.5	6.3	4.2	2	90	**1.0**
BHF0308R	★	M3	0.5	8	4.2	2	90	**1.0**
BHF0410	★	M4	0.7	11.5	6	3	90	
BHF0623	★	M6	1.0	23	12	4	90	**7.0**



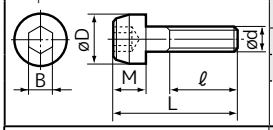
Cat. No.	Stock	d	Pitch	L	—	D	—	N·m
MIB1.6-2	★	M1.6	0.35	2.0	—	2.4	—	**0.2**
MIB1.6-2.5	★	M1.6	0.35	2.5	—	2.4	—	**0.2**
MIB1.6-3	★	M1.6	0.35	3.0	—	2.4	—	**0.2**

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Screws

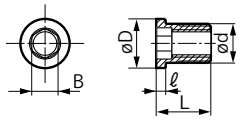
■ Screws

Cap Screw



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	M	N·m
QBX120	★	M12	1.75	54	30	22	10	14	—
QBX160	★	M16	2.0	56	30	28	14	16	—

Special Hollow Screw



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
BW0507F	★	M5	0.5	7	1.2	6.3	3.5	—
BW0508F-SD		M5	0.5	8	1.2	6.3	3.5	—
BW0609F	★	M6	0.75	9	1.5	7.7	4	—
BW0810F-SD		M8	0.75	10	1.8	10	5	—
BW0912F-SD		M9	0.75	12				—
KGBS1111	★	M5	0.5	8	1.2	6	3.5	—
KGBS1221	★	M6	0.75	9	1.5	7.5	4.5	—

Flat Head Screw (Torx Hole)

Fig 1

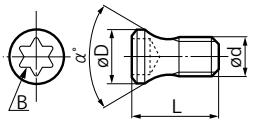


Fig 2

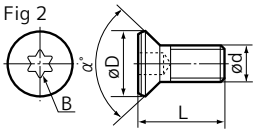


Fig 3

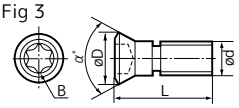
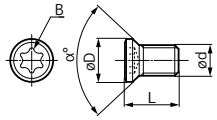


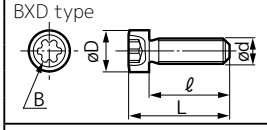
Fig 4



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	Fig	N·m
BFT2045T06	★	M2	0.4	4.5	2.7	T6	60	1	—
BFT2506T08	★	M2.5	0.45	6	3.45	T8	60	1	—
BFTY02205	★	M2.2	0.45	5	3.05	T7	60	1	—
BFTY02206	★	M2.2	0.45	5.6	3.05	T7	60	1	**1.0**
BFN0511T	★	M5	0.8	10.5	7.3	T20	90	2	—
BFTX016033	★	M1.6	0.35	3.3	2.6	T6	60	1	**0.2**
BFTX02507	★	M2.5	0.45	6.5	3.45	T8	60	4	—
BFTX03508	★	M3.5	0.6	8	5.1	T10	52	4	**2.0**
BFTX03584	★	M3.5	0.6	7.4	5.2	T15	60	4	**3.0**
BFTX03588	★	M3.5	0.6	8.8	5.2	T15	60	4	**3.4**
BFTX03510SD		M3.5	0.6	10	5.3	T10	60	2	**2.0**
BFTX03517SD		M3.5	0.6	17	5.3	T10	60	2	**2.0**
BFTX0408	★	M4	0.7	8	5.5	T15	60	1	—
BFTX0414	★	M4	0.7	14.5	5.5	T15	60	1	**3.0**
BFTX0517SD		M5	0.8	17	7.2	T20	60	2	**5.0**
BFTX0618SD		M6	1.0	18		T25	60	2	**7.5**
BFTX01604N	★	M1.6	0.35	4.2	2.4	T6	60	1	**0.2**
BFTX0203N	★	M2	0.4	3	2.7	T6	60	1	**0.5**
BFTX0204N	★	M2	0.4	4.3	2.7	T6	60	1	**0.5**
BFTX02205N	★	M2.2	0.45	4.5	3	T6	60	1	**0.5**
BFTX02505N	★	M2.5	0.45	4.5	3.45	T8	60	4	**1.1**
BFTX02506N	★	M2.5	0.45	5.5	3.45	T8	60	4	**1.5**
BFTX0305N	★	M3	0.5	5.3	4.2	T10	60	1	**2.0**
BFTX0306N	★	M3	0.5	5.8	4.2	T10	60	4	**2.0**
BFTX0307N	★	M3	0.5	6.5	4.2	T10	60	4	**2.0**
BFTX03085N	★	M3	0.5	8.5	5.4	T10	60	1	—
BFTX0312N	★	M3	0.5	12	5.4	T10	60	1	—
BFTX0407N	★	M4	0.7	7	5.6	T15	60	4	**3.0**
BFTX0409N	★	M4	0.7	9	5.6	T15	60	4	**3.4**
BFTX0412N	★	M4	0.7	12	5.5	T15	60	1	**3.0**
BFTX0509N	★	M5	0.8	9	7	T20	60	4	**5.0**
BFTX0511N	★	M5	0.8	11.5	7	T20	60	4	**5.0**
BFTX0513N	★	M5	0.8	13	7	T20	60	1	**5.0**
BFTX0515N	★	M5	0.8	15	7	T20	60	2	—
BFTX0615N	★	M6	1.0	15	9	T25	60	4	**5.0**
BFTX0619N	★	M6	1.0	19	9.3	T25	60	4	**5.0**
BFTX0203A	★	M2	0.4	3	2.7	T6	90	1	**0.5**
BFTX0204A	★	M2	0.4	4.3	2.7	T6	90	1	**0.5**
BFTX0305A	★	M3	0.5	5.3	4.3	T10	90	1	—
BFTX0306A	★	M3	0.5	5.8	4.3	T10	90	1	**2.0**
BFTX0307A	★	M3	0.5	6.8	4.3	T10	90	1	**2.0**
BFTX0407A	★	M4	0.7	7.3	5.6	T15	90	1	**3.4**
BFTX0410A	★	M4	0.7	10.3	5.6	T15	90	1	**3.4**
BFTX0509A	★	M5	0.8	9.3	6.9	T20	90	1	**5.0**
BFTX0204NS	★	M2	0.4	4.4	3.2	T1.8	82	2	**0.7**
BFTX0205NS	★	M2	0.4	5.5	3.2	T1.8	90	4	**0.7**
BFTX02506NS	★	M2.5	0.45	6.8	3.6	T2.2	90	4	**1.4**
BFTX0307NS	★	M3	0.5	7.8	4.2	T2.9	90	4	**3.0**
BFTX02206NT	★	M2.2	0.45	6	3.2	T1.8	60	4	**0.7**
BFTX02507NT	★	M2.5	0.45	7	3.6	T2.2	60	4	**1.4**
BFTX0408NT	★	M4	0.7	8	5.8	T3.6	60	4	**5.0**
BFTX0410NT	★	M4	0.7	10	5.8	T3.6	60	4	**5.0**
BFTX02508NV	★	M2.5	0.45	7.5	3.45	T8	60	3	**1.5**
BFTX0407K	★	M4	0.7	7	5.5	T15	86	4	—

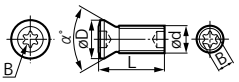
■ Screws

Special Cap Screw BXD type



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
BFF2506T08	★	M2.5	0.8	7.5	6	3.45	T8	—
BFF3505T10	★	M3.5	0.6	6.6	5	5	T10	—
BFF4510T15	★	M4.5	0.75	12.1	10.5	5.9	T15	—

Flat Head Screw (Torx Double Ended)

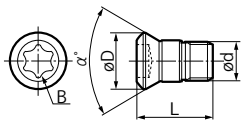


*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFTX0410T8R	★	M4	0.7	9.6	5.6	T8	60	**1.1**
BFTX0410T8L	★							**1.1**

R: right-hand thread, L: left-hand thread

Fine Thread Flat Head Screw (Torx Hole) (For SEC Ballnose Endmills)



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFTG0408F	★	M4	0.5	7.5	5.7	T15	61	**3.4**
BFTG0409F	★	M4	0.5	8.4	6.15	T15	61	**3.4**
BFTG0513F	★	M5	0.5	13	6.8	T20	61	**5.0**
BFTG0617F	★	M6	0.75	16.5	8	T25	61	**7.5**
BFTG0621F	★	M6	0.75	21	9.5	T25	61	**7.5**
BFTG0825F	★	M8	0.75	24.5	12	T25	61	**7.5**

Flat Head Screw (Torx Plus)

Fig 1

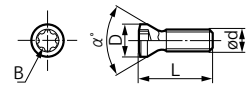
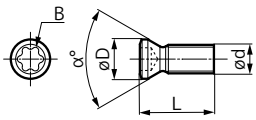


Fig 2



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	Fig	N·m
BFTX01804IP	★	M1.8	0.35	3.7	2.45	6IP	60	1	—
BFTX02505IP	★	M2.5	0.45	4.5	3.45	8IP	60	1	—
BFTX02506IP	★	M2.5	0.45	5.5	3.45	8IP	60	1	—
BFTX02507IP	★	M2.5	0.45	6.5	3.45	8IP	60	2	—
BFTX0305IP	★	M3	0.5	5.3	3.8	8IP	60	1	**2.0**
BFTX0306IP	★	M3	0.5	6	3.8	8IP	60	1	**2.0**
BFTX0307IP	★	M3	0.5	7	4.3	10IP	55	1	**2.0**
BFTX0308IP	★	M3	0.5	8	3.8	8IP	60	1	—
BFTX03510IP	★	M3.5	—	9.65	5.3	—	60	1	—
BFTX03510IP08	★	M3.5	0.6	10	5.3	8IP	60	1	—
BFTX03510IP15	★	M3.5	0.6	10	5.3	15IP	60	1	—
BFTX03512IP	★	M3.5	0.6	11.5	5.3	15IP	60	1	**3.0**
BFTX03584IP	★	M3.5	0.6	7.4	5.2	15IP	60	1	—
BFTX0407IP	★	M4	0.7	8	5.6	15IP	60	1	**3.0**
BFTX0409IP	★	M4	0.7	9	5.6	15IP	60	1	**3.0**
BFTX04095IP	★	M4	0.7	9.5	5.6	15IP	60	2	—
BFTX0412IP	★	M4	0.7	12	5.5	15IP	60	1	**3.0**
BFTX0418IP	★	M4	0.7	18	5.5	15IP	60	1	—
BFTX04513IP20	★	M4.5	0.75	13.1	6.8	20IP	60	1	—
BFTX0511IP	★	M5	0.8	11.5	7	20IP	60	1	—
BFTX0513IP	★	M5	0.8	13	7	20IP	60	1	—
BFTX0615IP	★	M6	1.0	15	9	25IP	60	1	—
BXD02208IPC	★	M2.2	0.45	7.5	3.5	8IP	0	1	—
BXD02509IPC	★	M2.5	0.45	9	4.1	10IP	0	1	—
BXD03011IPC	★	M3	0.5	10.5	4.9	15IP	0	1	—
BXD03512IPC	★	M3.5	0.6	11.5	5.5	15IP	0	1	—
BXD04014IPC	★	M4	0.7	12.5	6	20IP	0	1	—
BXD04515IPC	★	M4.5	0.75	14.3	6.8	25IP	0	1	—

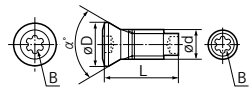
See each product page for the recommended tightening torque (N·m) in use.

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Screws

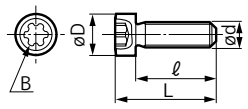
■ Screws

Flat Head Screw
(Torx Plus Double Ended)



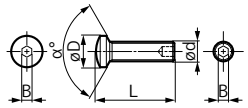
Cat. No.	Stock	Dimensions (mm)						N·m
		d	Pitch	L	D	B	α°	
BFTX0410NSW	★	M4	0.7	10	5.8	2.2	90	**1.4**
BFTX0410NTW	★	M4	0.7	10	5.85	2.2	60	**1.4**
BFTX0412NTW	★	M4	0.7	12	5.85	2.2	60	**1.4**

Cap Screw
(Torx Plus)



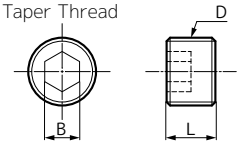
Cat. No.	Stock	Dimensions (mm)						N·m
		d	Pitch	L	ℓ	D	B	
BXD02208IP	★	M2.2	0.45	7.5	5.7	3.5	8IP	—
BXD02509IP	★	M2.5	0.45	9	7	4.1	10IP	—
BXD03011IP	★	M3	0.5	10.5	8	4.9	15IP	—
BXD03512IP	★	M3.5	0.6	11.5	8.8	5.5	15IP	—
BXD04014IP	★	M4	0.7	12.5	9.5	6	20IP	—
BXD04515IP	★	M4.5	0.75	14.3	10.8	6.8	25IP	—

Oval Head Screw



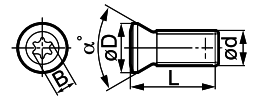
Cat. No.	Stock	Dimensions (mm)						N·m
		d	Pitch	L	D	B	α°	
FBH0520NT	★	M5	0.8	20	8	2.5	120	—

Taper Thread



Cat. No.	Stock	Dimensions (mm)						N·m
		D	L	B	—	—	—	
XP02	★	R 1/8	7	5	—	—	—	—

Torx Flat Head Crew

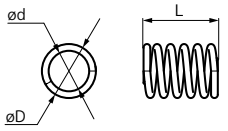


Cat. No.	Stock	Dimensions (mm)						N·m
		d	Pitch	L	D	B	α°	
KSS1111	★	3.5	0.6	11	5.2	T15	55	**3.5**
KSS1221	★	4.5	0.75	12	6.6	T15.3	55	**4.5**

★mark: Global stocked item
▲mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

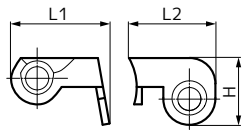
Springs / Covers / Cassettes / Eccentric Pins

■ Springs



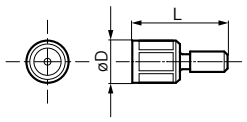
Cat. No.	Stock	Dimensions (mm) d	D	L	—	—	—	N·m —
CSP08	★	6.5	8	10	—	—	—	—
CSP12	★	9.6	12	10	—	—	—	—
CSP12J	★	6	8	10	—	—	—	—
CSP25	★	2	2.5	12	—	—	—	—
GSP-5	★	5.3	6.5	6.5	—	—	—	—
GSP06	★	6.4	7.6	7	—	—	—	—
GSP10	★	8.5	10.5	12	—	—	—	—
DSP5	★	2.3	3.3	10.5	—	—	—	—
S-SP4-20	★	3	4	20	—	—	—	—

■ Covers



Cat. No.	Stock	Dimensions (mm) L1	L2	H	—	—	—	N·m —
RFC	★	17	15	12	—	—	—	—

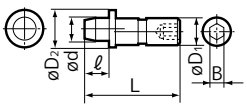
■ Cassettes



Cat. No.	Stock	Dimensions (mm) D	L	—	—	—	—	N·m —
BNRE-08	★	6.2	14	—	—	—	—	—
BNRE-10	★	8	16	—	—	—	—	—
BNRE-12	★	9.9	18.5	—	—	—	—	—
BNRE-16	★	12.6	21	—	—	—	—	—
BNRE-20	★	17	20.5	—	—	—	—	—

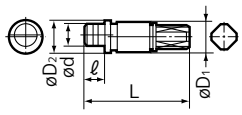
■ Eccentric Pins

For SEC-Boring Bars



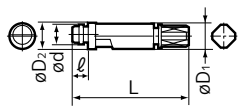
Cat. No.	Stock	Dimensions (mm) d	D1	D2	L	ℓ	B	N·m —
CPB43	★	4.5	5.5	7	19	5	3	—
CPB44T	★	4.5	5.5	7	22	5	3	—
CPB45T	★	4.5	5.5	7	27	5	3	—
CPB43S	★	4.5	5.5	7	16	5	3	—
CPB32C	★	3.3	4.1	5.5	14	3.4	2.5	—
CPB32	★	3.4	4.1	5.5	14	3.4	2.5	—
CPB34	★	3.4	4.1	5.5	14	5	2.5	—
CPB35	★	3.4	4.1	5.5	17	5	2.5	—
CPB42	★	4.5	5.5	7	14	5	3	—
CPB64	★	6.8	8.2	10.5	24	6.6	4	—

For SEC-30 type Holders



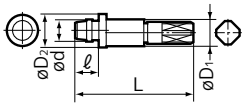
Cat. No.	Stock	Dimensions (mm) d	D1	D2	L	ℓ	—	N·m —
P432U	★	5.025	7	7.5	21	4.9	—	—
P433U	★	5.025	7	7.5	24	4.9	—	—
P434U	★	5.025	7	7.5	30	4.9	—	—
P221US	★	2.11	3.5	4	18	3.3	—	—
P321US	★	3.635	5	5.5	18	3.3	—	—
P322US	★	3.635	5	5.5	21	3.3	—	—
P323US	★	3.635	5	5.5	24	3.3	—	—
P332US	★	3.635	5	5.5	21	4.9	—	—
P333US	★	3.635	5	5.5	24	4.9	—	—
P334US	★	3.635	5	5.5	30	4.9	—	—

For SEC-30 type Holders



Cat. No.	Stock	Dimensions (mm) d	D1	D2	L	ℓ	—	N·m —
P433W	★	5.025	7	7.8	24	4.9	—	—
P434W	★	5.025	7	7.8	30	4.9	—	—
P323WS	★	3.635	5	5.8	24	3.3	—	—
P333WS	★	3.635	5	5.8	24	4.9	—	—
P334WS	★	3.635	5	5.8	30	4.9	—	—

For SEC-60 type Holders



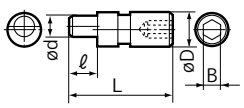
Cat. No.	Stock	Dimensions (mm) d	D1	D2	L	ℓ	—	N·m —
CPZ333	▲	3.4	4.1	5.5	25	5	—	—
CPZ333V	★	3.4	4.1	5.5	29	5	—	—
CPZ334	★	3.4	4.1	5.5	32	5.5	—	—
CPZ334V	★	3.4	4.1	5.5	35	5	—	—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Eccentric Pins / Lever Pins / Clamp Plates

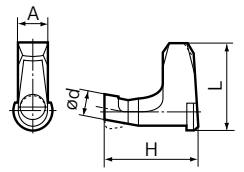
■ Eccentric Pins

For SEC-Cartridge BU

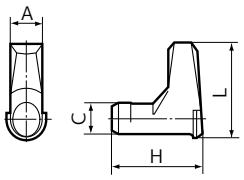


Cat. No.	Stock	Dimensions (mm)						N·m
		d	D	L	ℓ	B	—	
CPU304C	★	3.3	5.5	10	3.5	3	—	—

■ Lever Pins

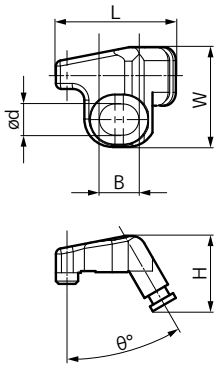


Cat. No.	Stock	Dimensions (mm)						N·m
		A	H	L	d	—	—	
LCL06	★	2.5	6.28	7	2	—	—	—
LCL09	★	3.4	9.3	10.75	3	—	—	—
LCL10	★	3.4	11.8	10.8	3	—	—	—
LCL12	★	3.7	13.4	12.9	3.5	—	—	—
LCL16	★	4.6	17.6	18.4	4.4	—	—	—
LCL20	★	6	18.9	20.4	5.6	—	—	—
LCL25	★	7.5	23.5	23.9	6.2	—	—	—
LCL32	★	8.5	26.8	29.8	8	—	—	—

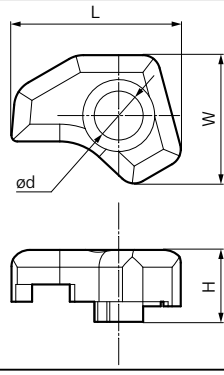


Cat. No.	Stock	Dimensions (mm)						N·m
		A	H	L	C	—	—	
LCL3S	★	3.7	10.6	10	3.6	—	—	—
LCL3-SD	★	3.7	12	10		—	—	—
LCL3C-SD		3.1	7.8	9.9	3.1	—	—	—
LCL3D-SD	★	3.7	11.5	12		—	—	—
LCL3DB-SD		3.1	9.4	11.5	3.1	—	—	—
LCL3T-SD		2.6	6.3	7.2	2.15	—	—	—
LCL4S	★	4.7	14	14.55	4.4	—	—	—
LCL4-SD	★	4.65	13.2		4.7	—	—	—
LCL4C-SD		4.65	10		4.7	—	—	—
LCL4D-SD	★	4.65	14.8	16	4.7	—	—	—
LCL4T-SD		4.65	13.2		4.7	—	—	—
LCL3	★	3.7	12	10	3.6	—	—	—
LCL4	★	4.7	14	14.55	4.7	—	—	—
LCL5	★	6	17	17.1	6	—	—	—
LCL5-SD		6	17,3		6	—	—	—
LCL5C-SD		7.5	18,1		7.5	—	—	—
LCL6	★	7.5	21	20.5	7.5	—	—	—
LCL6-SD		7.5	21		7.5	—	—	—
LCL8	★	8.6	25.4	25.4	8.6	—	—	—
LCL33NT	★	3.2	9.4	10	3.2	—	—	—

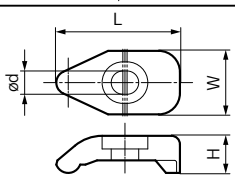
■ Clamp Plates



Cat. No.	Stock	Dimensions (mm)						N·m
		W	L	d	B	H	θ°	
JCR-01	★	17.9	21.6	5.6	7.1	13.5	30	—
JCL-01	★	17.9	21.6	5.6	7.1	13.5	30	—
JDR-01	★	16.5	25.9	5.6	7.2	14.4	30	—
JDL-01	★	16.5	25.9	5.6	7.2	14.4	30	—
JVR-01	★	18.3	28.9	5.6	7.5	15.2	30	—
JVL-01	★	18.3	28.9	5.6	7.5	15.2	30	—



Cat. No.	Stock	Dimensions (mm)						N·m
		W	L	d	H	—	—	
DCR1	★	23.5	29.3	8.5	12.5	—	—	—
DCL1	★	23.5	29.3	8.5	12.5	—	—	—
DCR2	★	22.3	29.4	8.5	12.5	—	—	—
DCL2	★	22.3	29.4	8.5	12.5	—	—	—
DCR3	★	27.7	35.4	10.5	12.5	—	—	—
DCL3	★	27.7	35.4	10.5	12.5	—	—	—

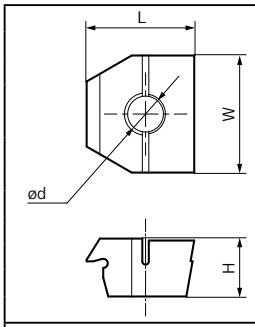


Cat. No.	Stock	Dimensions (mm)						N·m
		W	L	d	H	—	—	
TRCP3	★	15	29.2	5.5	8.8	—	—	—

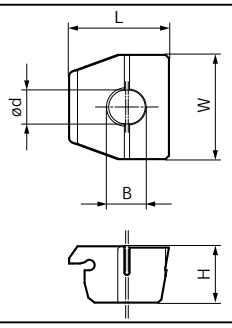
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Clamp Plates

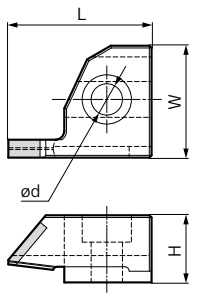
■ Clamp Plates



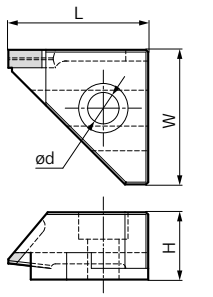
Cat. No.	Stock	Dimensions (mm) W	L	d	H	—	—	N·m
MMW30	★	18	16.6	5.5	8.9	—	—	—
MMW40	★	24	18	6.5	11	—	—	—



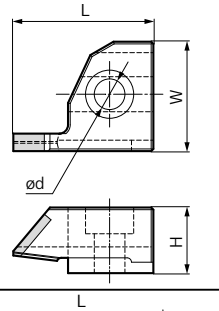
Cat. No.	Stock	Dimensions (mm) W	L	d	H	B	—	N·m
MWW40	★	20	19.15	6.5	10.8	7.35	—	—



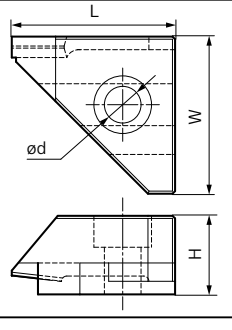
Cat. No.	Stock	Dimensions (mm) W	L	d	H	—	—	N·m
GDW600R	★	25	32	7	15	—	—	—
GDW600L	★	25	32	7	15	—	—	—
GDW615R	★	21	37	7	15	—	—	—
GDW615L	★	21	37	7	15	—	—	—
GDW800R	★	25	32	7	15	—	—	—
GDW800L	★	25	32	7	15	—	—	—
GDW815R	★	22.5	37	7	15	—	—	—
GDW815L	★	22.5	37	7	15	—	—	—



Cat. No.	Stock	Dimensions (mm) W	L	d	H	—	—	N·m
GDW645R	★	30	31.2	7	15	—	—	—
GDW645L	★	30	31.2	7	15	—	—	—
GDW845R	★	30	28	7	15	—	—	—
GDW845L	★	30	28	7	15	—	—	—

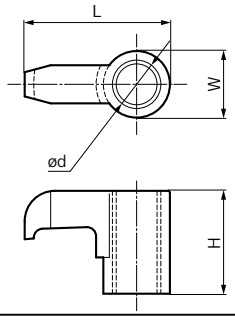


Cat. No.	Stock	Dimensions (mm) W	L	d	H	—	—	N·m
GDS600R	★	25	32	7	15	—	—	—
GDS600L	★	25	32	7	15	—	—	—
GDS615R	★	21	37	7	15	—	—	—
GDS615L	★	21	37	7	15	—	—	—
GDS800R	★	25	32	7	15	—	—	—
GDS800L	★	25	32	7	15	—	—	—
GDS815R	★	22.5	37	7	15	—	—	—
GDS815L	★	22.5	37	7	15	—	—	—

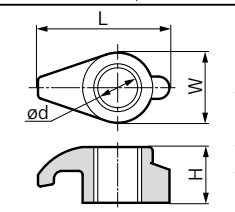


Cat. No.	Stock	Dimensions (mm) W	L	d	H	—	—	N·m
GDS645R	★	30	31.2	7	15	—	—	—
GDS645L	★	30	31.2	7	15	—	—	—
GDS845R	★	30	28	7	15	—	—	—
GDS845L	★	30	28	7	15	—	—	—

■ Clamp Plates

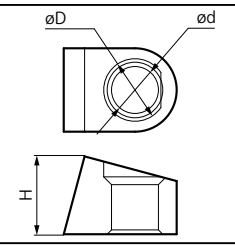


Cat. No.	Stock	Dimensions (mm) W	L	d	Pitch	H	—	N·m
CCM8-LONG	★	11	24	M8	1.25	17	—	—

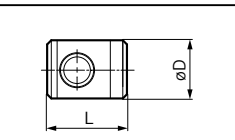


*: Left-hand threads

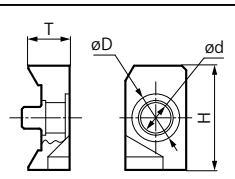
Cat. No.	Stock	Dimensions (mm) d	Pitch	W	L	H	—	N·m
CCM6BR	★	M6	1.0	8.8	16.5	7	—	—
* **CCM6BL**	★	M6	1.0	8.8	16.5	7	—	—
CCM5BSR	★	M5	0.8	6.8	14	7	—	—
* **CCM5BSL**	★	M5	0.8	6.8	14	7	—	—
* **CCM6UL**	★	M6	1.0	8.8	17.5	8	—	—
CCM8UR	★	M8	1.25	12	21	8	—	—



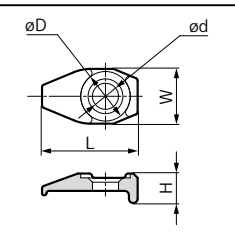
Cat. No.	Stock	Dimensions (mm) d	Pitch	D	H	—	—	N·m
BWS30	★	M8	1.25	9	11.2	—	—	—



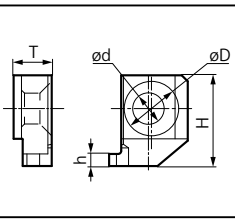
Cat. No.	Stock	Dimensions (mm) L	D	—	—	—	—	N·m
CKBW16	★	9.6	7.2	—	—	—	—	—



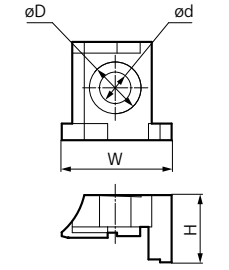
Cat. No.	Stock	Dimensions (mm) T	d	D	H	—	—	N·m
BNGCR	★	9.88	7	11	24	—	—	—
BNGCL	★	9.88	7	11	24	—	—	—



Cat. No.	Stock	Dimensions (mm) W	L	d	D	H	—	N·m
BNBC	★	6.3	11	3	5.7	3.4	—	—



Cat. No.	Stock	Dimensions (mm) T	d	D	h	H	—	N·m
GCLR-3	★	6.3	5.3	9	2	15	—	—
GCLL-3	★	6.3	5.3	9	2	15	—	—
GCLR-4	★	6.3	5.3	9	3	15	—	—
GCLL-4	★	6.3	5.3	9	3	15	—	—
GCLR-6	★	6.3	5.3	9	5	18	—	—
GCLL-6	★	6.3	5.3	9	5	18	—	—

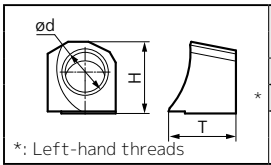


Cat. No.	Stock	Dimensions (mm) W	d	D	H	—	—	N·m
GTCR	★	30.4	8.7	14.3	18.6	—	—	—
GTCL	★	30.4	8.7	14.3	18.6	—	—	—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

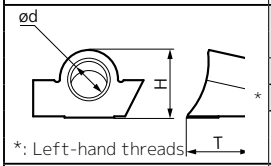
Clamp Plates

■ Clamp Plates



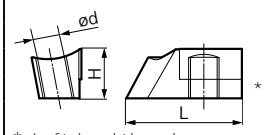
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
UFKWR	★	10	M7	1	10.54	—	—	—
* UFKWL	★	10	M7	1	10.54	—	—	—



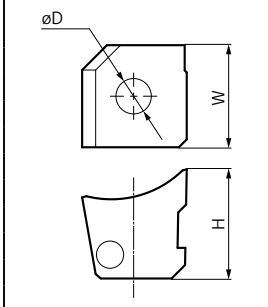
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
UFTWR	★	10	M7	1	11.3	—	—	—
* UFTWL	★	10	M7	1	11.3	—	—	—

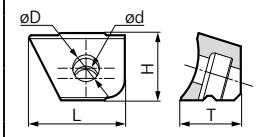


*: Left-hand threads

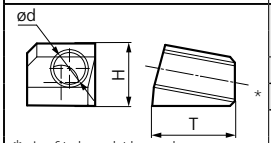
Cat. No.	Stock	Dimensions (mm) L	d	Pitch	H	—	—	N·m
GRWR	★	30.4	M8	1.25	13	—	—	—
* GRWL	★	30.4	M8	1.25	13	—	—	—



Cat. No.	Stock	Dimensions (mm) W	D	H	—	—	—	N·m
FPWR	★	15	5.2	16	—	—	—	—
FPWL	★	15	5.2	16	—	—	—	—
FEWR	★	15	5.2	15	—	—	—	—
FEWL	★	15	5.2	15	—	—	—	—

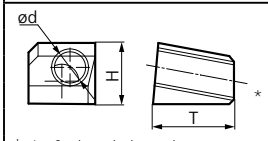


Cat. No.	Stock	Dimensions (mm) L	T	d	D	H	—	N·m
EHW4R	★	22	13.5	5.65	6.15	14.6	—	—
EHW5R	★	25	13.5	5.6	5.6	14.6	—	—



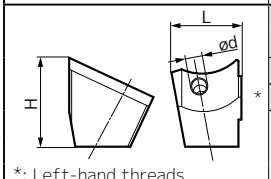
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
FTW40R	★	17	M8	1.25	12.85	—	—	—
* FTW40L	★	17	M8	1.25	12.85	—	—	—



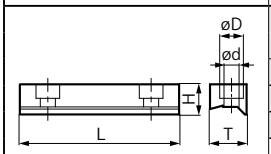
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
FTW41R	★	17	M8	1.25	12.85	—	—	—
* FTW41L	★	17	M8	1.25	12.85	—	—	—

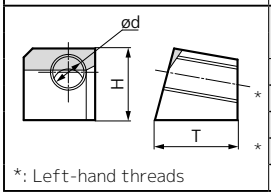


*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) L	d	Pitch	H	—	—	N·m
ATW45R	★	14	M8	1.25	17.9	—	—	—
* ATW45L	★	14	M8	1.25	17.9	—	—	—



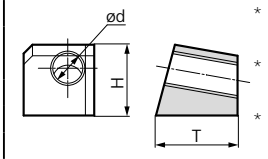
Cat. No.	Stock	Dimensions (mm) L	d	D	H	T	—	N·m
BCS15	★	74	7	11	14	17	—	—
BCS20	★	90	7	11	15.5	17	—	—
BCS25	★	100	7	11	15.5	17	—	—



*: Left-hand threads

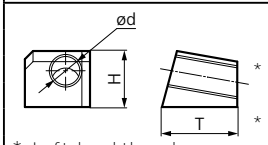
Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
GLW40R	★	18.5	M8	1.25	16.1	—	—	—
* GLW40L	★	18.5	M8	1.25	16.1	—	—	—
GLW50R	★	18.5	M8	1.25	14.6	—	—	—
* GLW50L	★	18.5	M8	1.25	14.6	—	—	—

■ Clamp Plates



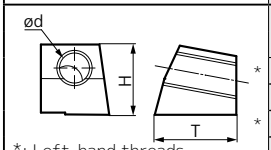
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
GLW41R	★	18.5	M8	1.25	16.1	—	—	—
* GLW41L	★	18.5	M8	1.25	16.1	—	—	—
GLW42R	★	18.5	M8	1.25	16.3	—	—	—
* GLW42L	★	18.5	M8	1.25	16.3	—	—	—
GLW51R	★	18.5	M8	1.25	14.6	—	—	—
* GLW51L	★	18.5	M8	1.25	14.6	—	—	—
GLW52R	★	18.5	M8	1.25	14.8	—	—	—
* GLW52L	★	18.5	M8	1.25	14.8	—	—	—



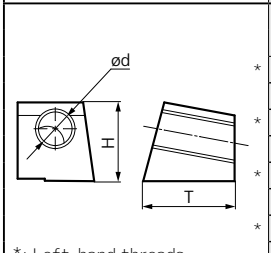
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
GLWF41R	★	18.5	M8	1.25	13.8	—	—	—
* GLWF41L	★	18.5	M8	1.25	13.8	—	—	—
GLWF80R	★	13	M8	1.25	12.8	—	—	—
* GLWF80L	★	13	M8	1.25	12.8	—	—	—



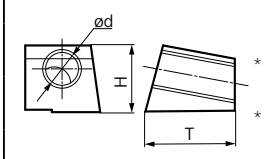
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
GTW40R	★	18.5	M8	1.25	15.7	—	—	—
* GTW40L	★	18.5	M8	1.25	15.7	—	—	—
GTW50R	★	18.5	M8	1.25	14.2	—	—	—
* GTW50L	★	18.5	M8	1.25	14.2	—	—	—



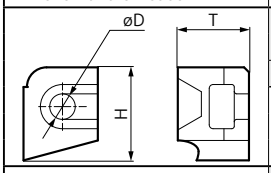
*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
GTW41R	★	18.5	M8	1.25	15.9	—	—	—
* GTW41L	★	18.5	M8	1.25	15.9	—	—	—
GTW42R	★	18.5	M8	1.25	16.2	—	—	—
* GTW42L	★	18.5	M8	1.25	16.2	—	—	—
GTW51R	★	18.5	M8	1.25	14.4	—	—	—
* GTW51L	★	18.5	M8	1.25	14.4	—	—	—
GTW52R	★	18.5	M8	1.25	14.6	—	—	—
* GTW52L	★	18.5	M8	1.25	14.6	—	—	—

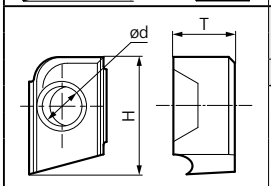


*: Left-hand threads

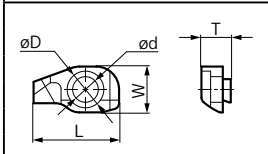
Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
GTWF41R	★	18.5	M8	1.25	13.7	—	—	—
* GTWF41L	★	18.5	M8	1.25	13.7	—	—	—
GTWF80R	★	13	M8	1.25	12.6	—	—	—
* GTWF80L	★	13	M8	1.25	12.6	—	—	—



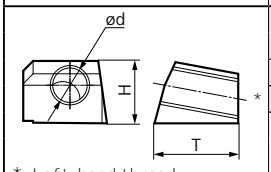
Cat. No.	Stock	Dimensions (mm) T	D	H	—	—	—	N·m
CHWR	★	14.5	5.2	18.9	—	—	—	—



Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
CEWR	★	10	M8	1.25	19	—	—	—

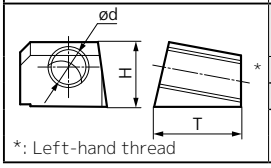


Cat. No.	Stock	Dimensions (mm) W	L	T	d	D	—	N·m
CCH4R	★	7.5	14	4.8	4.2	6	—	—
CCH5R	★	10	20	6.3	5.2	8	—	—



*: Left-hand thread

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
PTW40R	★	17	M8	1.25	12.5	—	—	—
* PTW40L	★	17	M8	1.25	12.5	—	—	—



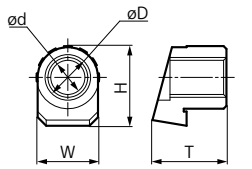
*: Left-hand thread

Cat. No.	Stock	Dimensions (mm) T	d	Pitch	H	—	—	N·m
PTW41R	★	17	M8	1.25	12.7	—	—	—
* PTW41L	★	17	M8	1.25	12.7	—	—	—

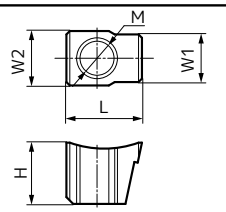
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Clamp Plates / Adjustment Wedges

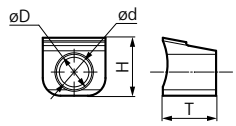
■ Clamp Plates



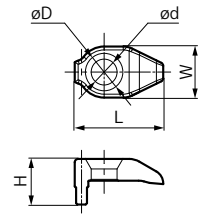
Cat. No.	Stock	Dimensions (mm) W	T	d	Pitch	D	T	H	N·m
FMW	★	10.6	14	M7	1	8	13	14	—



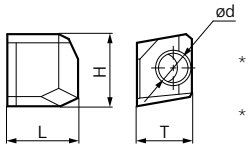
Cat. No.	Stock	Dimensions (mm) L	W1	W2	H	M	—	N·m
RMW	★	11.1	7	8	9	M6	—	—



Cat. No.	Stock	Dimensions (mm) T	d	Pitch	D	H	—	N·m
GRHNW	★	9	M6	1	6.5	9.8	—	—

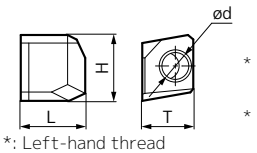


Cat. No.	Stock	Dimensions (mm) W	L	d	D	H	—	N·m
CCH3.5	★	7.5	13	3.8	5.5	6.7	—	—
CCH4.5	★	7.9	14.1	4.8	6.5	7.85	—	—



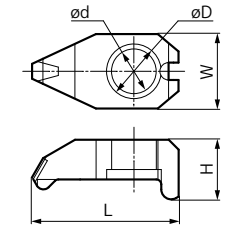
*: Left-hand thread

Cat. No.	Stock	Dimensions (mm) L	T	d	Pitch	H	—	N·m
* **HTW40R**	★	12	9.32	M6	1	12.5	—	—
HTW40L	★	12	9.32	M6	1	12.5	—	—
* **HTW50R**	★	14	9.76	M6	1	14.8	—	—
HTW50L	★	14	9.76	M6	1	14.8	—	—

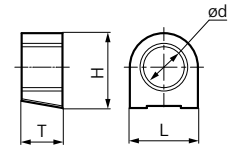


*: Left-hand thread

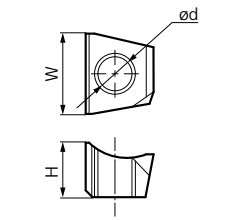
Cat. No.	Stock	Dimensions (mm) L	T	d	Pitch	H	—	N·m
* **HTW41R**	★	12	9.5	M6	1	12.5	—	—
HTW41L	★	12	9.5	M6	1	12.5	—	—
* **HTW51R**	★	14	10	M6	1	14.8	—	—
HTW51L	★	14	100	M6	1	14.8	—	—



Cat. No.	Stock	Dimensions (mm) W	L	d	D	H	—	N·m
DSLX8	★	15	29.5	8.5	11	12	—	—

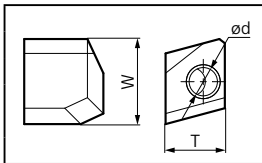


Cat. No.	Stock	Dimensions (mm) L	T	d	Pitch	H	—	N·m
FAWR	★	10	6	M7	1	11	—	—

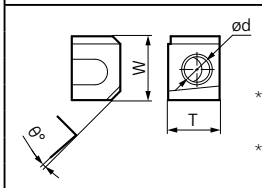


Cat. No.	Stock	Dimensions (mm) W	d	Pitch	H	—	—	N·m
HFW	★	11.8	M6	1	8	—	—	—

■ Clamp Plates

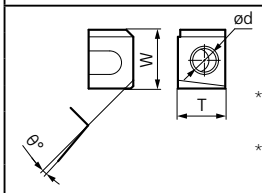


Cat. No.	Stock	Dimensions (mm) W	T	d	Pitch	—	—	N·m
AW52R	★	15	10.5	M6	1	—	—	—



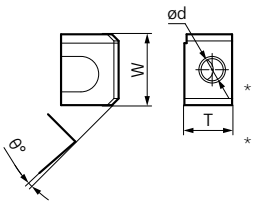
*: Left-hand thread

Cat. No.	Stock	Dimensions (mm) W	T	d	Pitch	θ°	—	N·m
NW41RR	★	12.5	10.1	M6	1	4	—	—
* **NW41RL**	★	12.5	10.1	M6	1	4	—	—
NW41FR	★	12.5	10.1	M6	1	7	—	—
* **NW41FL**	★	12.5	10.1	M6	1	7	—	—



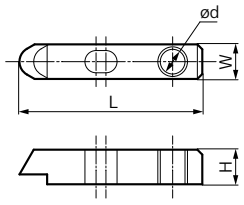
*: Left-hand thread

Cat. No.	Stock	Dimensions (mm) W	T	d	Pitch	θ°	—	N·m
NW42RR	★	12.5	10.4	M6	1	5	—	—
* **NW42RL**	★	12.5	10.4	M6	1	5	—	—
NW42FR	★	12.5	10.4	M6	1	0	—	—
* **NW42FL**	★	12.5	10.4	M6	1	0	—	—



*: Left-hand thread

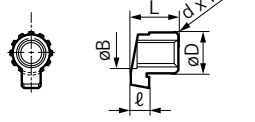
Cat. No.	Stock	Dimensions (mm) W	T	d	Pitch	θ°	—	N·m
NW51R	★	16	10.8	M6	1	4	—	—
* **NW51L**	★	16	10.8	M6	1	4	—	—
NW52R	★	16	10.9	M6	1	0	—	—
* **NW52L**	★	16	10.9	M6	1	0	—	—



Cat. No.	Stock	Dimensions (mm) W	L	d	Pitch	H	—	N·m
BNRW-08	★	7	37.6	M6	1	7	—	—
BNRW-12	★	10	41.6	M8	1	9	—	—
BNRW-16	★	13	48.6	M8	1	12	—	—
BNRW-20	★	16	52.4	M8	1	12	—	—

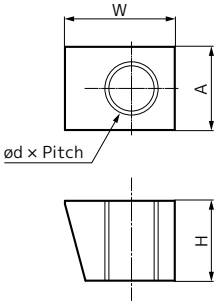
■ Adjustment Wedges

Adjustment Wedge



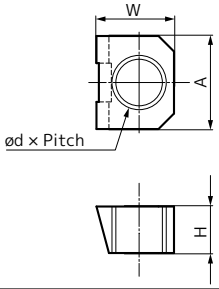
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
FME	★	M7	0.75	13	5	11	8	—

Adjustment Wedge



Cat. No.	Stock	Dimensions (mm) d	Pitch	W	A	H	—	N·m
BNRC-08	★	M5	0.8	10	6	6	—	—
BNRC-12	★	M5	0.8	11	10	8	—	—
BNRC-16	★	M8	1.25	16.5	12.5	12	—	—
BNRC-20	★	M8	1.25	16.5	16.5	12	—	—

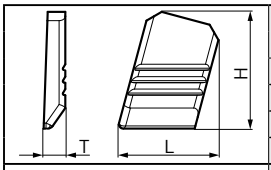
Adjustment Wedge



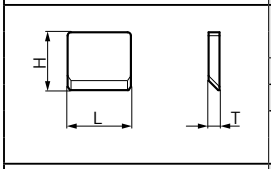
Cat. No.	Stock	Dimensions (mm) d	Pitch	W	A	H	—	N·m
FAAR	★	M8	0.75	10	12	6	—	—

Chipbreakers / Shims

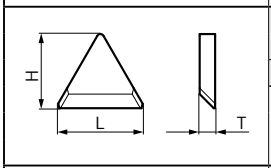
■ Chipbreakers



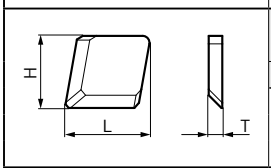
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
CBD4R	★	10	15	3.8	—	—	—	—
CBD4L	★	10	15	3.8	—	—	—	—
CBD5R	★	12	20	4.3	—	—	—	—
CBD5L	★	12	20	4.3	—	—	—	—



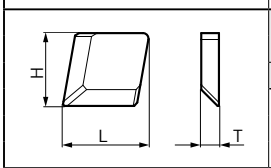
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
CBS13	★	9.3	8.5	1.6	—	—	—	—
CBS14	★	12.5	11.7	2.4	—	—	—	—



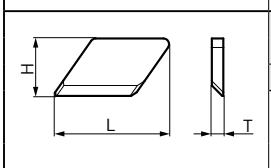
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
CBT12	★	9.3	8.16	1.6	—	—	—	—



Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
CBC0903	★	10	8.5	1.6	—	—	—	—



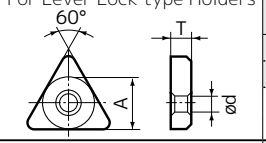
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
CBC4	★	12.6	10.7	2.6	—	—	—	—



Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
CBD1103	★	15.9	8	1.6	—	—	—	—

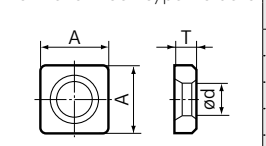
■ Shims

For Lever Lock type Holders



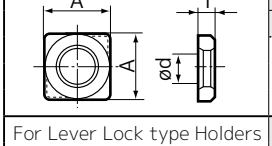
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LST317	★	9.5	2.7	5.2	—	—	—	—
LST42	★	12.65	3.18	6.9	—	—	—	—

For Lever Lock type Holders



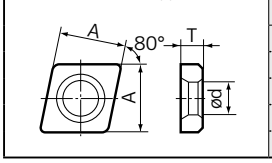
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LSS32	★	9.48	3.18	5	—	—	—	—
LSS32SD		9.48	3.18	5	—	—	—	—
LSS42	★	12.65	3.18	6.9	—	—	—	—
LSS42SD	★	12.65	3.18	6.9	—	—	—	—
LSS53	★	15.85	4.76	7.9	—	—	—	—
LSS53SD		15.85	4.76	7.9	—	—	—	—
LSS63	★	19	4.76	10	—	—	—	—
LSS63SD		19	4.76	10	—	—	—	—
LSS84	★	25.35	6.35	13.2	—	—	—	—

For Lever Lock type Holders



Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LSS42B	★	12.65	3.18	6.9	—	—	—	—

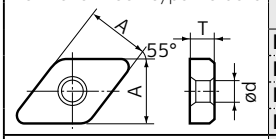
For Lever Lock type Holders



Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LSC317	★	9.5	2.7	5.2	—	—	—	—
LSC32	★	9.48	3.18	5	—	—	—	—
LSC42	★	12.65	3.18	6.9	—	—	—	—
LSC53	★	15.85	4.76	7.9	—	—	—	—
LSC63	★	19	4.76	10	—	—	—	—

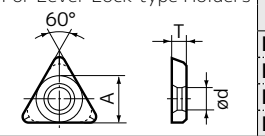
■ Shims

For Lever Lock type Holders



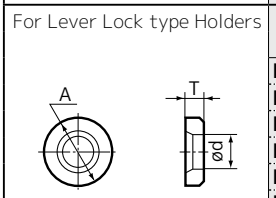
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LSD317	★	9.5	2.7	5.2	—	—	—	—
LSD32SD	★	8.5	3.18	5	—	—	—	—
LSD42	★	12.65	3.18	6.9				
LSD42SD		12.65	3.18	6.9	—	—	—	—

For Lever Lock type Holders



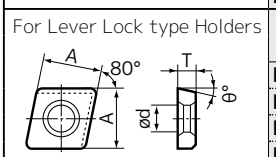
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LST317CA	★	9.33	2.7	5	—	—	—	—
LST317SD	★	9.5	2.7	5.2	—	—	—	—
LST42SD		12.65	3.18	6.9	—	—	—	—
LST53		15.85	4.76	7.9	—	—	—	—

For Lever Lock type Holders



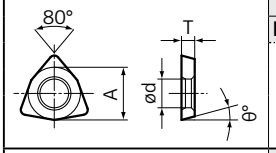
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
LSR817	★	8.4	2.7	5.2	—	—	—	—
LSR10	★	8.4	3.18	4.7	—	—	—	—
LSR12	★	10	3.18	4.7	—	—	—	—
LSR16	★	13.5	4.76	6.3	—	—	—	—
LSR20	★	17.2	4.76	7.9	—	—	—	—
LSR25	★	22	6.35	9.5	—	—	—	—
LSR32	★	28	6.35	12.7	—	—	—	—

For Lever Lock type Holders



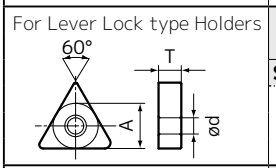
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
LSC32SD			3.18	5	—	—	0	—
LSC42B	★	12.65	3.18	6.9	—	—	8	—
LSC42SD	★	12.65	3.18	6.9	—	—	0	—
LSC53SD		15.85	4.76	7.9	—	—	0	—
LSC63SD	★	19	4.76	10	—	—	0	—

For Lever Lock type Holders



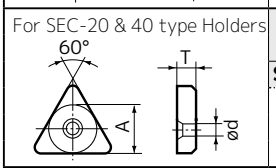
Cat. No.	Stock	Dimensions (mm) A	T	d	D	—	θ°	N·m
LSW42B	★	12.7	3.18	6.9	15	—	15	—

For Lever Lock type Holders



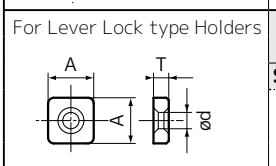
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
STN1103		6.3	3.18	3.4	—	—	—	—

For SEC-20 & 40 type Holders



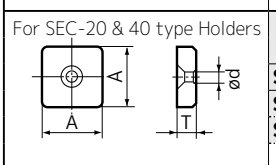
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
STND323	★	9.3	3.18	3.4	—	—	—	—

For Lever Lock type Holders



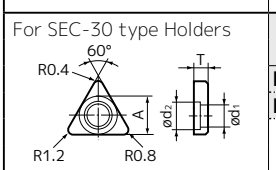
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
SSN0903	★	9.5	3.18	3.4	—	—	—	—

For SEC-20 & 40 type Holders



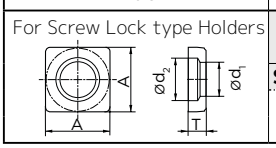
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
SSND423	★	12.5	3.18	3.4	—	—	—	—
SSND423Z	★				—	—	—	—
SSND433	★	12.5	4.76	3.4	—	—	—	—

For SEC-30 type Holders



Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	—	N·m
EST32	★	9.53	3.18	5.5	5.9	—	—	—
EST43	★	12.7	4.76	7.5	7.9	—	—	—

For Screw Lock type Holders



Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	—	N·m
SCS1204		11.5	3.18	6.4	7.9	—	—	—

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

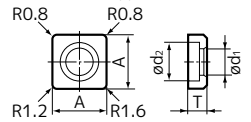
Blank: Made-to-order item
— mark: Not available

N·m Recommended Tightening Torque (N·m)

Shims

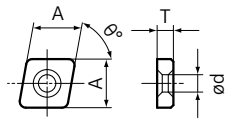
■ Shims

For SEC-30 type Holders



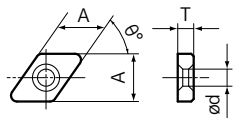
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
ESS42	★	12.7	3.18	7.5	7.9	—	—	—

For SEC-30 type Holders



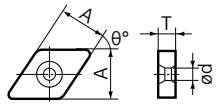
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
SCN0903	★	9.5	3.18	3.4	—	—	80	—

For SEC-30 type Holders



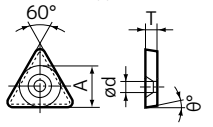
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
SDN1103	★	9.5	3.18	3.4	—	—	55	—

For SEC-40 type Holders



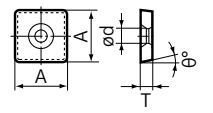
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
SCND433	★	12.65	4.76	3.4	—	—	80	—

For SEC-40 type Holders



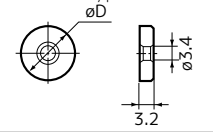
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
STPD322	★	8.4	3.18	3.4	—	—	6	—
STPD422	★	11	3.18	3.4	—	—	6	—
STPL42	★	11	3.18	3.4	—	—	6	—

For SEC-40 type Holders



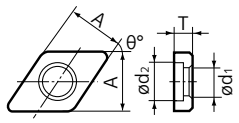
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
SSPD422	★	11.6	3.18	3.4	—	—	6	—
SSPD522	★	14.1	3.18	3.4	—	—	6	—

For SEC-40 type Holders



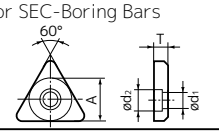
Cat. No.	Stock	Dimensions (mm) T	d	D	—	—	—	N·m
SRND32		3.2	3.4	9.53	—	—	—	—
SRND42	★	—	—	12.7	—	—	—	—

For SEC-60 type Holders



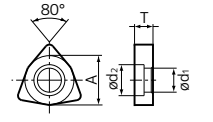
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	θ°	N·m
SVW322	★	9.5	3.18	4.7	6.5	—	35	—
SDW323	★	9.5	3.18	4.7	6.5	—	55	—
SDW423	★	12.65	3.18	6.2	8	—	55	—
SDW433						—		—
SCW323	★	9.5	3.18	4.8	6.5	—	80	—
SCW423	★	12.65	3.18	6.2	8	—	80	—
SCW433						—		—
SCW635	★	19	4.76	9	11.5	—	80	—
SFW433		12.65	4.76	6.2	8	—	50	—
CCS09T3	★	8.525	2.38	5.4	6.4	—	80	—

For SEC-M type Holders
For SEC-Boring Bars



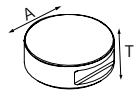
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
STW323	★	9.5	3.18	4.7	6.5	—	—	—
STW333	★					—	—	—
STW434	★	12.65	4.76	6.2	8	—	—	—

For SEC-M type Holders



Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
SWW433	★	12.65	4.76	6.2	8	—	—	—
LSW317	★					—	—	—

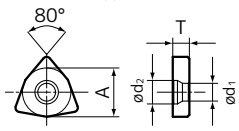
Shim for HFT



Cat. No.	Stock	Dimensions (mm) A	T	—	—	—	—	N·m
CSCFHFT	★	9.5	3.2	—	—	—	—	—

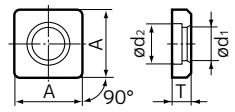
■ Shims

For SEC-M type Holders



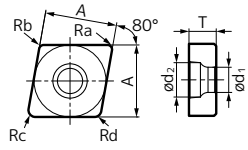
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
WNS0603B	★	9.525	3.18	3.4	4.5	—	—	—
WNS0604	★	9.52	3.18	3.5	4.5	—	—	—
WNS0803B	★	12.7	3.18	3.4	4.5	—	—	—
WNS0804	★	12.57	4.76	4.4	6	—	—	—
WNS0804B	★	12.7	4.76	4.4	6	—	—	—

For SEC-Boring Bars



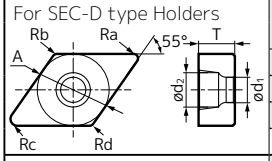
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
SSW423	★	12.65	3.18	6.2	8	—	—	—
SSW433	★	12.65	4.76	6.2	8	—	—	—
SSW635	★	19	4.76	9	11.5	—	—	—

For SEC-D type Holders



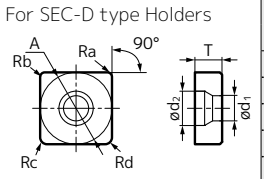
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
CNS1204	★	12.57	4.76	4.4	6	0.8	0.8	1.2	1.2	—
CNS1606	★	15.75	4.76	5.5	7.5	1.2	1.2	1.2	1.2	—
CNS1906	★	18.70	6.35	5.5	7.5	1.6	1.6	1.2	1.2	—
CNS2509	★	25.27	6.35	6.6	9.5	2.4	2.4	2.4	2.4	—
CNS1204-R24	★	12.57	4.76	4.4	6	2	0.8	2.4	1.2	—

For SEC-D type Holders



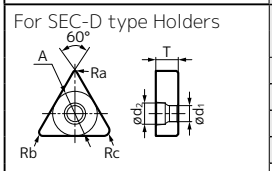
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
DNS1504	★	12.57	6.35	4.4	6	0.8	0.8	1.2	0.8	—
DNS1506	★	12.57	4.76	4.4	6	0.8	0.8	1.2	0.8	—
DNS1504-R24	★	12.57	6.35	4.4	6	2	0.8	2.4	0.8	—

For SEC-D type Holders



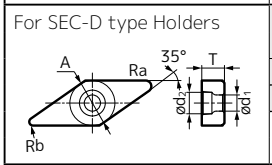
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
SNS1203B	★	12.57	3.18	3.4	4.5	—	—	—	—	—
SNS1204	★	12.57	4.76	4.4	6	0.8	0.8	1.2	1.2	—
SNS1506	★	15.75	4.76	5.5	7.5	1.2	1.2	1.2	1.2	—
SNS1906	★	18.92	6.35	5.5	7.5	1.2	1.2	1.2	1.2	—
SNS2507	★	25.27	7.93	6.6	9.5	2.4	2.4	2.4	2.4	—
SNS2509	★	25.27	6.35	6.6	9.5	2.4	2.4	2.4	2.4	—

For SEC-D type Holders



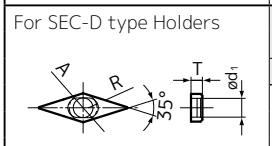
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	N·m
TNS1603B	★	9.525	3.18	3.4	4.5	—	—	—	—
TNS1604	★	9.45	4.76	3.4	4.5	0.4	0.8	1.2	—
TNS1604B	★	9.525	4.76	3.4	4.5	—	—	—	—
TNS1604-R24	★	9.45	4.76	3.4	4.5	1.6	2	2.4	—

For SEC-D type Holders



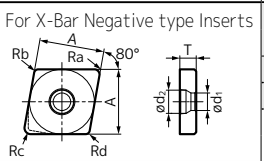
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	N·m
VNS1604	★	9.45	4.76	3.4	4.5	1.2	0.8	—
VCS1604	★	8.25	3.18	5.3	6.4	—	—	—

For SEC-D type Holders



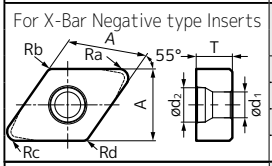
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	N·m
SVP32	★	7.73	3.55	5.5	—	—	—	—

For X-Bar Negative type Inserts



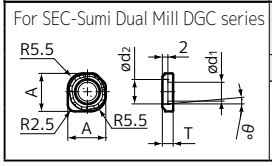
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
CNS1203B	★	12.57	3.18	3.4	4.5	1.2	0.8	1.2	0.8	—
CNS1204B	★	12.57	4.76	4.4	6	1.2	0.8	1.2	0.8	—

For X-Bar Negative type Inserts



Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
DNS1104B	★	9.45	4.76	3.4	4.5	1.2	0.8	1.2	0.8	—
DNS1504B	★	12.57	4.76	4.4	6	1.2	0.8	1.2	0.8	—
DNS1506B	★	12.57	6.35	4.4	6	1.2	0.8	1.2	0.8	—

For SEC-Sumi Dual Mill DGC series

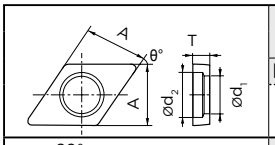


Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	θ°	N·m
DGCS13R	★	13.7	3.9	6.8	8.8	—	5	—

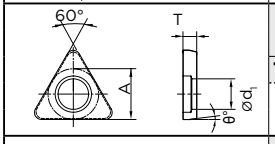
★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Shims / Seats / Supports

■ Shims

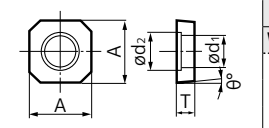


Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	θ°	N·m
DCS11T3	★	8.3	2.38	5.3	6.4	—	—	—



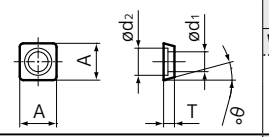
Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	θ°	N·m
TCS16T3		8.8	2.38	5.3	6.3	—	7	—

For SEC-WaveMill WGC/WGX series



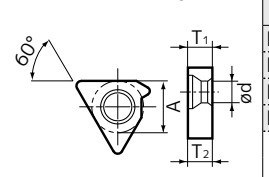
Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	θ°	N·m
WGCS13R	★	10.7	3	5.5	7.5	—	5	—

For SEC-WaveMill WFX series



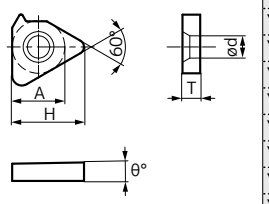
Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	θ°	N·m
WFXS4R	★	10.2	3	5.5	7.5	—	15	—

For LTER (Threading)

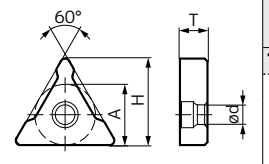


Cat. No.	Stock	Dimensions (mm) A	T_1	T_2	d	—	—	N·m
LSTE31-0	★	9.5	2.7	2.7	5.2	—	—	—
LSTE31-1	★	9.5	2.67	2.91	5.2	—	—	—
LSTE31-2	★	9.5	2.64	3.11	5.2	—	—	—
LSTE42-0	★	12.65	3.18	3.18	7	—	—	—

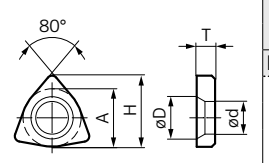
For SSTE/SSTI (Threading)



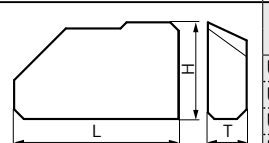
Cat. No.	Stock	Dimensions (mm) H	A	T	d	θ°	—	N·m
YE3	★	12.99	9.525	3.2	4.025	0	—	—
YI3	★	12.99	9.525	3.2	4.025	0	—	—
YE3-1P	★	12.99	9.525	3.2	4.025	1	—	—
YE3-2P	★	12.99	9.525	3.2	4.025	2	—	—
YE3-3P	★	12.99	9.525	3.2	4.025	3	—	—
YE3-1N	★	12.99	9.525	3.2	4.025	1	—	—
YE3-2N	★	12.99	9.525	3.2	4.025	2	—	—
YE3-3N	★	12.99	9.525	3.2	4.025	3	—	—
YI3-1P	★	12.99	9.525	3.2	4.025	1	—	—
YI3-2P	★	12.99	9.525	3.2	4.025	2	—	—
YI3-3P	★	12.99	9.525	3.2	4.025	3	—	—
YI3-1N	★	12.99	9.525	3.2	4.025	1	—	—
YI3-2N	★	12.99	9.525	3.2	4.025	2	—	—
YI3-3N	★	12.99	9.525	3.2	4.025	3	—	—



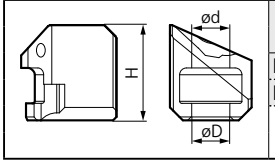
Cat. No.	Stock	Dimensions (mm) H	A	T	d	—	—	N·m
TRW5505	★	14.95	10.5	4.76	3.4	—	—	—



Cat. No.	Stock	Dimensions (mm) H	A	T	d	D	—	N·m
LSW317	★	10.37	8.53	2.7	4.8	6.2	—	—

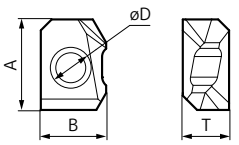


Cat. No.	Stock	Dimensions (mm) H	L	T	—	—	—	N·m
UF4SR	★	14.95	25.45	6	—	—	—	—
UF4SL	★	14.95	25.45	6	—	—	—	—
UF5SR	★	17.65	25.15	6	—	—	—	—
UF5SL	★	17.65	25.15	6	—	—	—	—

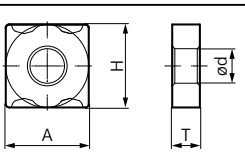


Cat. No.	Stock	Dimensions (mm) H	d	D	—	—	—	N·m
EHK4R	★	14	5.6	5.6	—	—	—	—
EHK5R	★	16	5.6	5.6	—	—	—	—

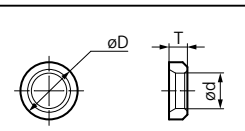
■ Shims



Cat. No.	Stock	Dimensions (mm) B	A	T	D	—	—	N·m
TSXS13L	★	9.6	13.3	6.8	6	—	—	—



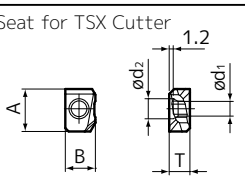
Cat. No.	Stock	Dimensions (mm) H	A	T	d	—	—	N·m
RMS	★	19.05	19.05	6.35	7.93	—	—	—



Cat. No.	Stock	Dimensions (mm) D	d	T	—	—	—	N·m
LSR917	★	9	5.2	2.7	—	—	—	—

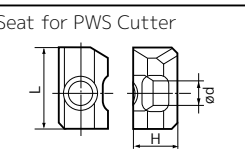
■ Seats

Seat for TSX Cutter



Cat. No.	Stock	Dimensions (mm) A	B	T	d_1	d_2	—	N·m
TSXS13R	★	12.7	9	6.2	4.4	6	—	—

Seat for PWS Cutter



Cat. No.	Stock	Dimensions (mm) d	L	H	—	—	—	N·m
PWSS4R	★	4.6	15	8	—	—	—	—

■ Supports

For BNGG series Grooving Holders

Fig 1

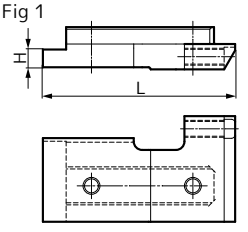
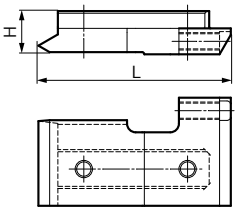
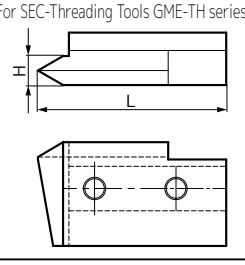


Fig 2



Cat. No.	Stock	Dimensions (mm) L	H	—	—	—	Fig	N·m
BNGSR200	★	44.5	1.2	—	—	—	1	—
BNGSR250	★	44.5	1.7	—	—	—	1	—
BNGSR300	★	44.5	2.2	—	—	—	1	—
BNGSR400	★	45.5	3.2	—	—	—	1	—
BNGSR500	★	45.5	4.2	—	—	—	1	—
BNGSR600	★	46.5	5.2	—	—	—	1	—
BNGSRTT	★	44.5	2	—	—	—	2	—
BNGSL200		44.5	1.2	—	—	—	1	—
BNGSL250		44.5	1.7	—	—	—	1	—
BNGSL300		44.5	2.2	—	—	—	1	—
BNGSL400		45.5	3.2	—	—	—	1	—
BNGSL500		45.5	4.2	—	—	—	1	—
BNGSL600		46.5	5.2	—	—	—	1	—
BNGSLTT		44.5	2	—	—	—	2	—

For SEC-Threading Tools GME-TH series

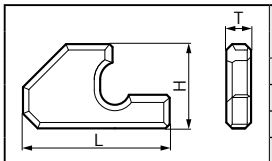


Cat. No.	Stock	Dimensions (mm) L	H	—	—	—	—	N·m
GTR		33.9	5.2	—	—	—	—	—
GTL		33.9	5.2	—	—	—	—	—

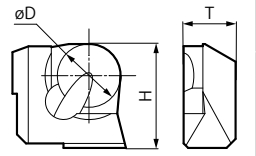
★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Locators / Retaining Rings / Hoses / Connectors / O-rings

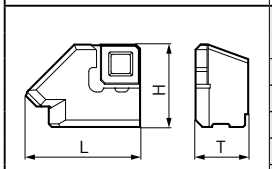
■ Locators



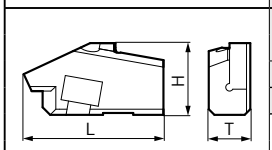
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
UF4KR	★	24.6	14	3.8	—	—	—	—
UF4KL	★	24.6	14	3.8	—	—	—	—
UF5KR	★	24.3	16.3	4.5	—	—	—	—
UF5KL	★	24.3	16.3	4.5	—	—	—	—



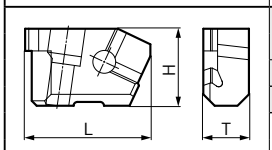
Cat. No.	Stock	Dimensions (mm) D	H	T	—	—	—	N·m
GRKR	★	7	23	11.5	—	—	—	—
GRKL	★	7	23	11.5	—	—	—	—



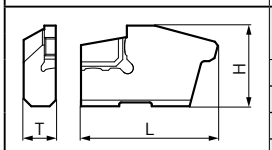
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
LFP4R	★	28.9	21.3	13	—	—	—	—
LFP4L	★	28.9	21.3	13	—	—	—	—
LFP5R	★	28.9	21.3	13	—	—	—	—
LFP5L	★	28.9	21.3	13	—	—	—	—
LFE4R	★	28.9	21.3	13	—	—	—	—



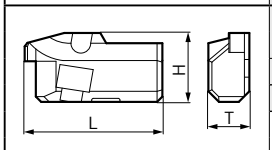
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
LNF40R	★	37	19	10	—	—	—	—
LNF40L	★	37	19	10	—	—	—	—



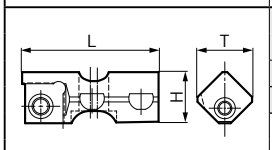
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
LAP40R	★	33	20	10	—	—	—	—
LAP40L	★	33	20	10	—	—	—	—



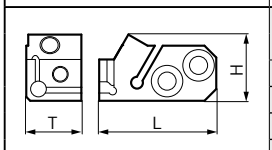
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
GL40R	★	35	21	8	—	—	—	—
GL40L	★	35	21	8	—	—	—	—
GL50R	★	35	22	9.5	—	—	—	—
GL50L	★	35	22	9.5	—	—	—	—



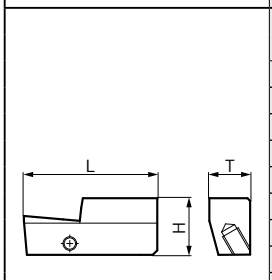
Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
LCP40R	★	38.7	19	11	—	—	—	—
LCP40L	★	38.7	19	11	—	—	—	—



Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
FMUU	★	39	14.3	15.6	—	—	—	—
FMUUE	★	39	14.3	15.6	—	—	—	—

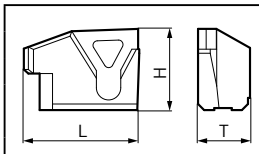


Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
GFXK4R	★	29.8	16.9	14	—	—	—	—
GFXK4L	★	29.8	16.9	14	—	—	—	—
GFVK5R	★	29.8	16.9	17	—	—	—	—
GFVK5L	★	29.8	16.9	17	—	—	—	—

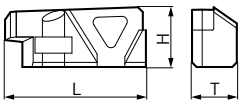


Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
TU050055K1	★	28.5	12.5	9	—	—	—	—
TU055065K1	★	28.5	12.5	9	—	—	—	—
TU065075K1	★	28.5	12.5	9	—	—	—	—
TU075085K1	★	28.5	12.5	9	—	—	—	—
TU085095K1	★	28.5	12.5	9	—	—	—	—
TU095105K1	★	28.5	12.5	9	—	—	—	—
TU105135K1	★	28.5	12.5	9	—	—	—	—
TU050055K2	★	28.5	12.5	9	—	—	—	—
TU055065K2	★	28.5	12.5	9	—	—	—	—
TU065075K2	★	28.5	12.5	9	—	—	—	—
TU075085K2	★	28.5	12.5	9	—	—	—	—
TU085105K2	★	28.5	12.5	9	—	—	—	—
TU105125K2	★	28.5	12.5	9	—	—	—	—

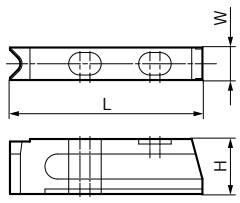
■ Locators



Cat. No.	Stock	Dimensions (mm) L	H	T	—	—	—	N·m
LCH4R	★	28	20	12.8	—	—	—	—

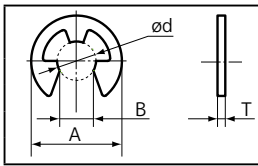


Cat. No.	Stock	Dimensions (mm) D	H	T	—	—	—	N·m
LCE4R	★	30	13	9.7	—	—	—	—



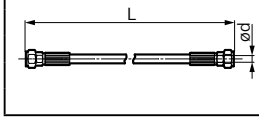
Cat. No.	Stock	Dimensions (mm) W	H	T	—	—	—	N·m
BNRSR-08	★	6.5	38.5	11	—	—	—	—
BNRSR-10	★	8.5	37.1	14	—	—	—	—
BNRSR-12	★	10.4	40.2	16	—	—	—	—
BNRSR-16	★	13	46.5	19	—	—	—	—
BNRSR-18	★	17	49.8	11	—	—	—	—
BNRSR-20	★	17	48.8	21	—	—	—	—

■ Retaining Rings



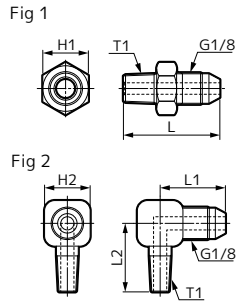
Cat. No.	Stock	Dimensions (mm) A	B	T	d	—	—	N·m
ER03	★	7	2.6	0.6	3	—	—	—
ER04	★	9	3.5	0.6	4	—	—	—
ER05	★	11	4.3	0.6	5	—	—	—

■ Hoses



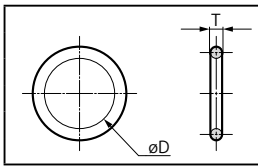
Cat. No.	Stock	Dimensions (mm) d	L	—	—	—	—	N·m
J-HOSE-G1/8-G1/8-200	★	8.8	200	—	—	—	—	—
J-HOSE-G1/8-G1/8-300	★	8.8	300	—	—	—	—	—

■ Connectors



Cat. No.	Stock	Dimensions (mm) Screw (Standard) T1	L	L1	L2	H1	H2	Fig	N·m
J-G1/8-R1/4-00	★	R1/4	34	—	—	14	—	1	—
J-G1/8-R1/8-00	★	R1/8	29	—	—	14	—	1	—
J-G1/8-R3/8-00	★	R3/8	36	—	—	19	—	1	—
J-G1/8-R1/4-90	★	R1/4	—	22	25	—	17	2	—
J-G1/8-R1/8-90	★	R1/8	—	20	21	—	14	2	—
J-G1/8-R3/8-90	★	R3/8	—	23	30	—	19	2	—

■ O-rings

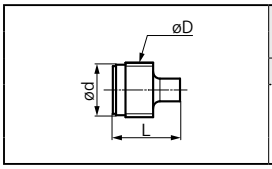


Cat. No.	Stock	Dimensions (mm) D	T	—	—	—	—	N·m
SS020	★	2	1	—	—	—	—	—
SS060	★	6	1	—	—	—	—	—
P3	★	2.8	1.9	—	—	—	—	—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

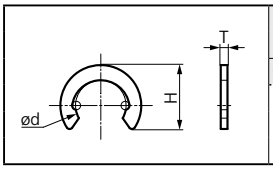
Coolant Nozzles / C-rings / Washers / Pins / Nuts

■ Coolant Nozzles



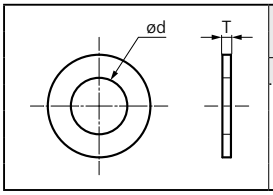
Cat. No.	Stock	Dimensions (mm) D	Pitch	d	L	—	—	N·m
C4-CNZ	★	M8	1.25	7.4	9.9	—	—	—

■ C-rings



Cat. No.	Stock	Dimensions (mm) d	H	T	—	—	—	N·m
CR03	★	1.5	3.79	0.4	—	—	—	—

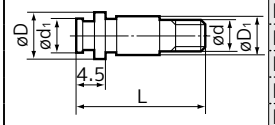
■ Washers



Cat. No.	Stock	Dimensions (mm) d	T	—	—	—	—	N·m
PW3	★	3.3	0.5	—	—	—	—	—

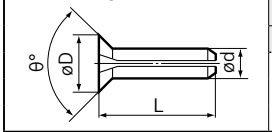
■ Pins

For SEC-M type Holders



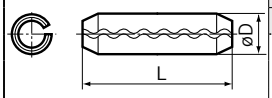
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	D_1	d_1	N·m
MP317	★	M4	0.7	15.5	6	4	3.7	—
MP317S	★	M4	0.7	15.5	6	4	3.56	—
MP320	★	M4	0.7	19.5	6	4	3.7	—
MP320S	★	M4	0.7	19.5	6	4	3.56	—
MP416	★	M5	0.8	14	7.5	6	5	—
MP420	★	M5	0.8	20	7.5	6	5	—
MP432		M5	0.8	32	7.5	6	5	—
MP531								
MP534								

For SEC-Light Endmill



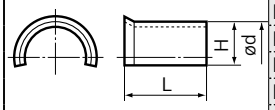
Cat. No.	Stock	Dimensions (mm) d	—	L	D	θ°	—	N·m
SPP308	★	3.2	—	8	4.8	60°	—	—

For SEC-20 & 40 type Holders



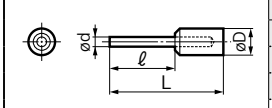
Cat. No.	Stock	Dimensions (mm) —	—	L	D	—	—	N·m
SPP3	★	—	—	14	3.2	—	—	—

For SEC-70 type Holders



Cat. No.	Stock	Dimensions (mm) d	H	L	—	—	—	N·m
LSP3	★	5	3.3	5.5	—	—	—	—
LSP3SD	★	5	3.3	5.5	—	—	—	—
LSP4	★	6.7	4	7	—	—	—	—
LSP4SD		6.7	4	7	—	—	—	—
LSP5	★	7.7	4.5	8.5	—	—	—	—
LSP5SD		7.7	4.5	8.5	—	—	—	—
LSP6	★	9.85	6	11.1	—	—	—	—
LSP6SD		9.85	6	11.1	—	—	—	—
LSP8	★	13.05	10	12	—	—	—	—
LSP10	★	5	3.3	6.5	—	—	—	—
LSP16	★	6.6	4.5	9	—	—	—	—
LSP20	★	8.2	5.5	9	—	—	—	—
LSP25	★	9.8	6.5	11	—	—	—	—
LSP32	★	13	10	12	—	—	—	—

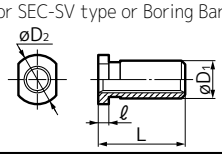
Pin for SEC-Mini Tool Holders



Cat. No.	Stock	Dimensions (mm) d	D	L	ℓ	—	—	N·m
LP04	★	0.4	1.1	4.7	3	—	—	—
LP06	★	0.4	1.1	6	5	—	—	—
LP07	★	0.4	1.1	7.7	3.5	—	—	—

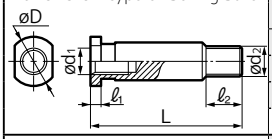
■ Pins

For SEC-SV type or Boring Bars



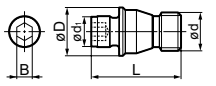
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D_1	D_2	N·m
VP32B	★	M3.5	0.6	8	1.4	5	6.5	—
VP40B	★	M3.5	0.6	11.5	1.4	5	6.5	—

For SEC-SV type or Boring Bars



Cat. No.	Stock	Dimensions (mm) d_1	Pitch	d_2	Pitch	L	D	ℓ_1	ℓ_2	N·m
VP20	★	M3.5	0.6	M4	0.7	12	6.5	≥ 4.5	≥ 4.5	—
VP25	★	M3.5	0.6	M4	0.7	17	6.5	≥ 4.5	≥ 4.5	—
VP32	★	M3.5	0.6	M4	0.7	24	6.5	≥ 4.5	≥ 4.5	—

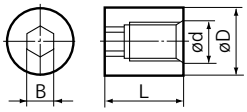
Shim Pin



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	d_1	B	—	—	N·m
HE060011P	★	M6	0.75	14.5	7.8	5.0	2.5	—	—	—
HE060011E	★							—	—	—

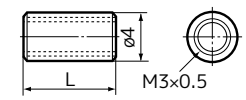
■ Nuts

For SEC-M type Holders



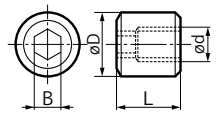
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	—	N·m
CPM32N	★	M4	0.7	7.5	7	3	—	—
CPM43N	★	M5	0.8	8.5	7	3	—	—
CPM43S	★	M5	0.8	6	7	3	—	—

For BNB Holders



Cat. No.	Stock	Dimensions (mm) L	—	—	—	—	—	N·m
BNBW-4	★	4	—	—	—	—	—	—
BNBW-7	★	7	—	—	—	—	—	—

For BNB Holders



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	—	N·m
CPV33N	★	M4	0.5	6	6	2.5	—	—
BNBW-2	★	M3	0.5	2	4	—	—	—

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Drawing Pins / Alignment Jigs / Sleeves / Stoppers / Wrenches

■ Drawing Pins

Fig 1

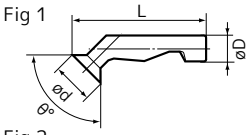
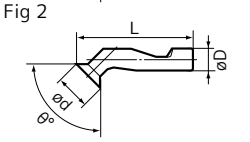
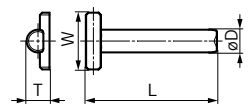


Fig 2



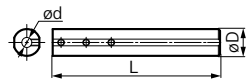
Cat. No.	Stock	Dimensions (mm) d	D	L	θ°	—	Fig	—	N·m
SR083	★	5	2.9	20	60	—	1	—	
SR124	★	6	3.9	24	60	—			
SR134B	★	6	3.9	22.5	60	—	2	—	

■ Alignment Jigs



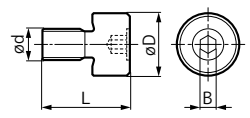
Cat. No.	Stock	Dimensions (mm) W	L	T	D	—	—	N·m
AFBSM60	★	15	34.67	6.05	6	—	—	—

■ Sleeves

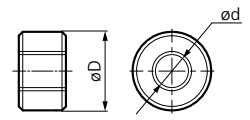


Cat. No.	Stock	Dimensions (mm) L	d	D	—	—	—	N·m
HBB616	★	100	6	16	—	—	—	—
HBB816	★	100	68	16	—	—	—	—

■ Stoppers



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	—	—	N·m
RFS	★	M5	0.8	12	10	2.5	—	—	—



Cat. No.	Stock	Dimensions (mm) d	Pitch	D	—	—	—	N·m
FMUE	★	M5	0.8	10	—	—	—	—

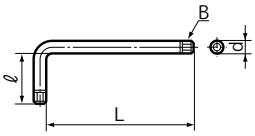
■ Wrenches

L-Shaped Wrench (Hex)



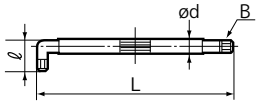
Cat. No.	Stock	Dimensions (mm) B	L	ℓ	—	—	—	N·m
LH015	★	1.5	45	14	—	—	—	—
LH020	★	2	50	16	—	—	—	—
LH020NT	★	2	50	16	—	—	—	—
LH025	★	2.5	56	18	—	—	—	—
LH025NT	★	2.5	56	6	—	—	—	—
LH030	★	3	63	20	—	—	—	—
LH035	★	3.5	22	68	—	—	—	—
LH040	★	4	70	25	—	—	—	—
LH050	★	5	80	28	—	—	—	—
LH060	★	6	90	32	—	—	—	—
LH080	★	8	100	36	—	—	—	—

L-Shaped Wrench (Torx)



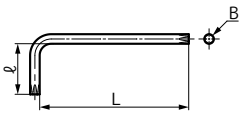
Cat. No.	Stock	Dimensions (mm) B	d	L	ℓ	—	—	N·m
LT08-06	★	T8	2.3	42.5	6	—	—	—
LT15-10	★	T15	2.8	62	10	—	—	—
LT15	★	T15	3.26	54	17.9	—	—	—
LT20	★	T20	3.9	57.2	19.1	—	—	—
LT25	★	T25	4.4	60.3	20.2	—	—	—
LT27	★	T27	4.96	63.5	21.5	—	—	—

Wrench (Torx)



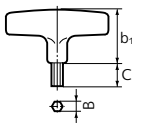
Cat. No.	Stock	Dimensions (mm) B	d	L	ℓ	—	—	N·m
LT25NT	★	3.6	4	65	10	—	—	—

L-Shaped Wrench (Torx Plus)



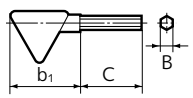
Cat. No.	Stock	Dimensions (mm) B	L	ℓ	—	—	—	N·m
LT15IP	★	15IP	55	19	—	—	—	—

Wrench (Hex)



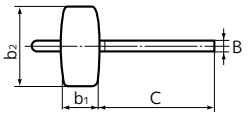
Cat. No.	Stock	Dimensions (mm) B	b_1	C	—	—	—	N·m
TH030	★	3	48	28	—	—	—	—
TH040	★	4	48	37	—	—	—	—
TH050	★	5	48	45	—	—	—	—

T-Shaped Wrench (Hex)



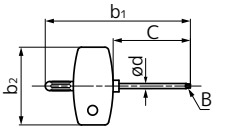
Cat. No.	Stock	Dimensions (mm) B	b_1	C	—	—	—	N·m
TH015	★	1.5	35	30	—	—	—	—
TH020	★	2	35	39	—	—	—	—
TH025	★	2.5	35	39	—	—	—	—

Wing Wrench (Hex)



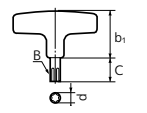
Cat. No.	Stock	Dimensions (mm) B	C	b_1	b_2	—	—	N·m
TSW040	★	4	60	20	40	—	—	—

Wing Wrench (Torx Plus)



Cat. No.	Stock	Dimensions (mm) B	d	C	b_1	b_2	—	N·m
TRXW10IP	★	10IP	2.6	40	75	40	—	—

T-Shaped Wrench (Torx)



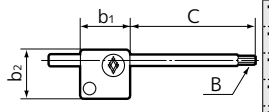
Cat. No.	Stock	Dimensions (mm) B	d	C	b_1	—	—	N·m
TTX15W	★	T15	4	97	28	—	—	—
TTX20	★	T20	3.9	58	47	—	—	—
TT25	★	T25	4.4	27	48	—	—	—
TT27	★	T27	5	41	48	—	—	—

★ mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

Wrenches / Anti-seizure Cream

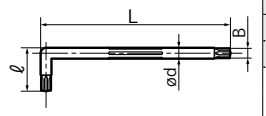
■ Wrenches

Torx Wrench



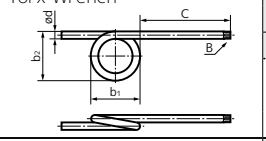
Cat. No.	Stock	Dimensions (mm) B	C	b1	b2	—	—	N·m
TRX06	★	T6	35.5	15	15	—	—	—
TRX08	★	T8	38.5	19	19	—	—	—
TRX10	★	T10	42.1	22	22	—	—	—
TRX15	★	T15	46	22	27	—	—	—
TRX20	★	T20	49	22	30	—	—	—

Torx Wrench



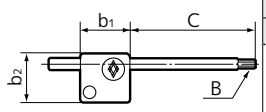
Cat. No.	Stock	Dimensions (mm) B	d	L	ℓ	—	—	N·m
RT06	★	2-1.8	2	35	8	—	—	—
RT08	★	2-2.1	2.1	35	8	—	—	—

Torx Wrench



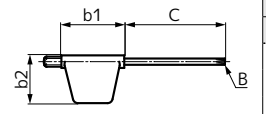
Cat. No.	Stock	Dimensions (mm) d	C	b1	b2	B	—	N·m
RT10	★	3	37	20	20	2.9	—	—

Torx Plus Wrench



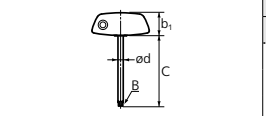
Cat. No.	Stock	Dimensions (mm) B	C	b1	b2	—	—	N·m
TRX06IP	★	6IP	34	15	15	—	—	—

Torx Plus Wrench



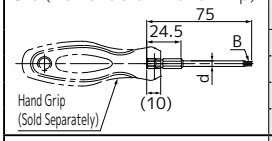
Cat. No.	Stock	Dimensions (mm) B	C	b1	b2	—	—	N·m
TRX08IP	★	8IP	40	25	19	—	—	—

T-Shaped Wrench (Torx Plus)



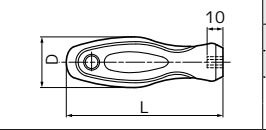
Cat. No.	Stock	Dimensions (mm) B	d	C	b1	—	—	N·m
TTR15IP	★	15IP	4	80	25.5	—	—	—

Bit (Removable Wrench Tip)



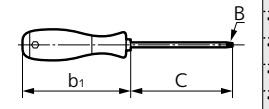
Cat. No.	Stock	Dimensions (mm) B	d	—	—	—	—	N·m
TRB10IP	★	10IP	4	—	—	—	—	—
TRB15IP	★	15IP	4	—	—	—	—	—
TRB20IP	★	20IP	4.5	—	—	—	—	—
TRB25IP	★	25IP	5	—	—	—	—	—

Hand Grip (Removable Handle)



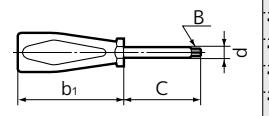
Cat. No.	Stock	Dimensions (mm) D	L	Remarks	N·m
HPS1015	★	32	99.4	For 10IP and 15IP	—
HPL2025	★	35.5	110.3	For 20IP and 25IP	—

Torx Plus Wrench (Screwdriver type)



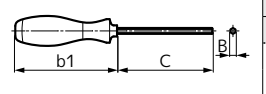
Cat. No.	Stock	Dimensions (mm) B	C	b1	—	—	—	N·m
TRDR08IP	★	8IP	60	104	—	—	—	—
TRDR10IP	★	10IP	80	111	—	—	—	—
TRDR15IP	★	15IP	80	111	—	—	—	—
TRDR20IP	★	20IP	100	118	—	—	—	—
TRDR25IP	★	25IP	100	118	—	—	—	—

Torx Wrench (Screwdriver type)



Cat. No.	Stock	Dimensions (mm) B	d	C	b1	—	—	N·m
TRD07	★	T7	2	45	70	—	—	—
TRD08	★	T8	2.3	55	70	—	—	—
TRD15	★	T15	3.3	70	100	—	—	—
TRD20	★	T20	3.9	100	90	—	—	—
TRD25	★	T25	5.3	80	110	—	—	—

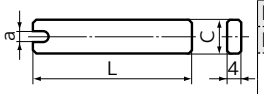
Hex Wrench (Integrated type)



Cat. No.	Stock	Dimensions (mm) B	C	b1	—	—	—	N·m
HD040	★	4	75	111	—	—	—	—

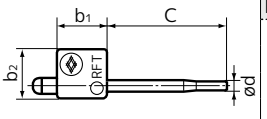
■ Wrenches

Key Wrench



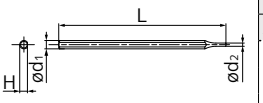
Cat. No.	Stock	Dimensions (mm) L	a	C	—	—	—	N·m
KY25	★	45	2.5	10	—	—	—	—
KY40	★	60	4	13	—	—	—	—

Rod Wrench (Wrench for Adjustment Screw)



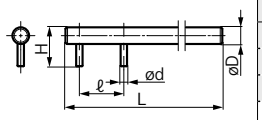
Cat. No.	Stock	Dimensions (mm) d	C	b1	b2	—	—	N·m
RFT	★	1.7	35	15	15	—	—	—

Rod Wrench



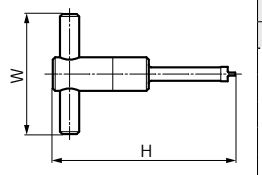
Cat. No.	Stock	Dimensions (mm) d1	d2	L	H	—	—	N·m
ANT	★	5	2	100	4.5	—	—	—

Wrench for SumiGrip



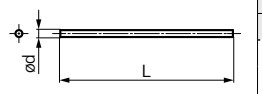
Cat. No.	Stock	Dimensions (mm) d	D	H	ℓ	L	—	N·m
SL-1	★	2.3	6	14	16	90	—	—
SL-2	★	2.3	6	14	12	90		
SL-4	★	2.5	6	12	5	90		

Assembly Wrench for HFJ



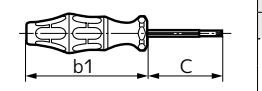
Cat. No.	Stock	Dimensions (mm) W	H	—	—	—	—	N·m
HFVT	★	50	76	—	—	—	—	—

Rod Wrench



Cat. No.	Stock	Dimensions (mm) d	L	—	—	—	—	N·m
1.8x45	★	1.8	45	—	—	—	—	—

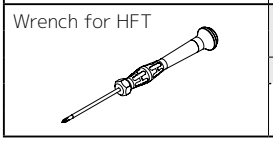
Torque Wrench



Cat. No.	Stock	Dimensions (mm) C	b1					N·m
TRDR06IP05	★	65	105					—

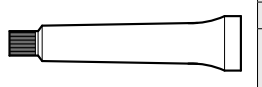
Torque Setting Value: 0.5N·m

Wrench for HFT



Cat. No.	Stock	Dimensions (mm) —	—	—	—	—	—	N·m
SDBSM	★	—	—	—	—	—	—	—

■ Anti-seizure Cream



Cat. No.	Stock	Contents (g)	Remarks
SUMI-P	★	5	—
APM-P	★	15	Anti-seizure Cream Dedicated for APM series

★mark: Global stocked item
▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available
N·m Recommended Tightening Torque (N·m)

MEMO

Technical Guidance Reference
N19 to N50

N



Technical Guidance
- Turning Edition N20
- Milling Edition N25
- Endmilling Edition N29
- Drilling Edition N32
- SUMIBORON Edition N37

References
- SI Unit Conversion List N41
- Metals Symbols Chart (Excerpt) N42
- Steel and Non-Ferrous Metal Symbol Chart (Excerpt) ... N44
- Hardness Scale Comparison Chart N45
- Dimensional Tolerance of Standard Fittings ... N46
- Dimensional Tolerance and Fittings N48
- Standard of Tapers N49
- Surface Roughness N50

Turning Edition - The Basic of Turning

■ Calculating Cutting Speed

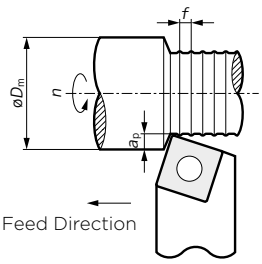
(1) Calculating spindle speed from cutting speed

$$n = \frac{1{,}000 \times v_c}{\times D_m}$$

n : Spindle Speed (min^{-1})
v_c : Cutting speed (m/min)
D_m : Inner/outer diameter of workpiece (mm)
: ≈ 3.14

Example: v_c=150m/min, D_m=100mm

$$n = \frac{1{,}000 \times 150}{3.14 \times 100} = 478\ (min^{-1})$$



- n : Spindle speed (min^{-1})
- v_c : Cutting speed (m/min)
- f : Feed rate per revolution (mm/rev)
- a_p : Depth of cut (mm)
- D_m : Diameter of workpiece (mm)

(2) Calculating cutting speed from spindle speed

$$v_c = \frac{\times D_m \times n}{1{,}000}$$

Refer to the above table

■ Calculating Power Requirements

$$P_c = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times}$$

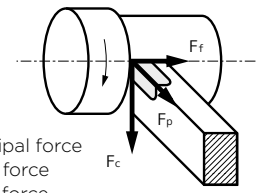
$$H = \frac{P_c}{0.75}$$

P_c : Power requirements (kW)
v_c : Cutting speed (m/min)
f : Feed rate (mm/rev)
a_p : Depth of cut (mm)
k_c : Specific cutting force (MPa)
H : Required horsepower (HP)
: Machine efficiency (0.70 to 0.85)

● Rough value of *kc*

Aluminum : 800MPa
General steel : 2,500 to 3,000MPa
Cast iron : 1,500MPa

■ Three Cutting Force Components



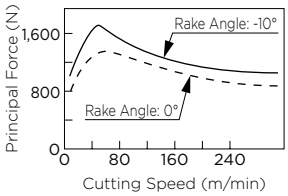
F_c : Principal force
F_f : Feed force
F_p : Back force

● Calculating cutting force

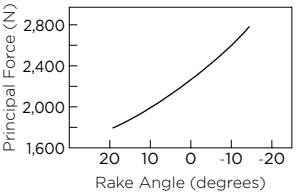
$$P = \frac{k_c \times q}{1{,}000} = \frac{k_c \times a_p \times f}{1{,}000}$$

P : Cutting force (kN)
k_c : Specific cutting force (MPa)
q : Chip area (mm^2)
a_p : Depth of cut (mm)
f : Feed rate (mm/rev)

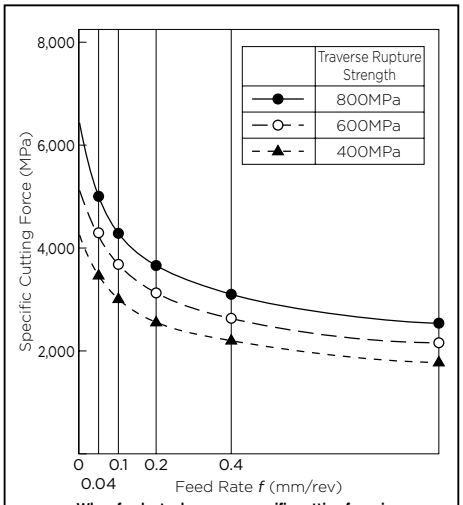
■ Relation Between Cutting Speed and Cutting Force



■ Relation Between Rake Angle and Cutting Force



■ Relation Between Feed Rate and Specific Cutting Force (for carbon steel)



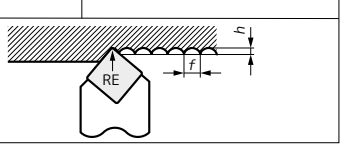
When feed rate decreases, specific cutting force increases.

■ Machined Surface Roughness

● Theoretical (geometrical) surface roughness

$$h = \frac{f^2}{8 \times RE} \times 10^3$$

h : Theoretical surface roughness (μm)
f : Feed rate per revolution (mm/rev)
RE: Corner radius (mm)



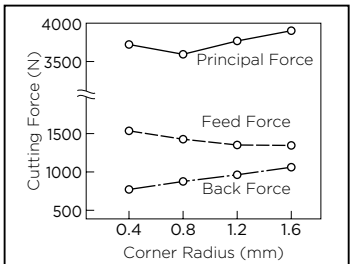
■ Actual surface roughness

Steel:
Theoretical roughness × 1.5 to 3
Cast iron:
Theoretical roughness × 3 to 5

● Ways to improve surface finish roughness

(1) Use an insert with a larger corner radius.
(2) Optimise the cutting speed and feed rate so that built-up edge do not occur.
(3) Select an appropriate insert grade.
(4) Use a wiper insert.

■ Relation Between Corner Radius and 3-part Force

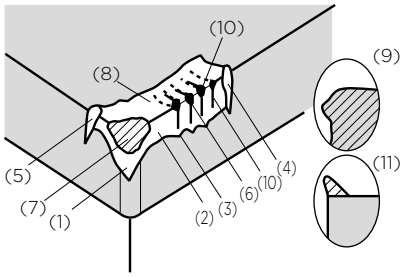


Large corner radius increases back force.

Work Material: 42CrMo4 (38HS)
Insert: TNGA2204OO
Holder: PTGNR2525-43
Cutting Conditions: v_c = 100m/min
a_p = 4mm
f = 0.45mm/rev

Turning Edition - Forms of Tool Failure and Tool Life

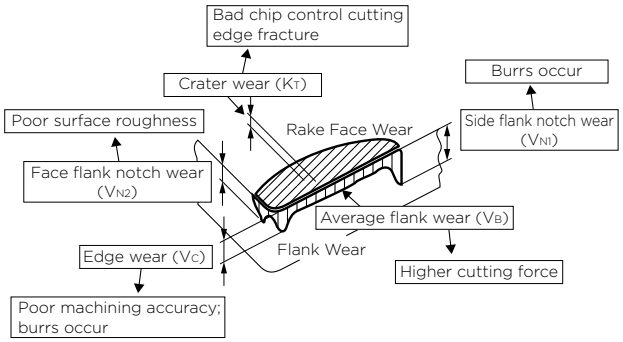
■ Forms of Tool Failure

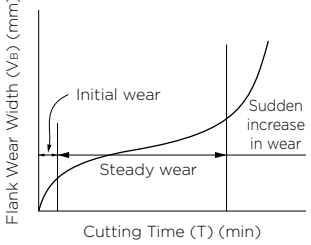
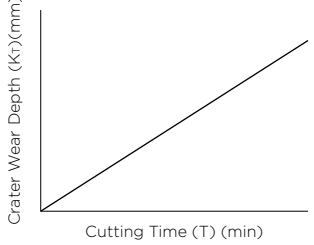


Classification	No.	Name of Failure	Major Causes of Failure
Failure Caused by Mechanical Factors	(1) to (5)	Flank wear	Wear caused by the scratching effect of hard grains contained in the work material
	(6)	Chipping	Fine breakages caused by high cutting loads or vibration
	(7)	Fracture	Large breakage caused by the impact of an excessive mechanical force acting on the cutting edge
Failure Caused by Thermal and Chemical Reactions	(8)	Crater wear	Cutting chips removing tool material as it flows over its top rake at high temperatures
	(9)	Plastic deformation	Deformation of cutting edge due to softening at high temperatures
	(10)	Thermal cracking	Fatigue from rapid, repeated heating and cooling cycles during interrupted cutting
	(11)	Built-up edges	Work material is pressure welded on the top face of the cutting edge

■ Tool Wear Curve

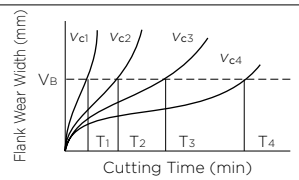
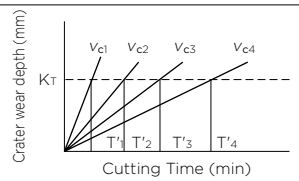
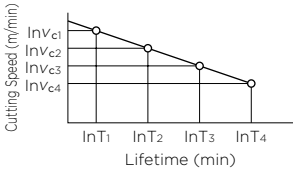
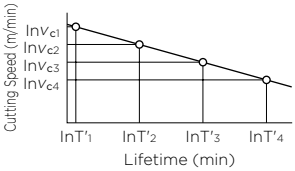
Forms of Tool Wear



Flank Wear	Crater Wear on Rake Face
	
· Wear increases rapidly right after starting cutting, then moderately and proportionally, and then rapidly again after a certain value.	· Wear increases proportionately to the cutting time.

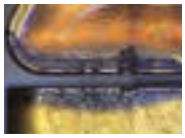
■ Tool Life (V-T)

· This double logarithm graph shows the relative tool life (T) with the specified wear over a range of cutting speeds (Vc) on the X-axis, and the cutting speed along the Y-axis.

	Flank Wear	Crater Wear
Tool wear		
Tool life		

Turning Edition - Cutting Edge Failure and Countermeasures

■ Insert Failure and Countermeasures

Insert Failure	Cause	Countermeasures
Flank Wear 	· Tool grade lacks wear resistance. · Cutting speed is too fast. · Feed rate is far too slow.	· Select a more wear-resistant grade. P30→P20→P10 K20→K10→K01 · Increase rake angle. · Decrease cutting speed. · Increase feed rate.
Crater Wear 	· Tool grade lacks crater wear resistance. · Rake angle is too small. · Cutting speed is too fast. · Feed rate and depth of cut are too large.	· Select a more crater wear-resistant grade. · Increase rake angle. · Change the chipbreaker. · Decrease cutting speed. · Reduce feed rate and depth of cut.
Cutting Edge Chipping 	· Tool grade lacks toughness. · Cutting edge breaks due to chip adhesion. · Cutting edge is not strong enough. · Feed rate and depth of cut are too large.	· Select a tougher grade. P10→P20→P30 K01→K10→K20 · Increase amount of honing on cutting edge. · Reduce rake angle. · Reduce feed rate and depth of cut.
Cutting Edge Fracture 	· Tool grade lacks toughness. · Cutting edge is not strong enough. · Holder is not strong enough. · Feed rate and depth of cut are too large.	· Select a tougher grade. P10→P20→P30 K01→K10→K20 · Select a chipbreaker with a strong cutting edge. · Select a holder with a larger approach angle. · Select a holder with a larger shank size. · Reduce feed rate and depth of cut.
Adhesion/Built-up Edges 	· Inappropriate grade selection. · Cutting edge is not sharp enough. · Cutting speed is too slow. · Feed rate is too slow.	· Select a grade with less affinity to the work material. Coated carbide or cermet grades. · Select a grade with a smooth coating. · Increase rake angle. · Reduce honing. · Increase cutting speed. · Increase feed rate.
Plastic Deformation 	· Tool grade lacks thermal resistance. · Cutting speed is too fast. · Feed rate and depth of cut are too large. · Not enough coolant.	· Select a more crater wear-resistant grade. · Increase rake angle. · Decrease cutting speed. · Reduce feed rate and depth of cut. · Supply sufficient coolant.
Notch Wear 	· Tool grade lacks wear resistance. · Rake angle is too small. · Cutting speed is too fast.	· Select a more wear-resistant grade. P30→P20→P10 K20→K10→K01 · Increase rake angle. · Alter depth of cut to shift the notch location.

Turning Edition - Chip Control and Countermeasures

■ Type of Chip Generation

	Flowing	Shearing	Tearing	Cracking
Type				
Condition	Continuous chips with good surface finish.	Chip is sheared and separated by the shear angle.	Chips appear to be torn from the surface.	Chips crack before reaching the cutting point.
Application	General cutting of steel and light alloy	Steel, stainless steel (low speed)	Steel, cast iron (very low speed, very small feed rate)	Cutting of general cast iron and carbon
Influence factor	Large ← Deformation of work material → Small Large ← Rake angle → Small Small ← Depth of cut → Large Large ← Cutting speed → Small			

■ Type of Chip Control

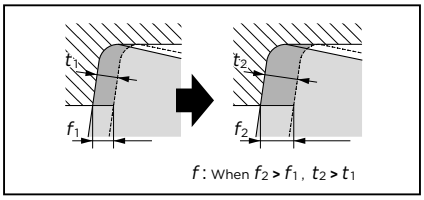
	Depth of Cut	A	B	C	D	E
Classification of chip shapes	Large					
	Small					
Evaluation	NC lathe (for automation)	×	×	○	○	△
	General-purpose lathe (for safety)	×	○	○	○ to △	×

Good: C type, D type

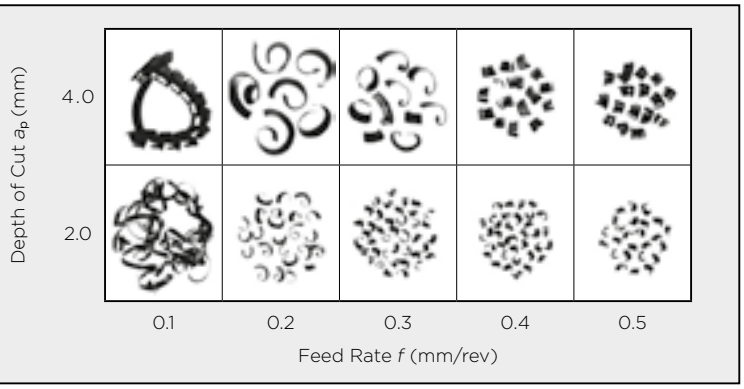
Poor
- A type: Twines around the tool or workpiece, damaging the machined surface and affecting safety.
- B type: Causes problems in the automatic chip conveyor and chipping occurs easily.
- E type: Causes spraying of chips and poor surface finish due to chattering, along with chipping, large cutting force and high temperatures.

■ Chip Control Improvement Factors

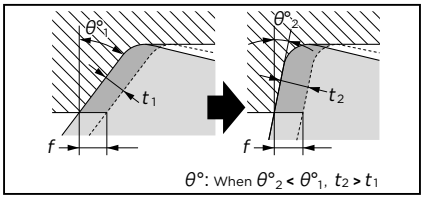
(1) Increase feed rate (*f*)



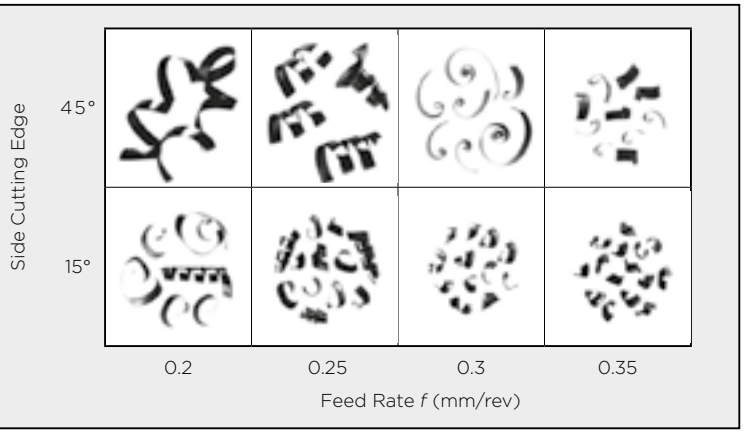
When the feed rate increases, the chip thickness (t) increases and chip control improves.



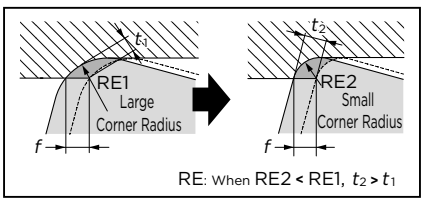
(2) Decrease side cutting edge (θ°)



Even if the feed rate is the same, a smaller side cutting edge angle makes chips thicker and chip control improves.

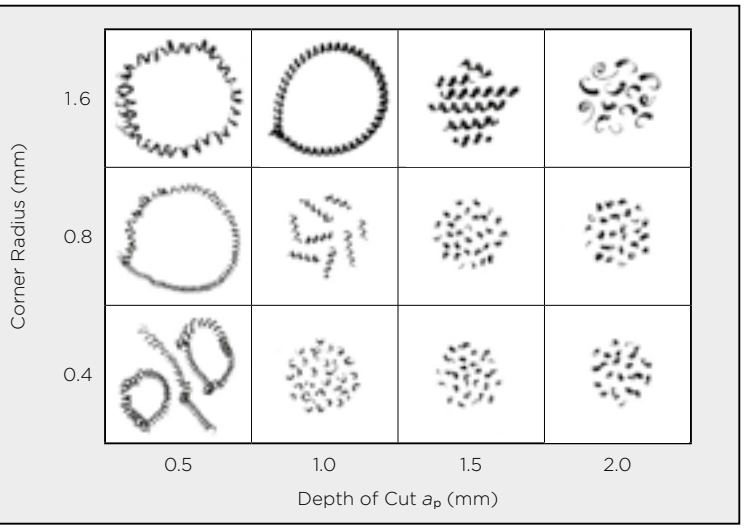


(3) Reduce corner radius (RE)



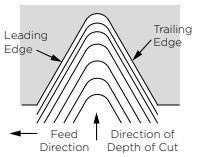
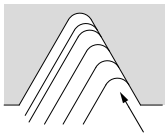
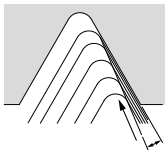
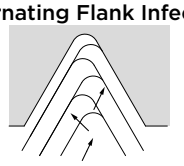
Even if the feed rate is the same, a smaller corner radius makes chips thicker and chip control improves.

* Cutting force increases proportionately to the length of the contact surface. Therefore, a larger corner radius increases back force which induces chattering. A smaller corner radius produces a rougher surface finish at the same feed rate.



Turning Edition - The Basics of Threading

■ Thread Cutting Methods

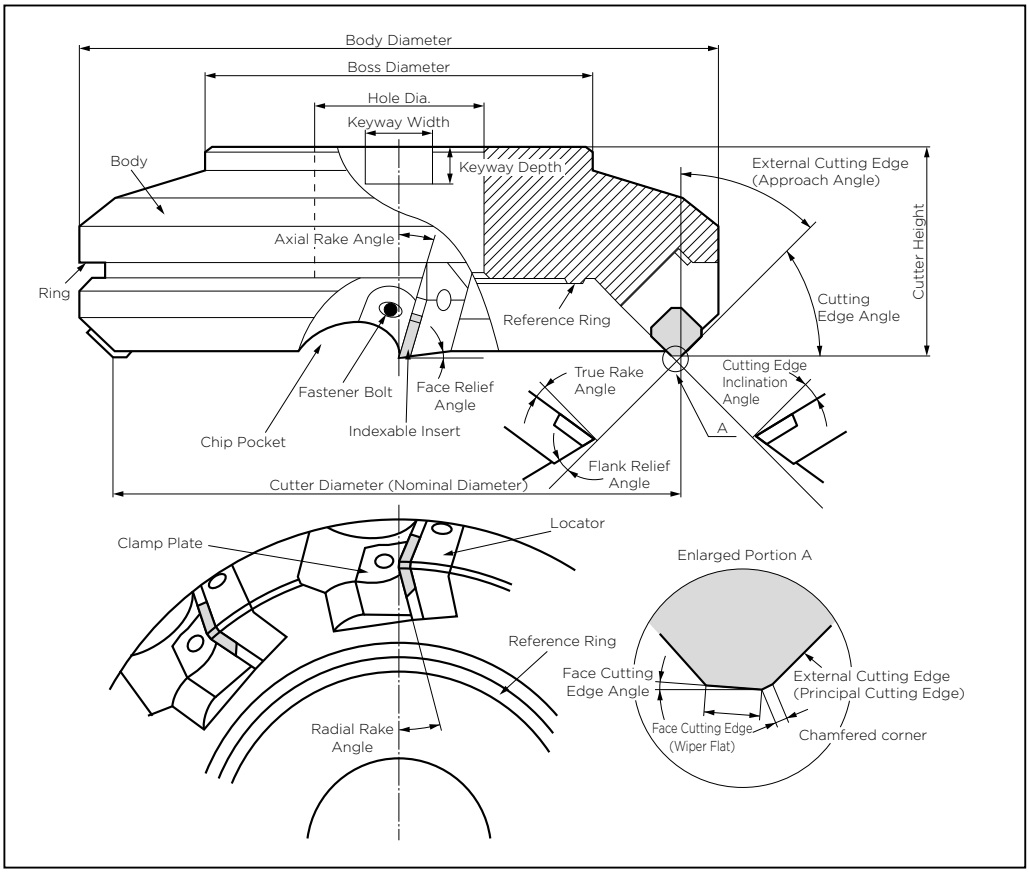
Cutting Method	Features
Radial Infeed 	· Most common threading technique, used mainly for small-pitched threads. · Easy to change cutting conditions such as depth of cut, etc. · Long contact point has a tendency to chatter. · Chip control is difficult. · Considerable damage tends to occur on the trailing edge side.
Flank Infeed 	· Effective for large-pitched threads and blemish-prone work material surfaces. · Chips evacuate from one side for good chip control. · The trailing edge is subjected to rubbing resulting in accelerated flank wear.
Modified Flank Infeed 	· Effective for large-pitched threads and blemish-prone work material surfaces. · Chips evacuate from one side for good chip control. · Inhibits flank wear on trailing edge side.
Alternating Flank Infeed 	· Effective for large-pitched threads and blemish-prone work material surfaces. · Wears evenly on right and left cutting edges. · Since both edges are used alternately, chip control is sometimes difficult.

■ Troubleshooting for Threading

Failure		Cause	Countermeasures
Cutting Edge Failure	Excessive Wear	· Tool grade	· Select a more wear-resistant grade
		· Cutting conditions	· Reduce cutting speed · Use a suitable quantity and concentration of coolant · Change the number of passes
	Uneven Wear on Right and Left Sides	· Tool mounting	· Check whether the cutting edge inclination angle is appropriate for the thread lead angle · Check whether the tool is mounted properly
		· Cutting conditions	· Change to modified flank infeed or alternating flank infeed
	Chipping	· Cutting conditions	· If built-up edge occurs, increase the cutting speed
	Fracture	· Biting of chips	· Supply enough coolant to the cutting edge
		· Cutting conditions	· Increase the number of passes and reduce the depth of cut for each pass · Use separate tools for roughing and finishing
Shape and Accuracy	Poor Surface Finish Roughness	· Cutting conditions	· If blemished due to low-speed machining, increase the cutting speed · If chattering occurs, decrease the cutting speed · If the depth of cut of the final pass is too small, make it larger
		· Tool grade	· Select a more wear-resistant grade
		· Inappropriate cutting edge inclination angle	· Select the correct shim to ensure relief on the side of the insert
	Inappropriate Thread Shape	· Tool mounting	· Check whether the tool is mounted properly
	Shallow Thread Depth	· Shallow depth of cut	· Check the depth of cut
		· Tool wear	· Check damage to the cutting edge

Milling Edition - The Basics of Milling

■ Parts



■ Milling Calculation Formulas

● Calculating cutting speed

$$v_c = \frac{\times DC \times n}{1{,}000}$$

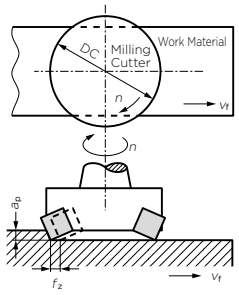
$$n = \frac{1{,}000 \times v_c}{\times DC}$$

● Calculating feed rate

$$v_f = f_z \times z \times n$$

$$f_z = \frac{v_f}{z \times n}$$

v_c : Cutting speed (m/min)
: $\pi \approx 3.14$
DC : Nominal cutting diameter (mm)
n : Rotation speed (min^{-1})
v_f : Feed rate per minute (mm/min)
f_z : Feed rate per tooth (mm/t)
z : Number of teeth



● Calculating power requirements

$$P_c = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times} = \frac{Q \times k_c}{60 \times 10^3 \times}$$

● Calculating horsepower requirements

$$H = \frac{P_c}{0.75}$$

● Calculating chip evacuation amount

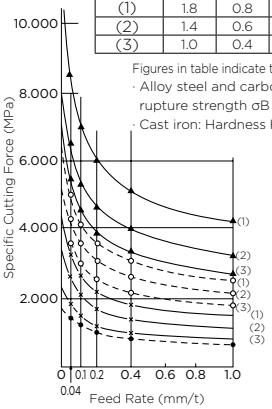
$$Q = \frac{a_e \times a_p \times v_f}{1{,}000}$$

P_c: Power consumption (kw)
H : Required horsepower (HP)
Q : Chip evacuation amount (cm^3/min)
a_e: Cutting width (mm)
v_f : Feed rate per minute (mm/min)
a_p: Depth of cut (mm)
k_c: Cutting force (MPa)
Rough values (Steel: 2,500 to 3,000MPa / Cast iron: 1,500MPa / Aluminum: 800MPa)
: Machine efficiency (about 0.75)

● Relation between feed rate, work material and specific cutting force

No. \ Work Material / Symbol	Alloy Steel	Carbon Steel	Cast Iron	Aluminum Alloy
(1)	1.8	0.8	200	—
(2)	1.4	0.6	160	—
(3)	1.0	0.4	120	—

Figures in table indicate these characteristics.
· Alloy steel and carbon steel: Traverse rupture strength σB (GPa)
· Cast iron: Hardness HB

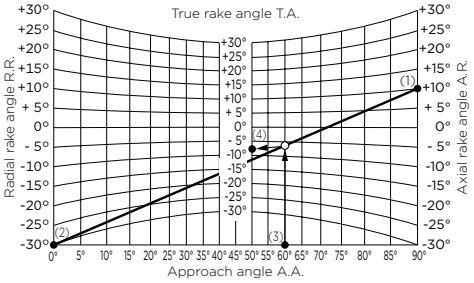


Milling Edition - The Basics of Milling

■ Functions of Cutting Edge Angles

	Material	Symbol	Function	Effect
(1) (2)	Axial rake angle Radial rake angle	A.R. R.R.	Determines chip evacuation direction, adhesion, thrust, etc.	Available in positive to negative (large to small) rake angles. Typical combinations: Positive and Negative, Positive and Positive, Negative and Negative
(3)	Approach angle	A.A.	Determines chip thickness and chip evacuation direction	Large: Thin chips Small cutting force
(4)	True rake angle	T.A.	Effective rake angle	Positive (Large): Excellent machinability and low chip adhesion. Low cutting edge strength. Negative (Small): Strong cutting edge and easy chip adhesion.
(5)	Cutting edge inclination angle	I.A.	Determines chip control direction	Positive (Large): Excellent chip control and small cutting force. Low cutting edge strength.
(6)	Face cutting edge angle	F.A.	Determines surface finish roughness	Small: Excellent surface roughness
(7)	Relief angle		Determines cutting edge strength, tool life, chattering	

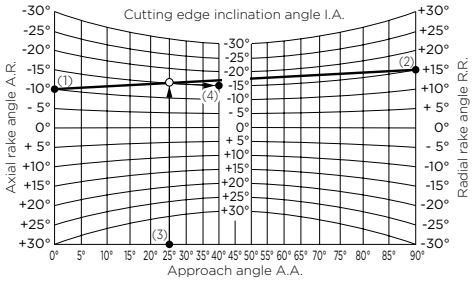
True rake angle (T.A.) table



Example: (1) A.R. (Axial rake angle) = +10°
(2) R.R. (Radial rake angle) = -30°
(3) A.A. (Approach angle) = 60°
-> (4) T.A. (True rake angle) = -8°

Formula: tan T.A.=tan R.R./cos A.A. + tan A.R./sin A.A.

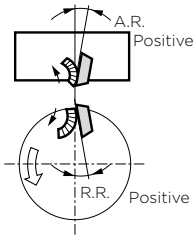
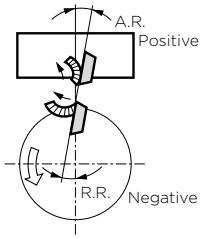
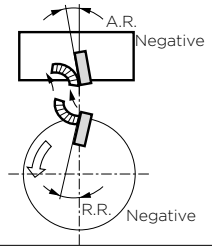
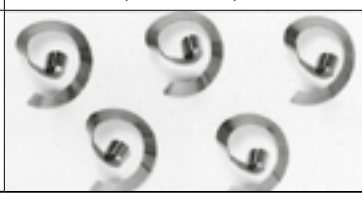
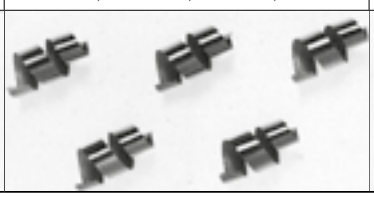
Inclination angle (I.A.) chart



Example: (1) A.R. (Axial rake angle) = -10°
(2) R.R. (Radial rake angle) = +15°
(3) A.A. (Approach angle) = 25°
-> (4) I.A. (inclination angle) = -15°

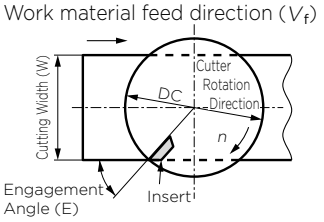
Formula: tan I.R.=tan A.R./cos A.A. - tan R.R./sin A.A.

■ Rake Angle Combination and Features

	Double Positive type	Negative - Positive type	Double Negative type
Edge combination and chip evacuation A.R.: Axial rake angle R.R: Radial rake angle : Chip and evacuation direction : Cutter rotation direction			
Advantages	Good sharpness	Excellent chip evacuation and sharpness	Economical design enabling use of both sides of insert Strong cutting edge
Disadvantages	Only single-sided inserts with a lower cutting edge strength can be used	Only single-sided inserts can be used	Dull cutting action
Applications	Machining of aluminum alloy and other materials requiring sharpness	Machining of steel, cast iron, and stainless steel, with suitable strength and good evacuation	For hard materials such as cast iron or poor surfaces such as castings
Cat. No.	ANX series, HF series, WAX series	WGX series, WFX series, RSX series, MSX series	TSX series, DGC series, DFC series, DNX series
Chips (Ex.) · Work material: 34CrMo4 · v_c=130m/min f_z=0.23mm/t a_p=3mm			

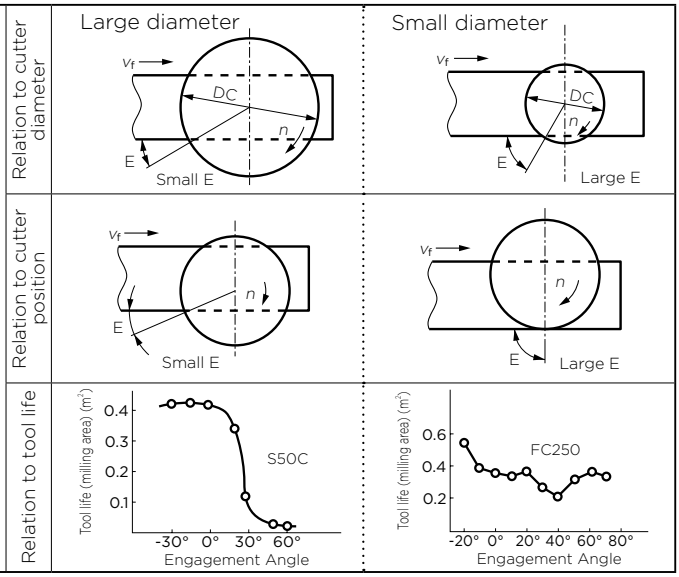
Milling Edition - The Basics of Milling

■ Relation between engagement angle and tool life



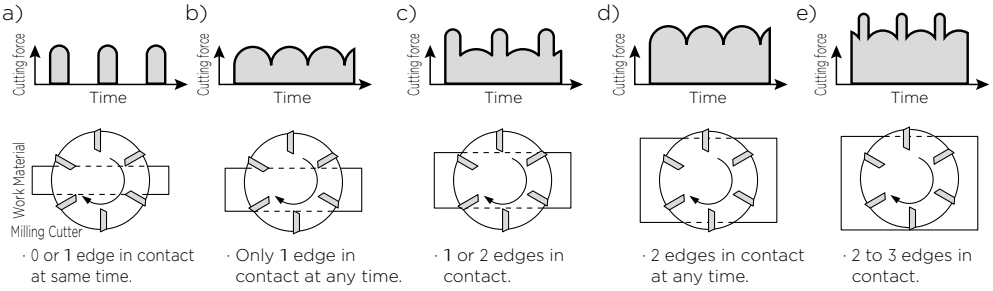
The engagement angle denotes the angle at which the full length of the cutting edge comes in contact with the work material, with reference to the feed direction.

- The larger E is, the shorter the tool life.
- To change the value of E:
  (1) Increase the cutter size.
  (2) Shift the position of the cutter.



● Relation between the number of simultaneously engaged cutting edges and cutting force

Normally, a cutting width 70 to 80% of the cutter diameter is considered appropriate, as shown in example d). However, this may not apply due to the actual rigidity of the machine or workpiece, and the machine horsepower.



- a) 0 or 1 edge in contact at same time.
- b) Only 1 edge in contact at any time.
- c) 1 or 2 edges in contact.
- d) 2 edges in contact at any time.
- e) 2 to 3 edges in contact.

■ Improving surface roughness

(1) Inserts with wiper flat

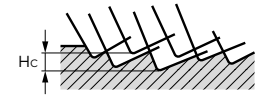
When all of the cutting edges have wiper flats, a few teeth protrude due to inevitable runout and act as wiper inserts.

- Insert equipped with straight wiper flat
  (Face angle: Around 15′ to 1°)
- Insert equipped with curved wiper flat
  (Curvature: ≈ R500 (example))

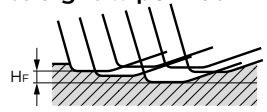
(2) Wiper insert assembling system

A system in which one or two inserts (wiper inserts) protrude with a smooth curved edge just a little beyond the other teeth to wipe the milled surface. (Applicable to WGX series, DGC series, etc.)

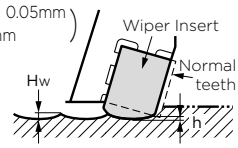
● Surface roughness without wiper flat



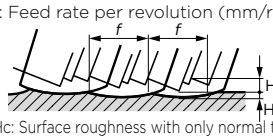
● Surface roughness with straight wiper flat



h: Projection value of wiper insert
(Cast Iron: 0.05mm
Al: 0.03mm)

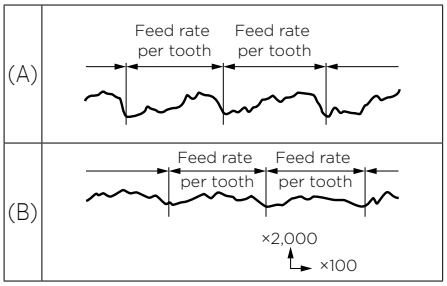


f: Feed rate per revolution (mm/rev)



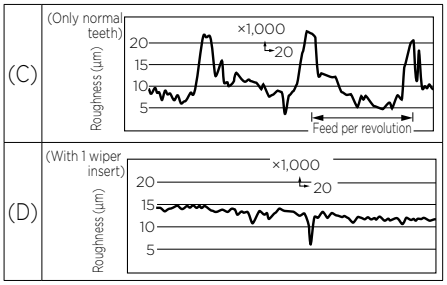
Hc: Surface roughness with only normal teeth
Hw: Surface roughness with wiper insert

● Surface roughness with wiper flat (difference in face cutting edge)



- Work material: 34CrMo4
- Cutter: DPG5160R (per tooth)
- v_c = 154m/min
  f_z = 0.234mm/t
  a_p = 2mm
- Face Cutting Edge Angle
  (A): 28′
  (B): 6′

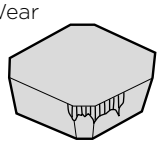
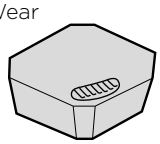
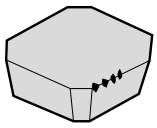
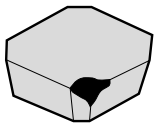
● Effects of wiper insert (example)



- Work material: GG-25
- Cutter: DPG4100R
- Insert: SPCH42R
- Face runout: 0.015mm
- Runout: 0.04mm
  v_c = 105m/min
  f_z = 0.29mm/t
  (1.45 mm/rev)
- (C): Normal teeth
- (D): Per wiper edge

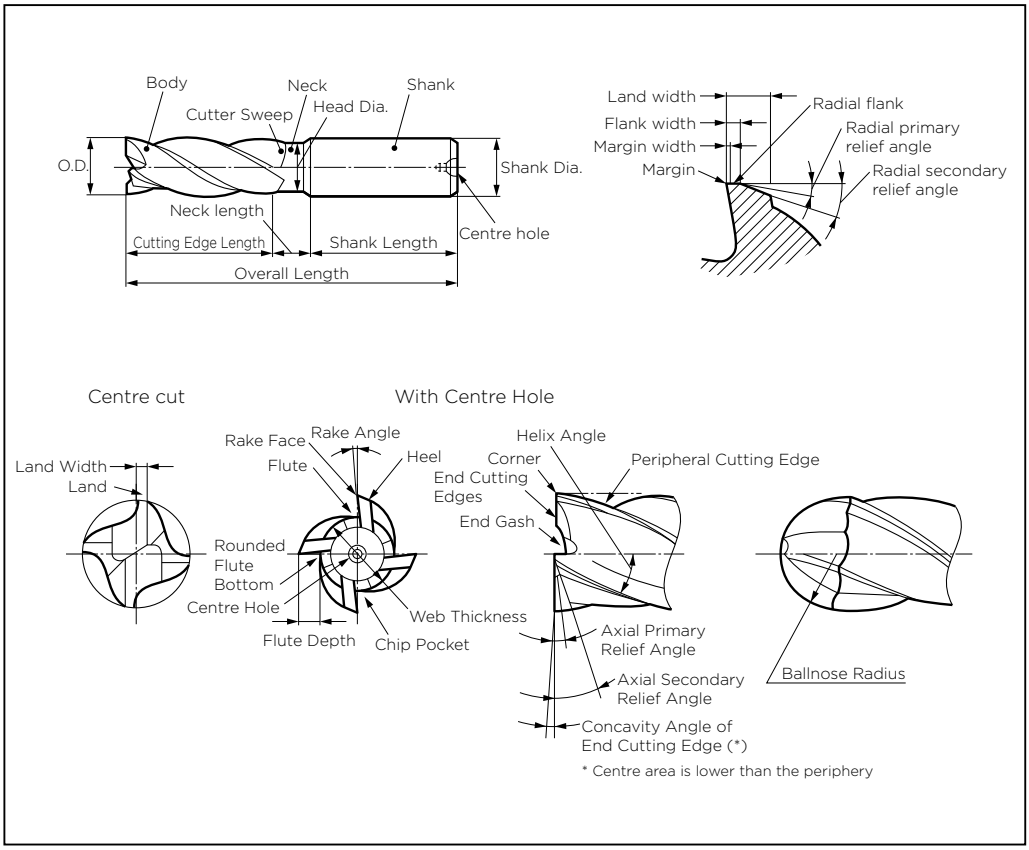
Milling Edition - Troubleshooting for Milling

■Troubleshooting for Milling

<table>
<tr><th colspan="2">Failure</th><th colspan="2">Basic Remedies</th><th>Countermeasure Examples</th></tr>
<tr><td rowspan="5">Cutting Edge Failure</td><td>Excessive Flank Wear
  </td><td>Tool Grade
Cutting Conditions</td><td>· Select a more wear-resistant grade.
Carbide (P30→P20 / K20→K10) → (Coated / Cermet)
· Decrease the cutting speed.
· Increase feed rate.</td><td>· Recommended Insert Grades<table><tr><th></th><th>Steel</th><th>Cast Iron</th><th>Non-Ferrous Alloy</th></tr><tr><td>Finishing</td><td>T250A, T2500A, T4500A (Cermet)</td><td>ACK100 (Coated) BN7000 (SUMIBORON)</td><td>DA1000 (SUMIDIA)</td></tr><tr><td>Roughing</td><td>ACP100, ACP2000 (Coated)</td><td>ACK200, ACK2000 (Coated)</td><td>DL1000 (Coated)</td></tr></table></td></tr>
<tr><td>Excessive Crater Wear
  </td><td>Tool Grade
Tool Design
Cutting Conditions</td><td>· Select a crater-resistant grade.
· Use a sharp chipbreaker. (G → L)
· Decrease the cutting speed.
· Reduce depth of cut and feed rate.</td><td>· Recommended Insert Grades<table><tr><th></th><th>Steel</th><th>Cast Iron</th><th>Non-Ferrous Alloy</th></tr><tr><td>Finishing</td><td>T250A, T2500A T4500A (Cermet)</td><td>ACK100, ACK2000 (Coated)</td><td>DA1000 (SUMIDIA)</td></tr><tr><td>Roughing</td><td>ACP100, ACP2000 (Coated)</td><td>ACK200, ACK2000 (Coated)</td><td>DL1000 (Coated)</td></tr></table></td></tr>
<tr><td>Chipping
  </td><td>Tool Grade
Tool Design
Cutting Conditions</td><td>· Use a tougher grade.
P10→P20→P30
K01→K10→K20
· Select a negative/positive cutter with a large peripheral cutting edge angle (a small approach angle).
· Reinforce the cutting edge (honing).
· Select a stronger chipbreaker. (G → H)
· Reduce feed rate.</td><td>· Recommended Insert Grades<table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>ACP200, ACP2000 (Coated)</td><td>ACK200, ACP2000 (Coated)</td></tr><tr><td>Roughing</td><td>ACP300, ACP3000 (Coated)</td><td>ACK300, ACK3000 (Coated)</td></tr></table>· Recommended cutter: SEC-WaveMill WGX series
· Cutting conditions: Refer to page H22</td></tr>
<tr><td>Fracture
  </td><td>Tool Grade
Tool Design
Cutting Conditions</td><td>· If it is due to excessive low speeds or very low feed rates, select a grade resistant to adhesion.
· If the cause is thermal cracking, select a thermal impact resistant grade.
· Select a negative/positive (or double negative) cutter type with a large peripheral cutting edge angle (a small approach angle).
· Reinforce the cutting edge (honing).
· Select a stronger chipbreaker. (G → H)
· Increase insert size (thickness in particular).
· Select appropriate conditions for that particular application.</td><td>· Recommended Insert Grades<table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Roughing</td><td>ACP300, ACK3000 (Coated)</td><td>ACK300, ACK3000 (Coated)</td></tr></table>· Recommended cutter: SEC-WaveMill WGX series
· Insert Thickness: 3.18 → 4.76mm
· Chipbreaker type: Standard → Strong edge type
· Cutting conditions: Refer to page H22</td></tr>
<tr><td rowspan="5">Others</td><td>Unsatisfactory Machined Surface Finish</td><td>Tool Grade
Tool Design
Cutting Conditions</td><td>· Select an adhesion-resistant grade.
Carbide → Cermet
· Improve axial runout of cutting edges.
(Use a cutter with less runout. / Mount the correct insert.)
· Use a wiper insert.
· Use cutters dedicated for finishing.
· Increase the cutting speed.</td><td>· Recommended Cutters and Insert Grades<table><tr><th colspan="2"></th><th>Steel</th><th>Cast Iron</th><th>Non-Ferrous Alloy</th></tr><tr><td rowspan="2">General-purpose</td><td>Cutter Insert</td><td>WGX series* ACP200 (Coated)</td><td>DGC series ACK200 (Coated)</td><td>ANX series* DA1000 (SUMIDIA)</td></tr><tr><td>Finishing</td><td>Cutter Insert</td><td>WGX series T4500A (Cermet)</td><td>FMU series BN7000 (SUMIBORON)</td><td>ANX series DA1000 (SUMIDIA)</td></tr></table>Cutters marked with * can be mounted with wiper inserts.</td></tr>
<tr><td>Chattering</td><td>Tool Design
Cutting Conditions
Others</td><td>· Select a cutter with sharp cutting edges.
· Use an irregular pitched cutter.
· Reduce the feed rate.
· Improve the rigidity of the workpiece and cutter clamp.</td><td>· Recommended Cutters
For steel: SEC-WaveMill WGX series
For cast iron: SEC-Sumi Dual Mill DGC series
For light alloy: High-efficiency PCD Cutter for Aluminum Alloys ANX series</td></tr>
<tr><td>Unsatisfactory Chip Control</td><td>Tool Design</td><td>· Select a cutter with good chip evacuation features.
· Reduce number of teeth.
· Use a wide chip pocket.</td><td>· Recommended cutter: SEC-WaveMill WGX series</td></tr>
<tr><td>Edge Chipping On Workpiece</td><td>Tool Design
Cutting Conditions</td><td>· Increase the peripheral cutting edge angle (decrease the approach angle).
· Change the chipbreaker blade type. (G → L)
· Reduce the feed rate.</td><td>· Recommended cutter: SEC-WaveMill WGX series</td></tr>
<tr><td>Burr Formation</td><td>Tool Design
Cutting Conditions</td><td>· Use a sharp-edged cutter.
· Increase feed rate.
· Use a burr-proof insert.</td><td>· Recommended cutter: SEC-WaveMill WGX series + FG Chipbreaker
SEC-Sumi Dual Mill DGC series + FG Chipbreaker</td></tr>
</table>

Endmilling Edition - The Basics of Endmilling

■ Parts



■ Calculating Cutting Conditions (Square Endmill)

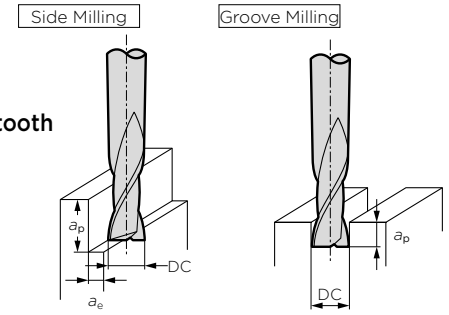
● Calculating cutting speed

$$v_c = \frac{\times\ DC \times n}{1{,}000} \qquad n = \frac{1{,}000 \times v_c}{\times\ DC}$$

● Calculating feed rate per revolution and per tooth

$$v_f = n \times f \qquad f = \frac{v_f}{n}$$

$$v_f = n \times f_z \times z \qquad f_z = \frac{f}{z} = \frac{v_f}{n \times z}$$

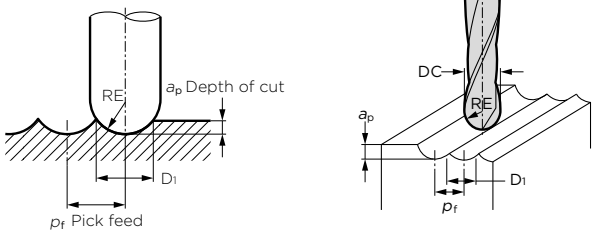


(Ballnose Endmill)

● Calculating notch width (D_1)

$$D_1 = 2\times\sqrt{2\times RE\times a_p - a_p^2}$$

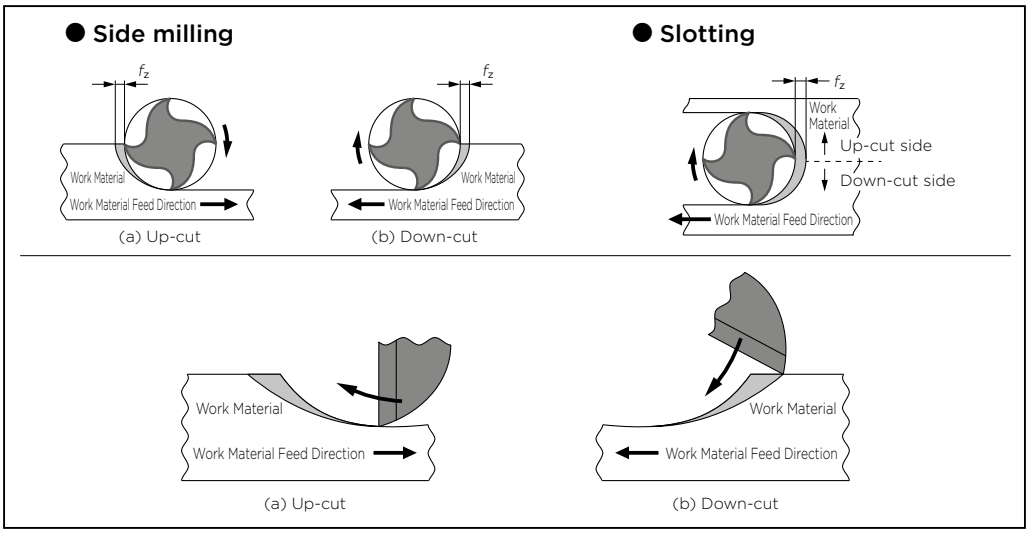
●Cutting speed and feed rate (per revolution and per tooth) are calculated using the same formula as the square endmill.

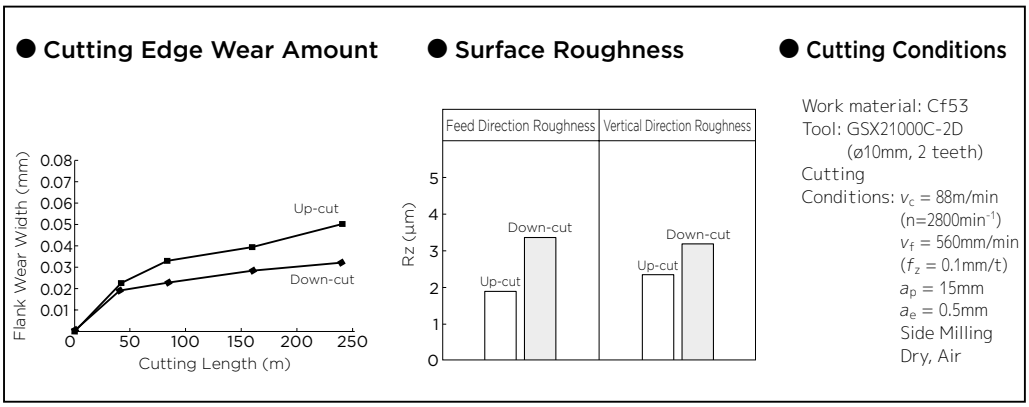


v_c	: Cutting speed (m/min)
	: $\pi \approx 3.14$
DC	: Endmill diameter (mm)
n	: Spindle speed (min^{-1})
v_f	: Feed rate (mm/min)
f	: Feed rate per revolution (mm/rev)
f_z	: Feed rate per tooth (mm/t)
z	: Number of teeth
a_p	: Depth of cut in axial direction (mm)
a_e	: Depth of cut in radial direction (mm)
RE	: Ballnose radius

Endmilling Edition - The Basics of Endmilling

■ Up-cut and Down-cut

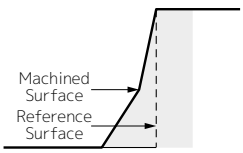




■ Relation Between Cutting Conditions and Deflection

Endmill specifications			Side milling Work Material: Pre-hardened steel (40HRC) Cutting conditions: v_c=25m/min, a_p=12mm, a_e=0.8mm		Grooving Work Material: Pre-hardened steel (40HRC) Cutting conditions: v_c=25m/min, a_p=8mm, a_e=8mm (Up Cut side / Down Cut side)	
Cat. No.	Number of Teeth	Helix Angle	Feed Rate 0.16mm/rev Style		Feed Rate 0.11mm/rev Style	
			Up-cut	Down-cut	Up-cut	Down-cut
GSX20800S-2D	2	30°				
GSX40800S-2D	4	30°				
Results			· The tool tip tends to back off with the down-cut. · The 4-flute type offers more rigidity and less backing off.		· The side of the slot tends to cut into the up-cut side toward the bottom of the slot. · The 4-flute type offers higher rigidity and less deflection.	

Cat. No.	Number of Teeth	Helix Angle	Feed Rate 0.05mm/rev Style		Feed Rate 0.03mm/rev Style	
			Up-cut	Down-cut	Up-cut	Down-cut
GSX20800S-2D	2	30°				
GSX40800S-2D	4	30°				



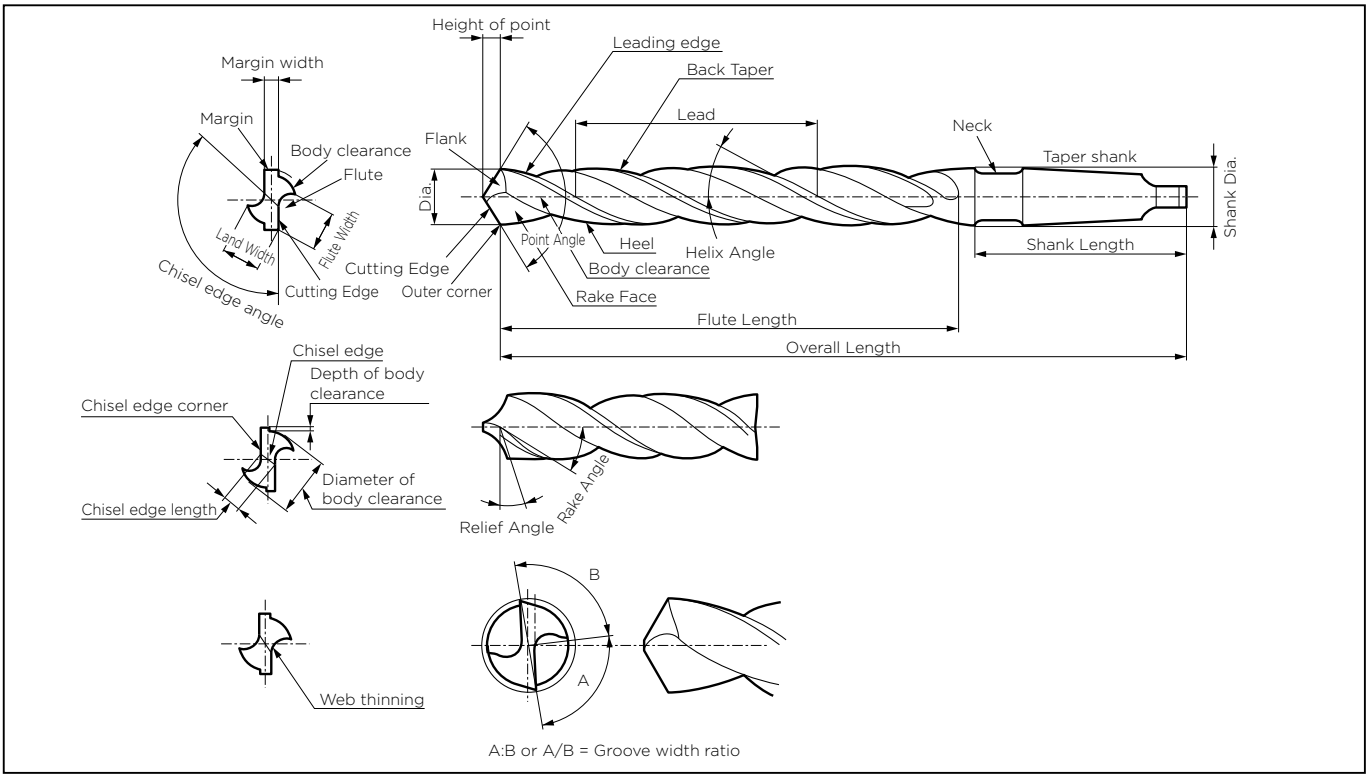
Endmilling Edition - Troubleshooting for Endmilling

■ Troubleshooting for Endmilling

Failure		Cause		Countermeasures
Cutting Edge Failure	Excessive Wear	· Cutting Conditions	· Cutting speed is too fast	· Decrease cutting speed and feed rate
			· Feed rate is too large	
		· Tool Shape	· The flank relief angle is too small	· Change to an appropriate flank relief angle
		· Tool Material	· Insufficient wear resistance	· Select a more wear-resistant substrate · Use a coated tool
	Chipping	· Cutting Conditions	· Feed rate is too large	· Decrease cutting speed
			· Depth of cut is too large	· Reduce depth of cut
			· Tool overhang is too long	· Adjust tool overhang to the correct length
		· Machine Area	· Workpiece clamping is too weak	· Clamp the workpiece firmly
			· Tool mounting is unstable	· Make sure the tool is seated in the chuck properly
	Fracture	· Cutting Conditions	· Feed rate is too large	· Decrease cutting speed
			· Depth of cut is too large	· Reduce depth of cut
			· Tool overhang is too long	· Reduce tool overhang as much as possible
			· Cutting edge is too long	· Select a tool with a shorter cutting edge
		· Tool Shape	· Web thickness is too small	· Change to more appropriate web thickness
Others	Deflection in Wall Surface	· Cutting Conditions	· Feed rate is too large	· Decrease cutting speed
			· Depth of cut is too large	· Reduce depth of cut
			· Tool overhang is too long	· Adjust tool overhang to the correct length
			· Cutting on the down-cut	· Change direction to up-cut
		· Tool Shape	· Helix angle is too large	· Use a tool with a smaller helix angle
			· Web thickness is too small	· Use a tool with the appropriate web thickness
	Unsatisfactory Machined Surface Finish	· Cutting Conditions	· Feed rate is too large	· Decrease cutting speed
			· Chip biting	· Use air blow
				· Use an insert with a larger relief pocket
	Chattering	· Cutting Conditions	· Cutting speed is too fast	· Decrease the cutting speed
			· Cutting on the up-cut	· Change direction to down-cut
			· Tool overhang is too long	· Adjust tool overhang to the correct length
		· Tool Shape	· Rake angle is too large	· Use a tool with an appropriate rake angle
		· Machine Area	· Workpiece clamping is too weak	· Clamp the workpiece firmly
			· Tool mounting is unstable	· Make sure the tool is seated in the chuck properly
	Chip Blockage	· Cutting Conditions	· Feed rate is too large	· Decrease cutting speed
			· Depth of cut is too large	· Reduce depth of cut
		· Tool Shape	· Too many teeth	· Reduce number of teeth
			· Chip biting	· Use air blow

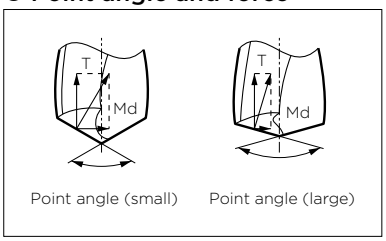
Drilling Edition - The Basics of Drilling

■ Drill Parts



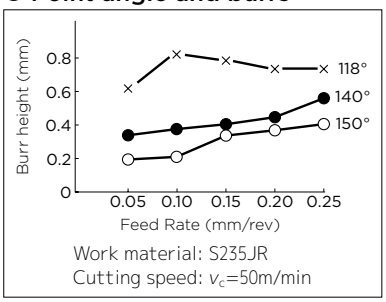
A:B or A/B = Groove width ratio

● Point angle and force



When point angle is large, thrust increases but torque decreases.

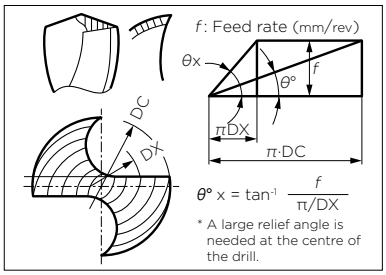
● Point angle and burrs



Work material: S235JR
Cutting speed: v_c=50m/min

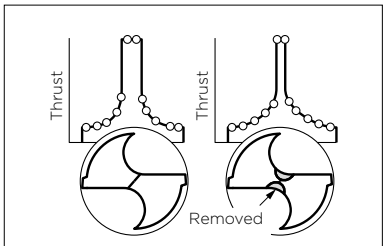
When point angle is large, burr height becomes low.

● Minimum requirement relief angle for drilling



* A large relief angle is needed at the centre of the drill.

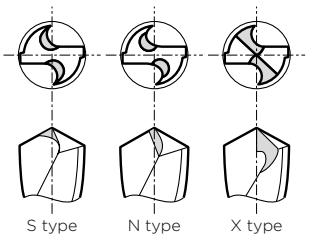
● Effects of web thinning



Web thinning decreases the thrust concentrated at the chisel edge, makes the drill edge sharp, and improves chip control.

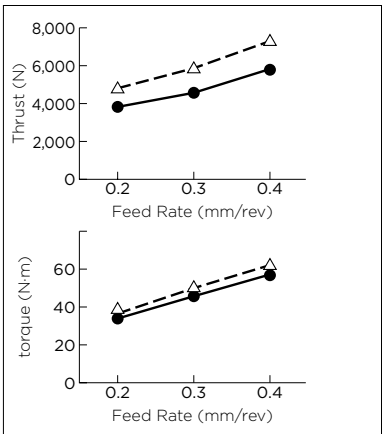
● Chisel width decreased by thinning

Typical types of thinning



S type: Standard type used for general-purposes.
N type: Suitable for thin web drills.
X type: For hard-to-cut materials or deep hole drilling. Entry easier.

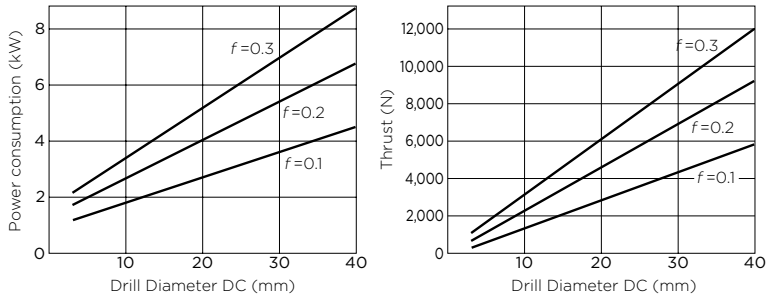
● Relation between edge treatment and cutting force



Drill: MULTIDRILL KDS215MAK
Edge treatment width: ●→0.15mm △ →0.23mm
Work material: C50 (230HB)
Cutting Conditions: v_c = 50m/min Wet

Drilling Edition - The Basics of Drilling

■ Reference for Power Requirements and Thrust



f: Feed rate (mm/rev)

Work material: C45 (220HB)

■ Cutting Conditions Selection

● Control cutting force for low-rigidity machines

The following table shows the relation between edge treatment width and cutting force. If the cutting force is too great and causes issues, take measures such as reducing the feed rate or reducing the cutting edge treatment of the drill.

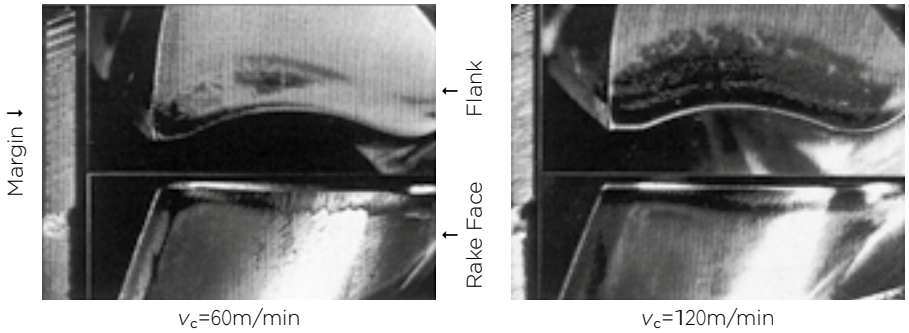
Drill diameter: ø10mm
Work material: C50 (230HB)

Cutting Conditions		Edge treatment width			
		0.15mm		0.05mm	
v_c(m/min)	*f*(mm/rev)	Torque (N/m)	Thrust (N)	Torque (N/m)	Thrust (N)
40	0.38	12.8	2,820	12.0	2,520
50	0.30	10.8	2,520	9.4	1,920
60	0.25	9.2	2,320	7.6	1,640
60	0.15	6.4	1,640	5.2	1,100

● High speed machining recommendation

If the machine has enough power and sufficient rigidity, reasonable tool life can be ensured even when adopting higher-efficiency machining. However, sufficient coolant must be supplied.

Wear example

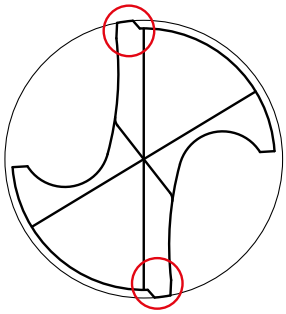


v_c=60m/min v_c=120m/min

Work material : S50C (230HB)
Cutting Conditions : *f* = 0.3mm/rev
H =50mm
Tool life : 600 holes (Cutting length: 30m)

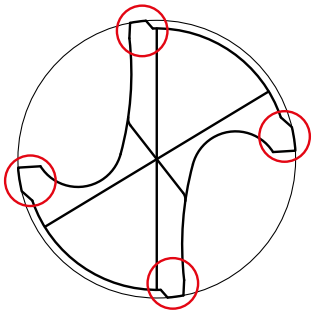
■ Explanation of Margins (Difference between single and double margins)

● Single Margin (2 guides: ○ part)



● Shape used on most drills

● Double Margin (4 guides: ○ part)

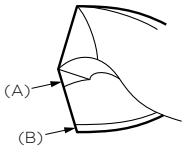


● 4-point guiding reduces hole bending and waviness for improved stability and accuracy during deep hole drilling.

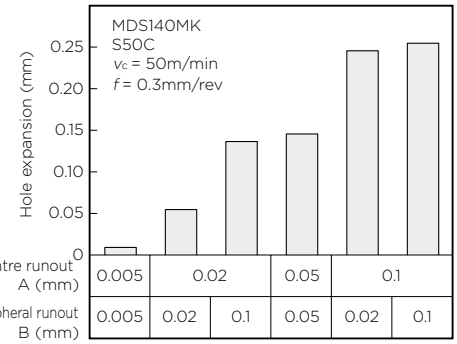
Drilling Edition - The Basics of Drilling

■ Runout Accuracy

For the runout accuracy of web-thinned drills, the runout after thinning (A) is important in addition to the difference in lip height (B).



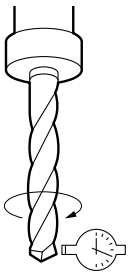
(A): Runout accuracy of thinning point
(B): The difference of the lip height



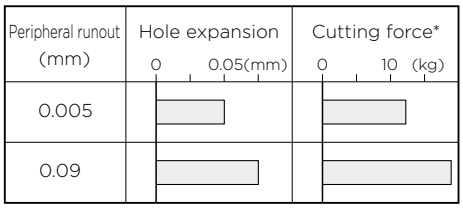
■ Drill Mounting Peripheral Runout Accuracy

● When the tool rotates

The peripheral runout accuracy of the drill mounted on the spindle should be controlled within 0.03mm. If the runout exceeds the limit, the drilled hole will become large with an increase in lateral cutting force, which may result in drill breakage.



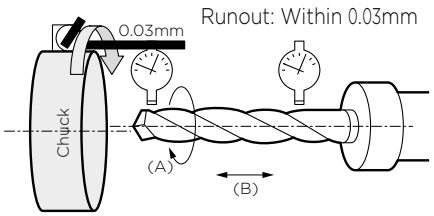
Runout: Within 0.03mm



* Horizontal cutting force.
Drill: MDS120MK Work Material: C50 (230HB)
Cutting Conditions: v_c = 50m/min, f = 0.3mm/rev, H = 38mm
Water-soluble Coolant

● When the work material rotates

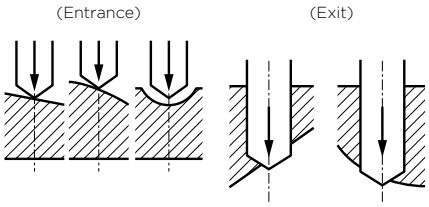
The peripheral runout at the drill edge (A) and the concentricity at (B) should be controlled within 0.03mm.



■ Work Material Surface and Drill Performance

● Work material with slanted or uneven surface

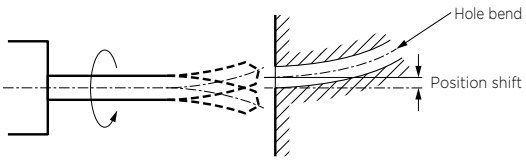
If the surface of the hole entrance or exit is slanted or uneven, decrease the feed rate to 1/3 to 1/2 of the recommended cutting conditions.



■ How to Use a Long Drill

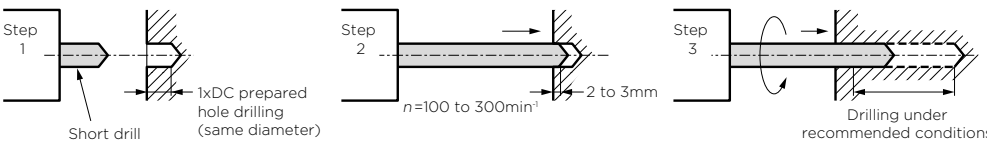
● Problem

When using a long drill (e.g. XHGS series), SMDH-D type drill or SMDH-12D type drill at high rotation speeds, the runout of the drill tip may cause a deviation at the entry point as shown on the right, bending the drill hole and resulting in drill breakage.



● Remedies

Method 1



Method 2 *Low rotation speed minimises centrifugal forces and prevents the drill from bending.

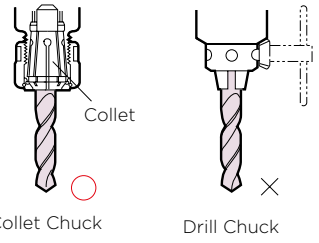


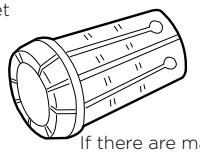
Drilling Edition - MULTIDRILL Usage Guidance

■ Drill Retention

(1) Collet Selection and Maintenance

- Ensure proper chucking of drills to prevent vibration. Collet type chucks are recommended, as the grip is strong and can be used with ease.
  (Drill chucks and keyless chucks are not suitable for MULTIDRILL as they have a weaker grip force.)
- When replacing drills, regularly remove cutting chips inside the collet by cleaning the collet and the spindle with oil. Repair marks with an oilstone.

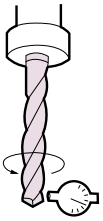




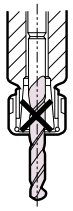
If there are marks, repair with an oilstone or change to a new one.

(2) Drill Mounting

- The peripheral runout of the drill mounted on the spindle must be within 0.03mm.
- Do not chuck on the drill flute.
  (If the drill flute is inside the holder, chip evacuation will be obstructed, causing damage to the drill.)



Peripheral runout within 0.03mm.



Do not grip on the drill flute.

■ Using Cutting Oil

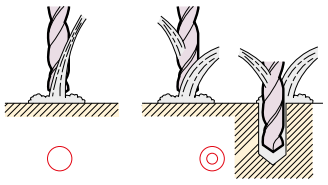
(1) Choosing Cutting Oil

- If the cutting speed is more than 40m/min, cutting oil (JISW1 type 2) is recommended as its cooling effects and chip control capacity are good, and it is highly soluble.
- For optimum tool life at cutting speeds of less than 40m/min, sulfo-chlorinated oil (JISA1 type 1) is recommended as it has a lubricating effect and is non-water-soluble.
  * Insoluble cutting oil may be flammable. To prevent fire, a substantial amount of oil should be used to cool the component so that smoke and heat will not be generated.

(2) Supply of Coolant

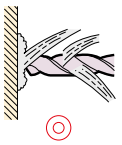
- External Coolant Supply
  There must be a sufficient external supply of coolant at the hole position.
  Coolant pressure 0.3 to 0.5MPa, coolant volume 3 to 10ℓ/min is a guideline.
- Internal Coolant Supply
  For drilling holes ø4 or smaller, the coolant pressure must be at least 2.0MPa to ensure sufficient supply of coolant. For ø6 and above, if L/D is <3, the pressure should be at 0.5 to 1.0MPa. If L/D is > 3, a pressure of at least 1 to 2MPa is recommended.

- External Coolant Supply
- Vertical drilling



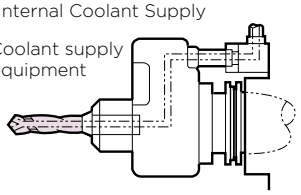
Use high pressure at entrance　　Easy to use

- Horizontal drilling

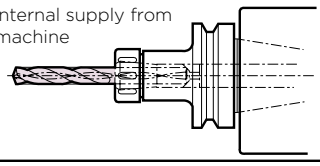


Use high pressure at entrance

- Internal Coolant Supply
- Coolant supply equipment



- Internal supply from machine

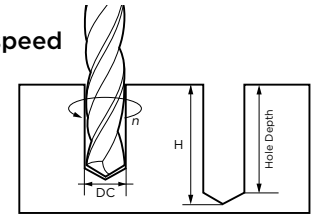


■ Calculation of Power Consumption and Thrust

● Calculating cutting speed

$$v_c = \frac{\times\ DC \times n}{1{,}000}$$

$$n = \frac{1{,}000 \times v_c}{\times\ DC}$$



● Calculating feed rate per revolution and per tooth

$$v_f = n \times f \qquad f = \frac{v_f}{n}$$

v_c : Cutting Speed (m/min)
: π ≈ 3.14
DC : Drill Diameter (mm)
n : Rotation Speed (min^{-1})
v_f : Feed Rate (mm/min)
f : Feed Rate per Revolution (mm/rev)
H : Drilling Depth (mm)
T : Cutting Time (min)
HB : Work Material Brinell Hardness

● Calculating cutting time

$$T = \frac{H}{v_f}$$

● Calculating power consumption and thrust <Experimental>

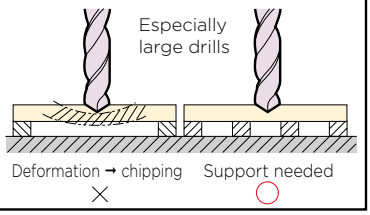
Power consumption (kW) = $HB \times DC^{0.68} \times v_c^{1.27} \times f^{0.59} / 36{,}000$

Thrust (N) = $0.24 \times HB \times DC^{0.95} \times f^{0.61} \times 9.8$

*When designing the machine, an allowance of 1.6 x power consumption and 1.4 x thrust should be given.

■ Clamping of the Workpiece

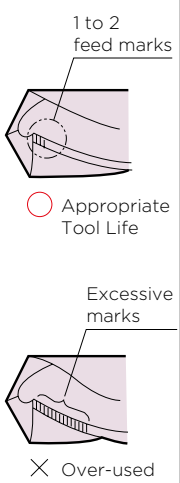
High thrust forces occur during high-efficiency drilling. Therefore, the workpiece must be supported to prevent fractures caused by deformation. Large torques and horizontal cutting forces also occur. Therefore, the workpiece must be clamped firmly enough to withstand them.



■ Drill Regrinding

- When to regrind
  When one or two feed marks (lines) appear on the margin, when corner wear reaches the margin width or when small chipping occurs, it indicates that the drill needs to be sent for regrinding.
  Regrind promptly.
- How and where to regrind
  We recommend regrinding and recoating. Regrinding alone is fine, but if the work material is steel, recoating is recommended to prevent shortening of tool life. Note: Ask us or an approved vendor to recoat with our proprietary coating.
- Regrinding on your own
  Customers regrinding their own drills can obtain MULTIDRILL Regrinding Instructions from us directly or from their vendor.

- Tool life determinant



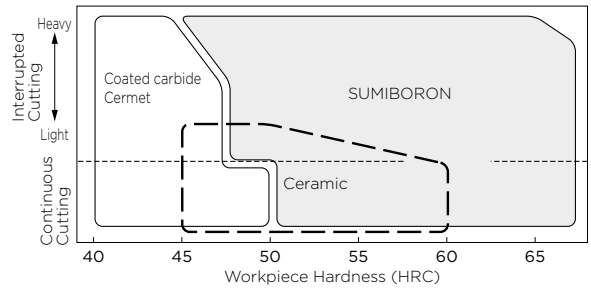
Drilling Edition - Troubleshooting for Drilling

■ Troubleshooting for Drilling

Failure		Cause	Basic Remedies	Countermeasure Examples
Drill Failure	Excessive Wear on Rake Face	· Inappropriate cutting conditions	· Use higher cutting speeds.	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
			· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
		· Unsuitable coolant	· Reduce pressure if using internal coolant	· 1.5MPa or less (external coolant supply can be used at hole depths (L/D) of 2 or less)
			· Use coolant with more lubricity	· Use JIS A1 grade No. 1 or its equivalent
	Chisel Point Breakage	· Poor drill engagement	· Reduce feed rate at entry point.	· f=0.08 to 0.12mm/rev
			· Pre-machining of flat surface for entry	· Drill flat base with Flat MULTIDRILL
		· Equipment, work materials, etc. lack rigidity	· Change cutting conditions to reduce resistance	· Increase v_c to decrease f (reduce thrust)
			· Improve clamp strength of work material	
		· Cutting edge is too weak	· Increase size of chisel width	· Use a chisel with a width of 0.1 to 0.2mm
			· Increase amount of honing on cutting edge	· Increase the width of the thinning area at the centre by 1.5 times
	Breakage on Peripheral Cutting Edge	· Inappropriate cutting conditions	· Decrease the cutting speed	· Refer to the lower limit of the recommended cutting conditions listed in this catalogue
			· Reduce feed rate	· Refer to the lower limit of the recommended cutting conditions listed in this catalogue
		· Unsuitable coolant	· Use coolant with more lubricity	· Use JIS A1 grade No. 1 or its equivalent
		· Equipment, work materials, etc. lack rigidity	· Improve clamp strength of work material	
		· Cutting edge is too weak	· Increase amount of honing on cutting edge	· Increase the width of the outer cutting edge by 1.5 times
			· Reduce the front relief angle	· Reduce the front relief angle by 2 to 3°
		· Biting from peripheral cutting edge	· Increase margin width (double margin specification).	· Increase the margin width by 2 to 3 times
		· Interruption during drill engagement	· Reduce feed rate	· Refer to the lower limit of the recommended cutting conditions listed in this catalogue
			· Increase amount of honing on cutting edge	· Increase the width of the outer cutting edge by 1.5 times
			· Reduce the front relief angle	· Reduce the front relief angle by 2 to 3°
	Margin Wear	· Inappropriate cutting conditions	· Decrease the cutting speed	· Refer to the lower limit of the recommended cutting conditions listed in this catalogue
		· Unsuitable coolant	· Use coolant with more lubricity	· Use JIS A1 grade No. 1 or its equivalent
			· Use more coolant	· If using external coolant, switch to internal coolant
		· Remaining margin wear	· Schedule for earlier regrind and ensure back taper	· If margin damage occurs, regrind to 1mm or less
		· Improper tool design	· Increase amount of back taper	· Make back taper 0.5/100
			· Reduce margin width	· Reduce the margin width to around 2/3
	Drill Breakage	· Chip blockage	· Use the optimal cutting conditions and tools	· Refer to recommended cutting conditions listed in this catalogue
			· Use more coolant	· If using external coolant, switch to internal coolant
		· Collet clamp too weak	· Use a collet with strong grip force	· If the collet chuck is damaged, replace it · Change the collet holder to the next size up
		· Equipment, work materials, etc. lack rigidity	· Improve clamp strength of work material	
Unsatisfactory Hole Accuracy	Oversized Holes	· Poor drill engagement	· Reduce feed rate at entry point.	· f=0.08 to 0.12mm/rev
			· Decrease the cutting speed	· Refer to the lower limit of the recommended cutting conditions listed in this catalogue
			· Pre-machining of flat surface for entry	· Flat machining with endmill
		· Drill lacks rigidity	· Use the optimal drill type for the hole depth	· Refer to this catalogue
			· Improve overall drill rigidity	· Large web, small groove width
		· Drill has runout	· Improve drill mounting precision	· If the collet chuck is damaged, replace it
			· Improve drill holding rigidity	· Change the collet holder to the next size up
		· Equipment, work materials, etc. lack rigidity	· Improve clamp strength of work material	
	Poor Surface Roughness	· Inappropriate cutting conditions	· Increase cutting speed.	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
			· Reduce feed rate	· Refer to the lower limit of the recommended cutting conditions listed in this catalogue
		· Unsuitable coolant	· Use coolant with more lubricity	· Use JIS A1 grade No. 1 or its equivalent
	Holes Not Straight	· Poor drill engagement	· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
		· Drill is not mounted properly	· Improve drill mounting precision	· If the collet chuck is damaged, replace it
			· Improve drill holding rigidity	· Change the collet holder to the next size up
		· Equipment, work materials, etc. lack rigidity	· Improve clamp strength of work material	
			· Select a double margin tool	· Refer to this catalogue
Unsatisfactory Chip Control	Chips Clog	· Inappropriate cutting conditions	· Increase cutting speed	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
			· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
		· Poor chip evacuation	· Increase volume if using internal coolant	
	Long Stringy Chips	· Inappropriate cutting conditions	· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
			· Increase cutting speed	· Refer to the upper limit of the recommended cutting conditions listed in this catalogue
		· Strong cooling effect	· Reduce pressure if using internal coolant	· The pressure should be 1.5 MPa or less if using internal coolant
		· Dull cutting edge	· Reduce amount of edge honing	· Reduce the width to around 2/3

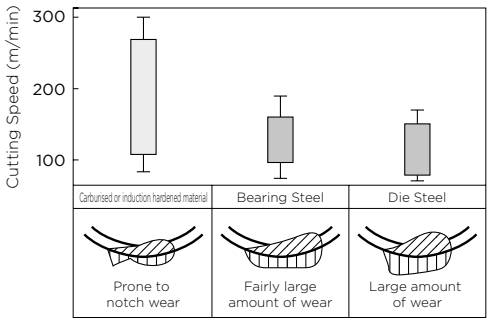
Hardened Steel Machining with SUMIBORON

■ Recommended zones for SUMIBORON by workpiece hardness and shape



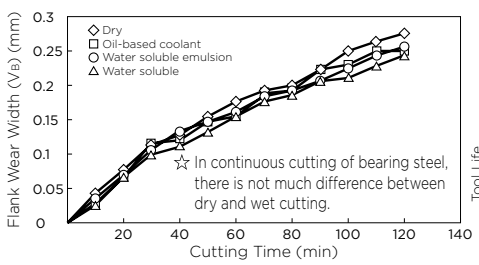
*While 50HRC is the limit for conventional coated carbide, coated carbide AC503U enables machining up to 62HRC (low-speed/continuous)

■ Cutting speed recommendations for each work material



■ Influence of coolant on tool life

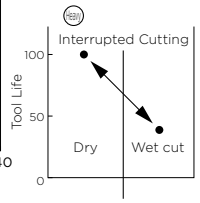
● Continuous Cutting



Work Material: 100Cr6 (58 to 62 HRC)
Cutting conditions: TPGN160304
v_c = 100m/min, a_p = 0.15mm, f = 0.1mm/rev
Continuous Cutting

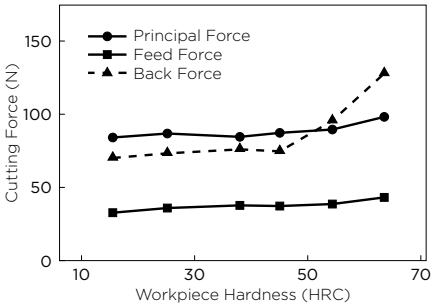
● Interrupted Cutting

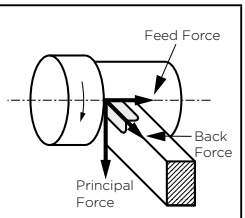
SKD11 with 4 U grooves
Cutting Speed v_c = 100m/min
Depth of Cut a_p = 0.2mm
Feed Rate f = 0.1mm/rev



For continuous cutting, the influence of coolant on tool life is minimal.
For interrupted cutting, the thermal impact shortens the tool life in wet conditions.

■ Relation between work material hardness and cutting force

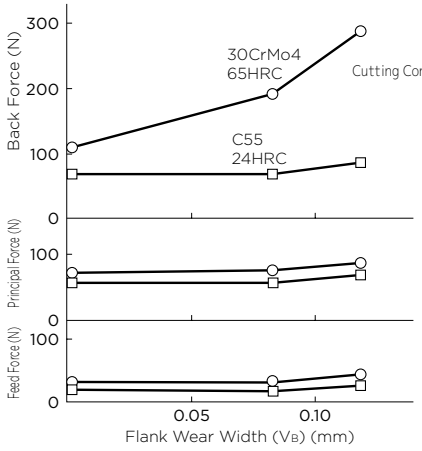




Work Material: C105U
Cutting Conditions: Cutting Speed v_c = 120m/min
Depth of Cut a_p = 0.2mm
Feed Rate f = 0.1mm/rev

Back force increases substantially for harder workpieces.

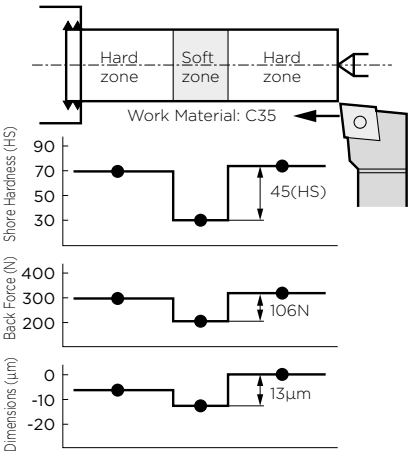
■ Relation between flank wear and cutting force



Cutting Conditions: Cutting Speed v_c = 80m/min
Depth of Cut a_p = 0.15mm
Feed Rate f = 0.1mm/rev

For hardened steel machining, back force increases substantially due to the expansion of flank wear.

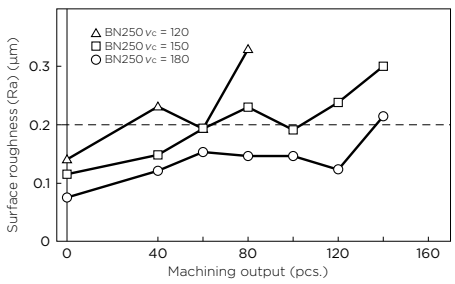
■ Influence of work material hardness on cutting force and accuracy



Cutting Speed: v_c = 120m/min
Depth of Cut: a_p = 0.5mm
Feed rate : f = 0.3mm/rev
Dry

External dimensions in the soft zone are smaller due to lower cutting forces.

■ Relation between cutting speed and surface roughness

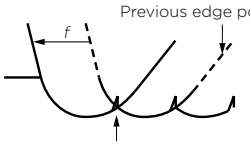
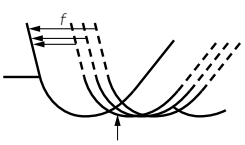


Work Material: 20CrMo4
58 to 62HRC
Holder: MTXNR2525
Tool: TNMA160408 NU

Cutting Conditions:
v_c = 120, 150, 180m/min
f = 0.045mm/rev
a_p = 0.15mm
Wet

At high cutting speeds, surface roughness is more stable.

■ Improvement of surface roughness by altering the feed rate

Constant Feed Rate	Variable Feed Rate
	
Stationary Notch Location	Shifting Notch Location
	

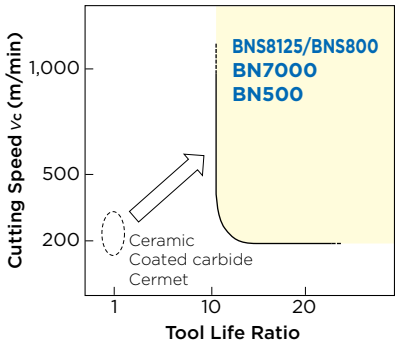
☆ Varying the feed rate spreads the notch location over a larger area.
→Surface finish improves and notch wear decreases.

Hardened Steel Machining with SUMIBORON

■ Advantages of using SUMIBORON for cast iron machining

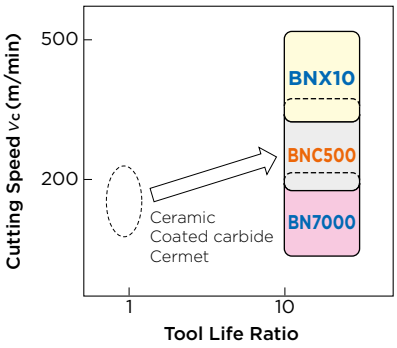
High-speed Machining

● Grey Cast Iron

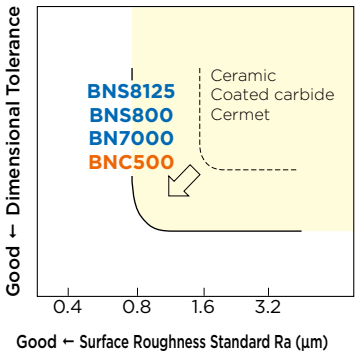


High-speed Machining

● Ductile Cast Iron



High-precision Machining

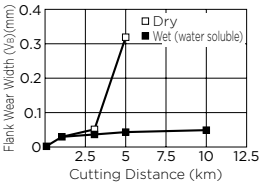


■ Turning

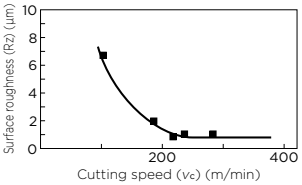
● Cast iron structure and wear shape examples

		FC	FCD
Structure			
	Matrix	Pearlite	Pearlite + Ferrite
Tool wear shape	Wet		
	Dry	 Crater Wear	

(v_c=200 to 500m/min)



Work Material : Continuous cutting with FC250
Tool Material : BN500
Tool Shape : SNGN120408
Cutting Conditions : v_c = 450m/min
a_p = 0.25mm
f = 0.15mm/rev
Dry & Wet (water soluble)





Machine : N/C lathe
Work Material : FC250 200HB
Holder : MTJNP2525
Tool Grade : BN500
Tool Shape : TNMA160408
Cutting Conditions : v_c = 110 to 280m/min
f = 0.1mm/rev
a_p = 0.1mm
Wet

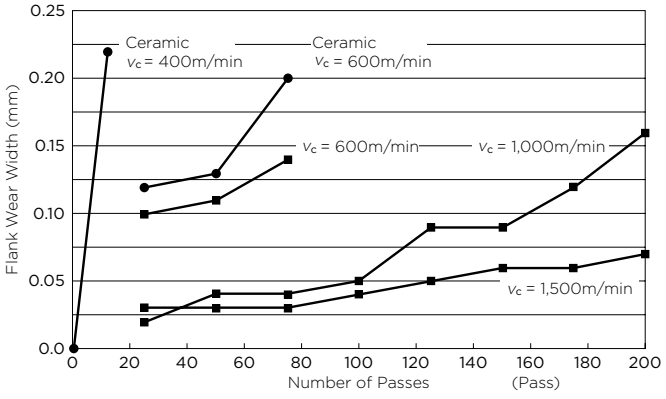
For turning cast iron with SUMIBORON, cutting speeds (v_c) should be 200m/min and above. Wet cutting is recommended.

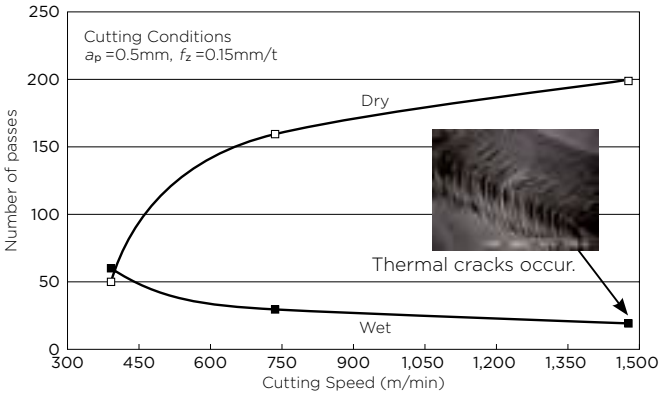
■ Milling

BN Finish Mill EASY (for high-speed finishing of cast iron)



- Enables cutting with v_c of 2,000m/min
- Surface finish roughness 3.2Rz (1.0Ra)
- Economical insert reduces running costs.
- Unit style enables easy runout adjustment.
- Employs safe, anti-centrifugal-force construction for high-speed conditions.





· Work Material : Grey cast iron (FC250)
· Cutting Conditions : a_p = 0.5mm, f_z = 0.1mm/t Dry
· Tool Grade : BN7000

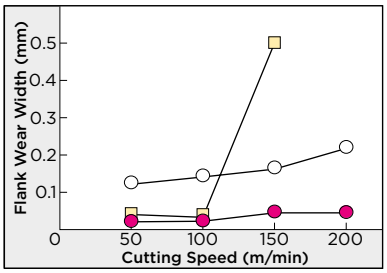
Dry cutting is recommended for high speed milling of cast iron with SUMIBORON.

Machining Exotic Alloys with SUMIBORON

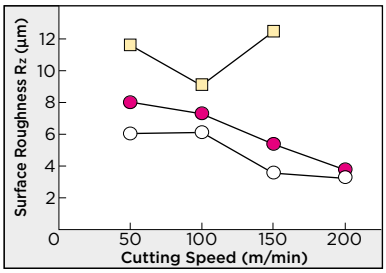
■ Sintered Alloy

SUMIBORON — Cemented Carbide — Cermet

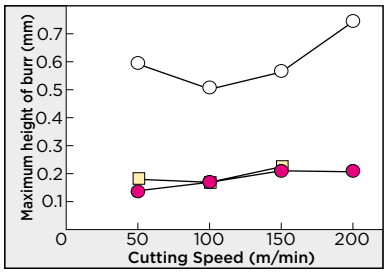
1. Flank wear



2. Surface roughness



3. Height of burr



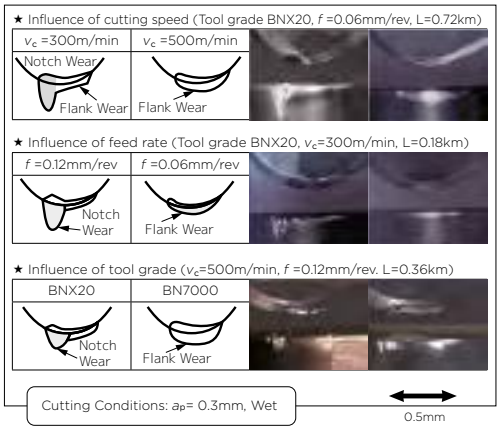
Work Material: Equivalent to SMF4040, ø80-ø100mm heavy interrupted facing with grooves and drilled holes. (After 40 passes)
Cutting Conditions: f = 0.1mm/rev, a_p = 0.1mm Wet
Tool Cat. No.: TNGA160404

Cemented carbide and cermet can perform at v_c up to 100m/min. However, if v_c is around 120m/min or higher, wear occurs rapidly, resulting in poorer surface roughness and greater spread of burrs. On the other hand, SUMIBORON exhibits stability and superior wear resistance, burr prevention and surface roughness, especially at high speeds.

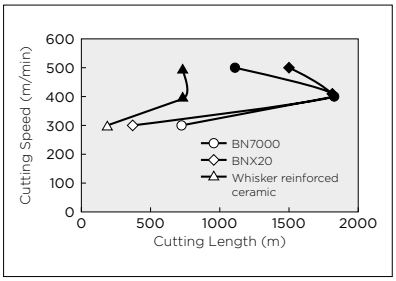
■ Heat-Resistant Alloy

● Nickel based alloy

Typical tool damage of CBN tool when cutting Inconel 718

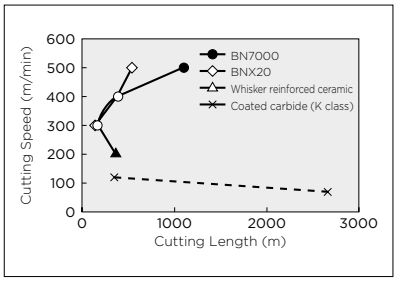


Cutting conditions: f = 0.06mm/rev, a_p= 0.3mm, Wet



Tool life criteria
Notch wear = 0.25mm (○)
or flank wear = 0.25mm
BNX20 is recommended for high speed and low feed rates; BN7000 is recommended for cutting speeds below v_c = 240m/min.

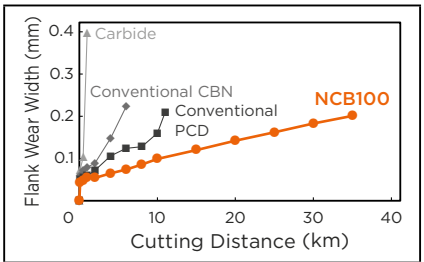
Cutting conditions: f = 0.12mm/rev, a_p= 0.3mm, Wet



Tool life criteria
Notch wear = 0.25mm (○)
or flank wear = 0.25mm
BN7000 is recommended for cutting at high feed rates (over f = 0.1mm/rev).

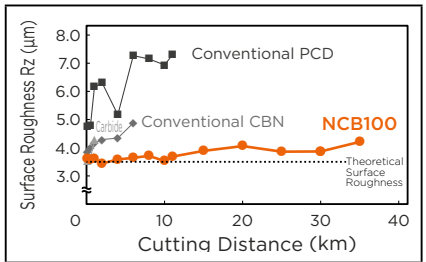
■ Cutting Performance (Machining Titanium Alloy)

● Wear Resistance

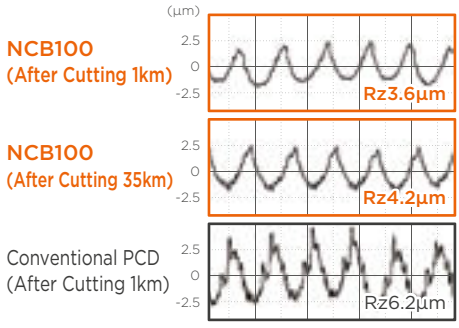


Work Material: Titanium Alloy (Ti-6Al-4V)
Tool Used: CNGA120408
Cutting Conditions: v_c = 150m/min, f = 0.15mm/rev
a_p = 0.5mm Wet (High-pressure Coolant)

● Machined Surface Roughness



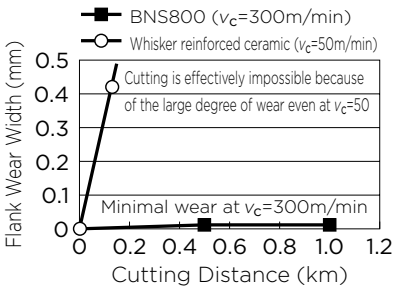
Work Material: Titanium Alloy (Ti-6Al-4V)
Tool Used: CNGA120408
Cutting Conditions: v_c = 150m/min, f = 0.15mm/rev
a_p = 0.5mm Wet (High-pressure Coolant)



■ Hard Facing Alloys

Work Material: Colmonoy No.6
(NiCr-based self-fluxing alloy)

Tool Cat. No. : SNGN090308
Cutting Conditions : v_c = 50,300m/min
f = 0.1mm/rev
a_p = 0.2mm
Dry





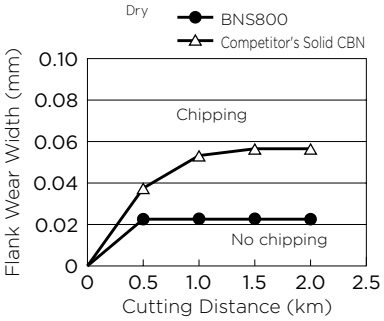
Whisker reinforced ceramic
(v_c=50m/min, after 0.1km of cutting)

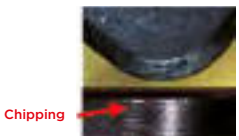


BNS800
(v_c=300m/min, after 1km of cutting)

Work Material: Stellite SF-20
(Co-based self-fluxing alloy)

Tool Cat. No. : SNGN090308
Cutting Conditions : v_c = 50m/min
f = 0.1mm/rev
a_p = 0.2mm
Dry





Competitor's Solid CBN
(After 2km of cutting)



BNS800
(After 2km of cutting)

Cutting Edge Failure and Countermeasures when Machining Hardened Steel

Insert Failure	Cause	Countermeasures
Flank Wear 	· Grade lacks wear resistance	· Select a more wear-resistant grade (e.g. BNC2115, BNC2010,BN1000 or BN2000).
	· Cutting speed is too fast	· Reduce the cutting speed to v_c=200m/min or less (higher feed rate also reduces tool-to-work contact time)
		· Use an insert with a larger relief angle
Crater Wear 	· Grade lacks crater wear resistance	· Select a higher-efficiency grade (e.g. BNC2115, BNC2010, BNX25 or BNX20).
Breakage at Bottom of Crater 	· Cutting speed is too fast	· Reduce the cutting speed to v_c=200m/min or less and increase the feed rate (low speed, high feed) (higher feed rate alone also reduces tool-to-work contact time)
Flaking 	· Grade lacks toughness	· Select a tougher grade (e.g. BNC2125, BNC2020 or BN2000).
	· Back force is too high	· Select an insert with a stronger cutting edge (increase negative land angle and perform honing).
		· If the grade is tough enough, improve the cutting edge sharpness
Notch Wear 	· High stress at boundary	· Change to a grade with a higher notch wear resistance (e.g. BNC2115, BNC2010 or BN2000)
		· Increase cutting speed (150 m/min or more)
		· Change to the Variable Feed Rate method, which alters the feed rate in fixed output intervals
		· Increase negative land angle and perform honing
Chipping at Forward Notch Position 	· Impact to front cutting edge is too large or occurs constantly	· Change to a micro-grained grade with a higher fracture resistance (e.g. BNC2135 and BN350)
		· Increase the feed rate (higher feed rates are recommended to reduce chipping)
		· Select an insert with a stronger cutting edge (increase negative land angle and perform honing).
Chipping at Side Notch Position 	· Impact to side cutting edge is too large or occurs constantly	· Change to a grade with a higher fracture resistance (e.g. BN350 or BNC2135)
		· Reduce feed rate
		· Use an insert with a larger side cutting angle
		· Use an insert with a larger corner radius
		· Select an insert with a stronger cutting edge (increase negative land angle and perform honing).
Thermal Crack 	· Thermal shock is too severe	· Completely dry conditions are recommended
		· Select a grade with better thermal conductivity
		· Reduce cutting speed, feed rate, and depth of cut to decrease the machining load

Reference: SI Unit Conversion List

■ Basic SI units

● Quantity as a reference of SI

Quantity	Material	Symbol
Length	Metre	m
Mass	Kilogram	kg
Time	Second	s
Current	Ampere	A
Temperature	Kelvin	K
Quantity of substance	Mol	mol
Luminous intensity	Candela	cd

● Basic unit provided with unique name and symbol (extracted)

Quantity	Material	Symbol
Frequency	Hertz	Hz
Force	Newton	N
Pressure and stress	Pascal	Pa
Energy, work, and heat quantity	Joule	J
Power and efficiency	Watt	W
Voltage	Bolt	V
Electrical resistance	Ohm	Ω

■ SI prefixes

● Prefix showing integral powers of 10 combined with SI units

Coefficient	Material	Symbol	Coefficient	Material	Symbol	Coefficient	Material	Symbol
10^{24}	Yotta	Y	10^{3}	Kilo	k	10^{-9}	Nano	n
10^{21}	Zeta	Z	10^{2}	Hecto	h	10^{-12}	Pico	p
10^{18}	Exa	E	10^{1}	Deca	da	10^{-15}	Femto	f
10^{15}	Peta	P	10^{-1}	Deci	d	10^{-18}	Atto	a
10^{12}	Tera	T	10^{-2}	Centi	c	10^{-21}	Zepto	z
10^{9}	Giga	G	10^{-3}	Milli	m	10^{-24}	Yocto	y
10^{6}	Mega	M	10^{-6}	Micro	μ			

■ Principal SI unit conversion list (□ portions are SI units)

● Force

N	kgf
1	1.01972×10^{-1}
9.80665	1

● Stress

Pa(N/m²)	MPa(N/mm²)	kgf/mm²	kgf/cm²	kgf/m²
1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}	1.01972×10^{-1}
1×10^{6}	1	1.01972×10^{-1}	1.01972×10	1.01972×10^{5}
9.80665×10^{6}	9.80665	1	1×10^{2}	1×10^{6}
9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1	1×10^{4}
9.80665	9.80665×10^{-6}	1×10^{-6}	1×10^{-4}	1

1Pa = 1N/m², 1MPa = 1N/mm²

● Pressure

Pa(N/m²)	kPa	MPa	GPa	bar	kgf/cm²	mmHg or Torr
1	1×10^{-3}	1×10^{-6}	1×10^{-9}	1×10^{-5}	1.01972×10^{-5}	7.50062×10^{-3}
1×10^{3}	1	1×10^{-3}	1×10^{-6}	1×10^{-2}	1.01972×10^{-2}	7.50062
1×10^{6}	1×10^{3}	1	1×10^{-3}	1×10	1.01972×10	7.50062×10^{3}
1×10^{9}	1×10^{6}	1×10^{3}	1	1×10^{4}	1.01972×10^{4}	7.50062×10^{6}
1×10^{5}	1×10^{2}	1×10^{-1}	1×10^{-4}	1	1.01972	7.50062×10^{2}
9.80665×10^{4}	9.80665×10	9.80665×10^{-2}	9.80665×10^{-5}	9.80665×10^{-1}	1	7.35559×10^{2}
1.33322×10^{2}	1.33322×10^{-1}	1.33322×10^{-4}	1.33322×10^{-7}	1.33322×10^{-3}	1.35951×10^{-3}	1

1Pa = 1N/m²

● Work/Energy/Heat quantity

J	kW·h	kgf·m	kcal
1	2.77778×10^{-7}	1.01972×10^{-1}	2.38889×10^{-4}
3.60000×10^{6}	1	3.67098×10^{5}	8.60000×10^{2}
9.80665	2.72407×10^{-6}	1	2.34270×10^{-3}
4.18605×10^{3}	1.16279×10^{-3}	4.26858×10^{2}	1

1J=1W/s,1J=1N/m

● Power (efficiency and motive energy)/Thermal flow

W	kgf·m/s	PS	kcal/h
1	1.01972×10^{-1}	1.35962×10^{-3}	8.60000×10^{-1}
1×10^{3}	1.01972×10^{2}	1.35962	8.60000×10^{2}
9.80665	1	1.33333×10^{-2}	8.43371
7.355×10^{2}	7.5×10	1	6.32529×10^{2}
1.16279	1.18572×10^{-1}	1.58095×10^{-3}	1

1W = 1J/s, PS: Horsepower

● Specific heat

J/(kg·K)	1kcal (kg/°C) cal/(g/°C)
1	2.38889×10^{-4}
4.18605×10^{3}	1

● Thermal conductivity

W/(m/K)	kcal/(h·m·°C)
1	8.60000×10^{-1}
1.16279	1

● Rotation speed

min^{-1}	rpm
1	1

$1min^{-1}$=1rpm

References

■ Metals Symbols Chart (Excerpt)

● Carbon Steel for Structural Use P

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
S10C	1008 1010	C10E C10R 1.1122	08 10	040A10 045A10 045M10	XC10	08 10
S12C	1012	—	—	040A12	XC12	—
S15C	1015	C15E C15R 1.1132	15	055M15	—	15
S20C	1020	C22 CK22	20	070M20	—	20
S25C	1025	C25 C25E C25R C16D 1.0415	25	—	—	25
S30C	1030	C30 C30E C30R	30	080A30 080M30	—	30
S35C	1035	C35 C35E C35R 1.1172	35	080A35 080M36	—	35
S40C	1040 C40E	C40 C40E C40R 1.1186	40	060A40 080A40 080M40	—	40
S43C	1042 1043	—	—	080A42	XC42H1 XC42H2	40Г
S45C	1045 1045H	C45 C45E C45R 1.1191 1.1192	45	060A45 080M46	XC45	45
S50C	1049	C50 C50E C50R 1.1206	50	080M50	XC50	50
S53C	1050 1053	—	50Mn	080A52	XC54	—
S55C	1055	C55 C55E C55R 1.1203	55	070M55	XC55H1 XC55H2	55
S58C	1060	C60 C60E C60R	60	060A57 080A57	XC60	—
S60C	1059	C60E 1.1221	60 60Mn	—	—	60
S09CK	1010	C10E C10R	—	045A10 045M10	XC10	—
S15CK	1015	C15E C15R	—	—	XC12	—
S20CK	—	CK22	—	—	XC18	—

● Cr Steel P

SCr415	5115	17Cr3 1.7016	15Cr	—	—	15Х
SCr420	5120	—	20Cr	—	20MC5	20Х
SCr430	5130 5132	34Cr4 34CrS4 1.7033	30Cr	530A30 530A32	32C4	30Х
SCr435	5135	37Cr4 1.7034	35Cr	530A36	38C4	35Х
SCr440	5140	41Cr4 41CrS4 1.7035	40Cr	530M40 530A40	42C4	40Х
SCr445	5147	—	45Cr	—	—	45Х

● Nickel Chromium Steel P

SNC415	4720 4715	20NiCrMo2-2 10NiCr5-4 17CrNi6-6 1.5918 1.5805 1.6523	20CrNi 12CrNi2 15CrNi6K	—	—	20ХН 12ХН
SNC236	3140 4337	41crCrMo7-3-2 34CrNiMo6	40CrNi 34CrNi2	—	—	40ХН
SNC246	8645	—	45CrNi	—	—	45ХН
SNC815	E3310	15niCr13 1.5752	12CrNi3	—	—	12ХН3А
SNC620	—	20NiCrMo13-4 1.6660	20CrNi3	—	—	20ХН3А
SNC631	—	30NiCrMo16-6 1.6747	30CrNi3	—	—	30ХН3А
SNC836	—	35NiCrMo16 1.6773	37CrNi3	—	—	—

● Ni-Cr-Mo Steel P

SNCM220	8615 8617 8620 8622 4718	20NiCrMo2-2 20NiCrMoS2-2 17NiCrMo6 1.6566 1.6523	20CrNiMo 18CrMnNiMo 20NiCrMoK	805A20 805M20 805A22 805M22	20NCD 2	20ХН2М 18ХНГМ
SNCM240	8637 8640	39NiCrMo3 1.6510	40CrNiMo	—	—	40ХН2МА
SNCM415	—	—	—	—	—	
SNCM420	4320	17NiCrMo6-4	20CrNi2Mo			20ХН2М (20ХНМ)
SNCM439	4340	41NiCrMo7-3-2 1.6563	40CrNi2Mo	—	—	40ХН2МА
SNCM447	4340	41NiCrMo7-3-2 1.6563	45CrNiMoV	—	—	—

● Cr-Mo Steel P

SCM415	—	18CrMo4 1.7243	15CrMo	—	—	15ХМ
SCM420	—	20MoCr4 1.7321	20CrMo	708M20	—	20ХМ

● Cr-Mo Steel (continued) P

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
SCM421	4121	18CrMo4 22CrMoS35 1.7243	20CrMnMo	—	—	25ХГМ
SCM425	—	25CrMo 1.7218	25CrMo	—	—	—
SCM430	4130	—	30CrMo	708A30	30CD4	30ХМ
SCM435	4135 4137	34CrMo4 1.7220	35CrMo	708A37 709A37	34CD4 38CD4 35CD4	35ХМ
SCM440	4142 4140	42CrMo4 42CrMoS4 1.7225	42CrMo	708M40 708A40 708A42 709A42 709M40	42CD4	38ХМ
SCM445	4145 4150	50CrMo4 1.7228	50CrMo	708A47	—	—

● Manganese Chromium Steel/Manganese Steel P

SMn420	1522 1524	18Mn5 1.0436	20Mn2	150M19 120M19	20M5	20Г
SMn433	1330	28Mn6 1.1170	30Mn2	—	—	30Г2
SMn438	1335 1541	—	35Mn2	150M36	40M6	35Г2
SMn443	1340 1345 1541	—	40Mn2 45Mn2	135M40 150M36	35M5	35Г2 45Г2
SMnC420	5120	20MnCr5 1.7147	20CrMn	—	—	18ХГ
SMnC443	5140	41Cr4 1.7035	40CrMn	—	—	—

● Carbon Tool Steel P

SK140 SK1	W2-13A W1-13	—	T13	—	$Y_2$140	—
SK120 SK2	W1-11 1/2	C120U 1.1555	T12	BW1C	$Y_2$120	y12
SK105 SK3	W1-10 W1-10 1/2	C105U 1.1545 C105W1	T11	BW1B	Y,105	—
SK95 SK4	W1-9 W1-9 1/2	C105U 1.1545	T10	BW1A	Y,90 Y,80	y10
SK85 SK5	W1-8C W1-8	C80W1	T8Mn	BW1A	—	y8Г
SK80	W1-8A	C80U 1.1525	T8	—	—	y8
SK70	1070	C70U 1.1520	T7	—	—	y7

● High Speed Steel P

SKH2	T1	HS18-0-1 1.3355	W18Cr4V	BT1	Z80WCV 18-04-01	P18
SKH3	T4	S18-1-2-5	—	BT4	Z80WKCV 18-05-04-01	—
SKH4	T5	—	—	BT5	Z80WKCV 18-10-04-02	—
SKH10	T15	S12-1-4-5	W12Cr4V5Co5	BT15	Z160WKCV 12-05-05-04	P12K5V5
SKH51	M2	S6-5-2 1.3339	W6Mo5Cr4V2	BM2	Z160WDCV 06-05-04-02	P6M5Ф2
SKH52	M3-1	HS6-6-2 1.3350	W6Mo6Cr4V2	—	—	—
SKH53	M3-2	S6-5-3 HS6-5-3 1.3344	W6Mo5Cr4V3	—	Z160WDCV 06-05-04-03	P6M5Ф3
SKH54	M4	—	W6Mo5Cr4V4	BM4	Z130WDCV 06-05-04-04	—
SKH55	M35 M41	S6-5-2-5 HS6-5-2-5 1.3243	W6Mo5Cr4V2Co5	BM35	Z190WDCV 06-05-05-04-02	P6M5Ф5
SKH56	M36	—	—	—	—	—
SKH57	M48	HS10-4-3-10 1.3207	W10Mo4Cr4V3Co10	—	Z130WKCDV 10-10-04-04-03	—
SKH58	M7	HS2-8-2 1.3348	W2Mo9Cr4V2	—	Z100DCWV 09-04-02-02	—
SKH59	M42	HS2-10-1-8 1.3247	W2Mo9Cr4VCo8	BM42	Z130DKCWV 09-08-04-02-01	P2M9K8Ф

● Alloy Tool Steel P

SKS11	F2	—	—	—	—	—
SKS2	—	105WCr6	—	—	105WC13	—
SKS51	L6	—	—	—	—	—
SKS41	—	—	4CrW2Si	—	—	4XB2C
SKS43	W2-9 1/2	—	—	BW2	Y,105V	—
SKS44	W2-8 1/2	—	—	—	—	—
SKS3	O1	95MnWCr5 1.2825	9CrWMn	—	—	9ХВГ
SKS31	O7	105WCr6	CrWMn	—	105WC31	ХВГ
SKD1	D3	X210Cr12 1.2080	Cr12	BD3	X200Cr12	X12
SKD4	—	—	30W4Cr2V	BH21	Z32WCV5	—
SKD5	H21	X30WCrV9-3 1.2581	3Cr2W8V	BH21	Z30WCV9	3X2B8Ф
SKD6	H11	X37CrMoV5-1 1.2343	4Cr5MoSiV	BH11	X38CrMoV5	4X5МФС
SKD61	H13	X40CrMoV5-1 1.2344	4Cr5MoSiV1	BH13	Z40CDV5	4X5МФ1С
SKD7	H10	X32CrMoV33 1.2365	3Cr3Mo3V	BH10	32DCV28	—
SKD8	H19	38CrCoWV18-17-17 1.2661	3Cr3Mo3VCo3	BH19	—	—
SKD10	D2	X153CrMoV12 1.2379	Cr12Mo1V1	—	—	X12M1Ф1

References

Alloy Tool Steel (continued) P

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
SKD11	D2 D4	—	Cr12MoV	BD2	X160CrMoV12	X12МФ
SKD12	A2	X100CrMoV5 1.2363	Cr5Mo1V	BA2	Z100CDV5	—

Ferritic Stainless Steels M

SUS405	405 S40500	X10CrAl13 1.4002	0Cr13Al 06Cr13Al	405S17	26CA13	—
SUS429	429 S42900	—	1Cr15 10Cr15 022Cr15NbTi	—	—	—
SUS430	430 S43000	X6Cr17 1.4016	1Cr17 10Cr15 S11710	430S17	Z8C17	12X17
SUS430F	430F S43020	X12CrMoS17	Y1Cr17 Y10Cr17	—	210CF17	—
SUS434	434 S43400	X6CrMo17-1 1.4113	1Cr17Mo 10Cr17Mo	434S17	Z8CD17.01	—

Martensitic Stainless Steels M

SUS410	410 S41010	X10Cr13 1.4006	12Cr13 1Cr13	410S21	Z13C13	12X13
SUS403	403 S40300	—	12Cr12 1Cr12	—	—	—
SUS444	444 S44400	X2CrMoTi18-2 1.4521	019Cr19Mo2NbTi 00Cr18Mo2	—	—	—
SUS416	416 S41600	X12CrS13 1.4005	Y12Cr13 Y1Cr13	416S21	Z12CF13	—
SUS420J1	420 S42000	X20Cr13 1.4021	20Cr13 2Cr13	420S29	Z20C13	20X13
SUS420J2	420 S42000	X30Cr13 1.4028	30Cr13 3Cr13	420S45	Z30C13	30X13
SUS420F	420G S42020	X29Cr13 1.4029	Y30Cr13 Y3Cr13	—	Z30CF13	—
SUS431	431 S43100	X17CrNi16-2	17Cr16Ni2	431S29	—	—
SUS440C	440C S44004	—	108Cr17 11Cr17	—	Z100CD17	—

Stainless Steel (Precipitation Hardened Structure) M

SUS630	630 S17400	X5CrNiCuNb16-4 1.4542	0Cr17Ni4Cu4Nb 05Cr17Ni4Cu4Nb	—	Z6CNU17.04	—
SUS631	631 S17700	X7CrNiAl17-7 1.4568	0Cr17Ni7Al 07Cr17Ni7Al	—	Z8CNA17.07	09Х17Н7 Ю

Austenitic Stainless Steels M

SUS201	201 S20100	X12crMnNiN17-7-5 1.4372	1Cr17Mn6Ni5N 12Cr17Mn6Ni5N	—	Z12CMN17-07Az	—
SUS202	202 S20200	X12CrMnNiN18-9-5 1.4373	1Cr18Mn9Ni5N 12Cr18Mn9Ni5N	284S16	—	—
SUS301	301 S30100	X12CrNi17 7 1.4319 1.4310	1Cr17Ni7 12Cr17Ni7	—	Z12CN17.07	17X18H9
SUS302	302 S30200	X9CrNi18-9 1.4325	1Cr18Ni9 12Cr18Ni9	302S25	Z10CN18.09	12X18H9
SUS302B	302B S30215	—	1Cr18Ni9Si3 12Cr18Ni9Si3	—	—	—
SUS303	303 S30300	X8CrNiS18-9 X10CrNiS189 1.4305	Y1Cr18Ni9 Y12Cr18Ni9	303S21	Z10CNF18.09	—
SUS303Se	303Se S30323	—	Y12Cr18Ni9Se Y1Cr18Ni9Se	303S41	—	12X18H10E
SUS304	304 S30400	X5CrNi18-10 1.4301	0Cr18Ni9 06Cr19Ni10	304S31	Z6CN18.09	08X18H10
SUS304L	304L S30403	X2CrNi19-11 1.4306	00Cr19Ni10 022Cr19Ni10	304S11	Z2CN18.10	03X18H11
SUS304N1	304N S30451	X5CrNiN19-9 1.4315	06Cr19Ni10N 06Cr19Ni10NbN	—	Z6CN19-09Az	—
SUS305	305 S30500	X2CrNiN18-10 1.4311	1Cr18Ni12 10Cr18Ni12	305S19	Z8CN18.12	—
SUS309S	309S S30908	X6CrNi23-13 1.4950	0Cr23Ni13 06Cr23Ni13	—	—	0X23H12
SUS310S	310S S31008	X6CrNi25-20 1.4951	0Cr25Ni20 06Cr25Ni20	—	—	08X23H20
SUS316	316 S31600	X5CrNiMo17-12-2 1.4401	0Cr17Ni12Mo2 06Cr17Ni12Mo2	316S31	Z7CND17.12	—
SUS316L	316L S31603	X2CrNiMo17-12-2 1.4404	00Cr17Ni12Mo2 022Cr17Ni12Mo2	316S11	Z2CND17.12	03X17H14M2
SUS316N	316N S31651	—	0Cr17Ni12Mo2N 06Cr17Ni12Mo2N	—	—	—
SUS317	317 S31700	—	0Cr19Ni13Mo3 06Cr19Ni13Mo3	317S16	—	—
SUS317L	317L S31703	X2CrNiMo18-15-4 1.4438	00Cr19Ni13Mo3 022Cr19Ni13Mo3	317S12	Z2CND19.15	03Х19Н13М3
SUS321	321 S32100	X6CrNiTi18-10 1.4541	0Cr18Ni10Ti 06Cr18Ni11Ti	321S31	Z6CNT18.10	08Х18Н10Т
SUS347	347 S34700	X6CrNiNb18-10 1.4550	0Cr18Ni11Nb 06Cr18Ni11Nb	347S31	Z6CNNb18.10	08Х18Н12Б

Ferritic Heat Resistant Alloy S

SUH409	409 S40900	X6CrTi12	06Cr11Ti 0Cr11Ti	409S19	Z6CT12	—
SUH446	446 S44600	—	2Cr25N 16Cr25N	—	Z12C24	—

Martensitic Heat Resistant Alloy S

SUH1	—	—	45Cr9Si3	401S45	Z45CS9	—
SUH3	—	—	4Cr10Si2Mo 40Cr10Si2Mo	—	Z40CSD10	40Х10С2М
SUH4	—	—	8Cr20Si2Ni 80Cr20Si2Ni	443S65	Z80CSN20.02	—

Martensitic Heat Resistant Alloy (continued) S

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
SUH11	—	—	4Cr9Si2 42Cr9Si2	—	—	40Х 9С2
SUH600	—	—	2Cr12MoVNbN 18Cr12MoVNbN	—	—	—
SUH616	616 S42200	—	2Cr12NiMoWV 22Cr12NiWMoV	—	—	—

Austenitic Heat Resistant Alloy S

SUH31	—	—	4Cr14Ni14W2Mo	331S42	—	45Х14Н14В2М
SUH35	—	X53CrMnNiN21-9-4 1.4871	5Cr21Mn9Ni4N 53Cr21Mn9Ni4N	349S52	Z52CMN21.09	55Х20Г9АН4
SUH36	—	X53CrMnNi21 9	—	349S54	Z55CMN21-09Az	55Х20Г9АН4
SUH37	—	X15CrNiSi20-12 1.4828	22Cr21Ni12N 2Cr21Ni12N	381S34	—	—
SUH38	—	—	—	—	—	—
SUH309	309 S30900	X12CrNi23-13 1.4833	16Cr23Ni13 2Cr23Ni13	309S24	Z15CN24.13	20Х23Н12
SUH310	310 S31000	—	2Cr25Ni21 20Cr25Ni20	310S24	Z15CN25.20	—
SUH330	—	X12CrNiMnMoN25-18-6-5 1.4565	1Cr16Ni35 12Cr16Ni35	—	Z12NCS35.16	—

Grey Cast Iron K

FC100	No 20B	GG-10	HT100	100	—	СЧ10
FC150	No 25B	GG-15	HT150	150	FGL150	СЧ15
FC200	No 30B	GG-20	HT200	200	FGL200	СЧ20
FC250	No 35B	GG-25	HT250	250	FGL250	СЧ25
FC300	No 45B	GG-30	HT300	300	FGL300	СЧ30
FC350	No 50B	GG-35	HT350	350	FGL350	СЧ35

Nodular Cast Iron K

FCD400	60-40-18	GGG-40	QT400-18	400/17	FGS370-17	ВЧ40
FCD450	—	GGG-40.3	QT450-10	420/12	FGS400-12	ВЧ45
FCD500	80-55-06	GGG-50	QT500-7	500/7	FGS500-7	ВЧ50
FCD600	—	GGG-60	QT600-3	600/7	FGS600-2	ВЧ60
FCD700	100-70-03	GGG-70	QT700-2	700/2	FGS700-2	ВЧ70
FCD800	120-90-02	GGG-80	—	800/2	FGS800-2	ВЧ80

Aluminum and Al Alloys-Sheets, plates and strips N

A1060P	1060	EN AW-1060	L2	—	—	—
A1050P	1050	A199.50	1A50	—	—	—
A1100P	1100	EN AW-1100	L5-1	—	—	—
A1200P	1200	EN AW-1200	L5	EN AW-1200	EN AW-1200	—
A2014P	2014	EN AW-2014	LD10	EN AW-2014	EN AW-2014	—
A2017P	2017	EN AW-2017	2A11(LY11)	EN AW-2017	EN AW-2017	—
A2219P	2219	EN AW-2219	2A16(LY16)	—	—	—
A2024P	2024	EN AW-2024	2A12(LY12)	EN AW-2024	EN AW-2024	—
A2124P	2124	EN AW-2124	2A12(LY12)	—	—	—
A3003P	3003	EN AW-3003	LF21	EN AW-3003	EN AW-3003	—
A3004P	3004	EN AW-3004	3004	—	—	—
A3005P	3005	EN AW-3005	3005	—	—	—
A3015P	3105	EN AW-3105	3105	—	—	—
A5005P	5005	EN AW-5005	5005	—	—	—
A5050P	5050	EN AW-5050	—	—	—	—
A5052P	5052	EN AW-5052	5A02	EN AW-5052	EN AW-5052	—
A5154P	5154	—	LF3	—	—	—
A5254P	5254	—	LF3	—	—	—
A5454P	5454	EN AW-5454	5454	EN AW-5454	EN AW-5454	—
A5456P	5456	EN AW-5456	—			
A6101P	6101	EN AW-6101	6101			
A6061P	6061	EN AW-6061	6061(LD30)	EN AW-6061	EN AW-6061	—
A7075P	7075	EN AW-7075	7A04	EN AW-7075	EN AW-7075	—
A7178P	7178	EN AW-7178	7A03(LC3)	—	—	—

Aluminum Alloy Die Castings N

ADC1	A413.0	EN AC-44300	YL102	—	—	—
ADC3	A360.0	EN AC-43400	YL104	EN AC-43400	EN AC-43400	—
ADC5	518.0	—	Al-Mg7	—	—	—
ADC10	—	EN AC-46000	YL112	—	—	—
ADC12	—	—	YL113	LM20	—	—
ADC14	B390.0	—	—	—	—	—
AC4C	357	G-AlSi7Mg	ZAlSi7Mg1A	LM25	A-S7G-03	—
AC4CH	356	G-AlSi7Mg	ZALSi7Mg	LM25	A-S7G	—
—	308	G-AlSi6Cu4	ZAlSi5Cu6Mg	LM21	—	—

Hardened Steel H

C4BS	440A	X100CrMo13	7Cr17	—	—	—
AC4A	610	X110CrMoV15	—	—	—	—
AC4A	0-2	X65CrMo14	—	—	—	—

References

■ Steel and Non-Ferrous Metal Symbols Chart (Excerpt)

● Classifications and Symbols of Steels

Classification	Material	Symbol	Symbol Description
Structural Steel	Rolled steels for welded structures	SM	"M" for "Marine": Usually used in welded marine structures
	Re-rolled steels	SRB	"R" for "Re-rolled" and "B" for "Bar"
	Rolled steel for general structures	SS	S for "Steel" and S for "Structure"
	Light gauge sections for general structures	SSC	"C" for "Cold" after SS
Steel Sheets	Hot rolled mild steel sheets / plates in coil form	SPH	P for "Plate" and "H" for "Hot"
Steel Tubes	Carbon steel tubes for piping	SGP	"GP" for "Gas Pipe"
	Carbon steel tubes for boiler and heat exchangers	STB	"T" for "Tube" and "B" for "Boiler"
	Seamless steel tubes for high-pressure gas cylinders	STH	"H" for "High Pressure" after ST
	Carbon steel tubes for general structures	STK	"K" for "Kozo" ("structure" in Japanese) after ST
	Carbon steel tubes for mechanical structures	STKM	"M" for "Machine" after STK
	Alloy steel tubes for structures	STKS	"S" for "Special" after STK
	Alloy steel tubes for piping	STPA	"A" for "Alloy" after STP
	Carbon steel tubes for pressure piping	STPG	"P" for "Piping" and "G" for "General" after ST
	Carbon steel tubes for high-temperature piping	STPT	"T" for "Temperature" after ST
	Carbon steel tubes for high-pressure piping	STS	"S" for "Special" after ST
	Stainless steel tubes for piping	SUS-TP	"T" for "Tube" and "P" for "Piping" after SUS
Steel for Mechanical Structures	Carbon steels for mechanical structures	SxxC	"C" for "Carbon"
	Aluminum-chromium-molybdenum steels	SACM	"A" for "Al", "C" for "Cr" and "M" for "Mo"
	Chromium molybdenum steels	SCM	"C" for "Cr" and "M" for "Mo"
	Chromium steels	SCr	"Cr" for "Chromium" after "S" for "Steel"
	Nickel Chromium steels	SNC	"N" for "Nickel" and "C"for "Chromium"
	Nickel Chromium Molybdenum steels	SNCM	"M" for "Molybdenum" in SNC
	Manganese steels and manganese chromium steels for mechanical structures	SMn SMnC	"Mn" for "Manganese" "C" for "Chromium" in SMn
Special Steels – Tool Steels	Carbon tool steels	SK	"K" for "Kogu" ("tool" in Japanese)
	Hollow drill steels	SKC	"C" for "Chisel" after SK
	Alloy tool steel	SKS SKD SKT	S for "Special" after SK D for "Die" after SK T for "Tanzo" - ("forging" in Japanese) after SK
	High-speed tool steels	SKH	"H" for "High speed" after SK
Special Steels – Stainless Steel	Free cutting sulphuric steels	SUM	"M" for "Machinability" after SU
	High-carbon chromium bearing steels	SUJ	"J" for "Jikuuke" ("bearing" in Japanese) after SU
	Spring steels	SUP	"P" for "Spring" after SU
	Stainless steel	SUS	"S" for "Stainless Steel" after SU
Special Steels – Heat Resistant Alloy	Heat resistant alloy	SUH	"U" for "Special Usage" and "H" for "Heat"
	Heat resistant alloy bars	SUH-B	"B" for "Bar" after SUH
	Heat resistant alloy sheets	SUHP	"P" for "Plate" after SUH
Forged Steels	Carbon steel forgings for general use	SF	"F" for "Forging"
	Carbon steel booms and billets for forgings	SFB	"B" for "Billet" after SF
	Chromium molybdenum steel forgings	SFCM	"C" for "Chromium" and "M" for "Molybdenum" after SF
	Nickel chromium molybdenum steel forgings	SFNCM	"N" for "Nickel" in SFCM
Cast Iron	Grey cast iron	FC	"F" for "Ferrous" and "C" for "Casting"
	Spherical graphite / Ductile cast irons	FCD	"D" for "Ductile" after FC
	Blackheart malleable cast irons	FCMB	"M" for "Malleable" and "B" for "Black" after FC
	Whiteheart malleable cast irons	FCMW	"W" for "White" after FCM
	Pearlite malleable cast iron	FCMP	"P" for "Pearlite" after FCM
Cast Steels	Carbon cast steels	SC	"C" for "Casting"
	Cast stainless steels	SCS	"S" for "Stainless Steel" after SC
	Heat-resistant cast steels	SCH	"H" for "Heat" after SC
	High-manganese cast steels	SCMnH	"Mn" for "Manganese" and "H" for "High" after SC

● Non-Ferrous Metals

Classification	Material	Symbol
Copper and Copper Alloys	Copper and copper alloys - sheets, plates and strips	CxxxxP
		CxxxxPP
		CxxxxR
	Copper and copper alloys - welded pipes and tubes	CxxxxBD
		CxxxxBDS
		CxxxxBE
		CxxxxBF
Aluminum and Aluminum Alloys	Aluminum and Al alloys - Sheets, plates and strips	AxxxxP
		AxxxxPC
	Aluminum and Al alloys Rods, bars and wires	AxxxxBE
		AxxxxBD
		AxxxxW
	Aluminum and Al alloys - Extruded shapes	AxxxxS
	Aluminum and Al alloy castings	AxxxxFD
		AxxxxFH
Wrought Alloys Magnesium	Magnesium alloy sheets and plates	MP
Material Nickel	Nickel-copper alloy sheets and plates	NCuP
	Nickel-copper alloy rods and bars	NCuB
Wrought Materials Titanium	Titanium rods and bars	TB
Castings	Brass castings	YBsCx
	High-strength brass castings	HBsCx
	Bronze castings	BCx
	Phosphorus Bronze castings	PBCx
	Aluminum bronze castings	AlBCx
	Aluminum alloy castings	AC
	Magnesium alloy castings	MC
	Zinc alloy die castings	ZDCx
	Aluminum alloy die castings	ADC
	Magnesium alloy die castings	MDC
	White metals	WJ
	Aluminum alloy castings for bearings	AJ
	Copper-lead alloy castings for bearings	KJ

References

■ Hardness Scale Comparison Chart

● Approximate corresponding values for steel hardness on the Brinell scale

Brinell 3,000kgf HB	Rockwell Hardness A Scale 60kgf brale HRA	Rockwell Hardness B Scale 100kgf 1/10in ball HRB	Rockwell Hardness C Scale 150kgf brale HRC	Rockwell Hardness D Scale 100kgf brale HRD	Vickers 50kgf HV	Shore Hardness HS	Tensile Strength (GPa)
—	85.6	—	68.0	76.9	940	97	—
—	85.3	—	67.5	76.5	920	96	—
—	85.0	—	67.0	76.1	900	95	—
767	84.7	—	66.4	75.7	880	93	—
757	84.4	—	65.9	75.3	860	92	—
745	84.1	—	65.3	74.8	840	91	—
733	83.8	—	64.7	74.3	820	90	—
722	83.4	—	64.0	73.8	800	88	—
712	—	—	—	—	—	—	—
710	83.0	—	63.3	73.3	780	87	—
698	82.6	—	62.5	72.6	760	86	—
684	82.2	—	61.8	72.1	740	—	—
682	82.2	—	61.7	72.0	737	84	—
670	81.8	—	61.0	71.5	720	83	—
656	81.3	—	60.1	70.8	700	—	—
653	81.2	—	60.0	70.7	697	81	—
647	81.1	—	59.7	70.5	690	—	—
638	80.8	—	59.2	70.1	680	80	—
630	80.6	—	58.8	69.8	670	—	—
627	80.5	—	58.7	69.7	667	79	—
601	79.8	—	57.3	68.7	640	77	—
578	79.1	—	56.0	67.7	615	75	—
555	78.4	—	54.7	66.7	591	73	2.06
534	77.8	—	53.5	65.8	569	71	1.98
514	76.9	—	52.1	64.7	547	70	1.89
495	76.3	—	51.0	63.8	528	68	1.82
477	75.6	—	49.6	62.7	508	66	1.73
461	74.9	—	48.5	61.7	491	65	1.67
444	74.2	—	47.1	60.8	472	63	1.59
429	73.4	—	45.7	59.7	455	61	1.51
415	72.8	—	44.5	58.8	440	59	1.46
401	72.0	—	43.1	57.8	425	58	1.39
388	71.4	—	41.8	56.8	410	56	1.33
375	70.6	—	40.4	55.7	396	54	1.26
363	70.0	—	39.1	54.6	383	52	1.22
352	69.3	(110.0)	37.9	53.8	372	51	1.18
341	68.7	(109.0)	36.6	52.8	360	50	1.13
331	68.1	(108.5)	35.5	51.9	350	48	1.10

Brinell 3,000kgf HB	Rockwell Hardness A Scale 60kgf brale HRA	Rockwell Hardness B Scale 100kgf 1/10in ball HRB	Rockwell Hardness C Scale 150kgf brale HRC	Rockwell Hardness D Scale 100kgf brale HRD	Vickers 50kgf HV	Shore Hardness HS	Tensile Strength (GPa)
321	67.5	(108.0)	34.3	50.1	339	47	1.06
311	66.9	(107.5)	33.1	50.0	328	46	1.03
302	66.3	(107.0)	32.1	49.3	319	45	1.01
293	65.7	(106.0)	30.9	48.3	309	43	0.97
285	65.3	(105.5)	29.9	47.6	301	—	0.95
277	64.6	(104.5)	28.8	46.7	292	41	0.92
269	64.1	(104.0)	27.6	45.9	284	40	0.89
262	63.6	(103.0)	26.6	45.0	276	39	0.87
255	63.0	(102.0)	25.4	44.2	269	38	0.84
248	62.5	(101.0)	24.2	43.2	261	37	0.82
241	61.8	100.0	22.8	42.0	253	36	0.80
235	61.4	99.0	21.7	41.4	247	35	0.78
229	60.8	98.2	20.5	40.5	241	34	0.76
223	—	97.3	(18.8)	—	234	—	—
217	—	96.4	(17.5)	—	228	33	0.73
212	—	95.5	(16.0)	—	222	—	0.71
207	—	94.6	(15.2)	—	218	32	0.69
201	—	93.8	(13.8)	—	212	31	0.68
197	—	92.8	(12.7)	—	207	30	0.66
192	—	91.9	(11.5)	—	202	29	0.64
187	—	90.7	(10.0)	—	196	—	0.62
183	—	90.0	(9.0)	—	192	28	0.62
179	—	89.0	(8.0)	—	188	27	0.60
174	—	87.8	(6.4)	—	182	—	0.59
170	—	86.8	(5.4)	—	178	26	0.57
167	—	86.0	(4.4)	—	175	—	0.56
163	—	85.0	(3.3)	—	171	25	0.55
156	—	82.9	(0.9)	—	163	—	0.52
149	—	80.8	—	—	156	23	0.50
143	—	78.7	—	—	150	22	0.49
137	—	76.4	—	—	143	21	0.46
131	—	74.0	—	—	137	—	0.45
126	—	72.0	—	—	132	20	0.43
121	—	69.8	—	—	127	19	0.41
116	—	67.6	—	—	122	18	0.40
111	—	65.7	—	—	117	15	0.38

1) Figures within the ( ) are not commonly used.
2) Rockwell A, C and D scales utilise a diamond brale.
3) This chart was taken from the JIS Iron and Steel Handbook (1980).

References

■ Dimensional Tolerance of Standard Fittings [Excerpt from DIN EN ISO 286-1 (2010-11)]

● Dimensional Tolerance Used for Shafts of Standard Fittings

Unit: μm

Classification of Reference Dimensions (mm)		Shaft Tolerance Class																												
or greater	or less	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	g7	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	x6
—	3	-140 -165	-60 -85	-20 -34	-20 -45	-14 -24	-14 -28	-14 -39	-6 -12	-6 -16	-8 -20	-2 -6	-2 -8	-2 -12	0 -4	0 -6	0 -10	0 -14	0 -25	±2	±3	±5	+4 0	+6 0	+6 +2	+8 +2	+10 +4	+12 +6	+16 +10	+20 +14	—	+24 +18	+26 +20
3	6	-140 -170	-70 -100	-30 -48	-30 -60	-20 -32	-20 -38	-20 -50	-10 -18	-10 -22	-10 -28	-4 -9	-4 -12	-4 -16	0 -5	0 -8	0 -12	0 -18	0 -30	±2.5	±4	±6	+6 +1	+9 +1	+9 +4	+12 +4	+16 +8	+20 +12	+23 +15	+27 +19	—	+31 +23	+36 +28
6	10	-150 -186	-80 -116	-40 -62	-40 -76	-25 -40	-25 -47	-25 -61	-13 -22	-13 -28	-13 -35	-5 -11	-5 -14	-5 -20	0 -6	0 -9	0 -15	0 -22	0 -36	±3	±4.5	±7.5	+7 +1	+10 +1	+12 +6	+15 +6	+19 +10	+24 +15	+28 +19	+32 +23	—	+37 +28	+43 +34
10	14	-150 -193	-95 -138	-50 -77	-50 -93	-32 -50	-32 -59	-32 -75	-16 -27	-16 -34	-16 -43	-6 -14	-6 -17	-6 -24	0 -8	0 -11	0 -18	0 -27	0 -43	±4	±5.5	±9	+9 +1	+12 +1	+15 +7	+18 +7	+23 +12	+29 +18	+34 +23	+39 +28	—	+44 +33	+51 +40
14	18																															+56 +45
18	24	-160 -212	-110 -162	-65 -98	-65 -117	-40 -61	-40 -73	-40 -92	-20 -33	-20 -41	-20 -53	-7 -16	-7 -20	-7 -28	0 -9	0 -13	0 -21	0 -33	0 -52	±4.5	±6.5	±10.5	+11 +2	+15 +2	+17 +8	+21 +8	+28 +15	+35 +22	+41 +28	+48 +35	—	+54 +41	+67 +54
24	30																													+54 +41	+61 +48	+77 +64
30	40	-170 -232	-120 -182	-80 -119	-80 -142	-50 -75	-50 -89	-50 -112	-25 -41	-25 -50	-25 -64	-9 -20	-9 -25	-9 -34	0 -11	0 -16	0 -25	0 -39	0 -62	±5.5	±8	±12.5	+13 +2	+18 +2	+20 +9	+25 +9	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48	+76 +60	—
40	50	-180 -242	-130 -192																											+70 +54	+86 +70	
50	65	-190 -264	-140 -214	-100 -146	-100 -174	-60 -90	-60 -106	-60 -134	-30 -49	-30 -60	-30 -76	-10 -23	-10 -29	-10 -40	0 -13	0 -19	0 -30	0 -46	0 -74	±6.5	±9.5	±15	+15 +2	+21 +2	+24 +11	+30 +11	+39 +20	+51 +32	+60 +41	+72 +53	+85 +66	+106 +87	—
65	80	-200 -274	-150 -224																										+62 +43	+78 +59	+94 +75	+121 +102	
80	100	-220 -307	-170 -257	-120 -174	-120 -207	-72 -107	-72 -126	-72 -159	-36 -58	-36 -71	-36 -90	-12 -27	-12 -34	-12 -47	0 -15	0 -22	0 -35	0 -54	0 -87	±7.5	±11	±17.5	+18 +3	+25 +3	+28 +13	+35 +13	+45 +23	+59 +37	+73 +51	+93 +71	+113 +91	+146 +124	—
100	120	-240 -327	-180 -267																										+76 +54	+101 +79	+126 +104	+166 +144	
120	140	-260 -360	-200 -300	-145 -208	-145 -245	-85 -125	-85 -148	-85 -185	-43 -68	-43 -83	-43 -106	-14 -32	-14 -39	-14 -54	0 -18	0 -25	0 -40	0 -63	0 -100	±9	±12.5	±20	+21 +3	+28 +3	+33 +15	+40 +15	+52 +27	+68 +43	+88 +63	+117 +92	+147 +122	—	—
140	160	-280 -380	-210 -310																										+90 +65	+125 +100	+159 +134		
160	180	-310 -410	-230 -330																										+93 +68	+133 +108	+171 +146		
180	200	-340 -455	-240 -355	-170 -242	-170 -285	-100 -146	-100 -172	-100 -215	-50 -79	-50 -96	-50 -122	-15 -35	-15 -44	-15 -61	0 -20	0 -29	0 -46	0 -72	0 -115	±10	±14.5	±23	+24 +4	+33 +4	+37 +17	+46 +17	+60 +31	+79 +50	+106 +77	+151 +122	—	—	—
200	225	-380 -495	-260 -375																										+109 +80	+159 +130			
225	250	-420 -535	-280 -395																										+113 +84	+169 +140			
250	280	-480 -610	-300 -430	-190 -271	-190 -320	-110 -162	-110 -191	-110 -240	-56 -88	-56 -108	-56 -137	-17 -40	-17 -49	-17 -69	0 -23	0 -32	0 -52	0 -81	0 -130	±11.5	±16	±26	+27 +4	+36 +4	+43 +20	+52 +20	+66 +34	+88 +56	+126 +94	—	—	—	—
280	315	-540 -670	-330 -460																										+130 +98				
315	355	-600 -740	-360 -500	-210 -299	-210 -350	-125 -182	-125 -214	-125 -265	-62 -98	-62 -119	-62 -151	-18 -43	-18 -54	-18 -75	0 -25	0 -36	0 -57	0 -89	0 -140	±12.5	±18	±28.5	+29 +4	+40 +4	+46 +21	+57 +21	+73 +37	+98 +62	+144 +108	—	—	—	—
355	400	-680 -820	-400 -540																										+150 +114				
400	450	-760 -915	-440 -595	-230 -327	-230 -385	-135 -198	-135 -232	-135 -290	-68 -108	-68 -131	-68 -165	-20 -47	-20 -60	-20 -83	0 -27	0 -40	0 -63	0 -97	0 -155	±13.5	±20	±31.5	+32 +5	+45 +5	+50 +23	+63 +23	+80 +40	+108 +68	+166 +126	—	—	—	—
450	500	-840 -995	-480 -635																										+172 +132				

References

■ Dimensional Tolerance of Standard Fittings [Excerpt from DIN EN ISO 286-1 (2010-11)]

● Dimensional Tolerance Used for Holes of Standard Fittings

Unit: μm

Classification of Reference Dimensions (mm)		Hole Tolerance Class																													
or greater	or less	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
—	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	—	-18 -28	-20 -30
3	6	+188 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	—	-19 -31	-24 -36
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	±4.5	±7.5	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	—	-22 -37	-28 -43
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0	+27 0	+43 0	+70 0	±5.5	±9	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	—	-26 -44	-33 -51
14	18																																		-38 -56
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0	+33 0	+52 0	+84 0	±6.5	±10.5	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	—	-33 -54	-46 -67
24	30																															-33 -54	-40 -61	-56 -77
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0	+39 0	+62 0	+100 0	±8	±12.5	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-34 -59	-39 -64	-51 -76	—
40	50	+280 +180	+192 +130	+230 +130																												-45 -70	-61 -86	
50	65	+310 +190	+214 +140	+260 +140	+146 +100	+174 +100	+220 +100	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0	+46 0	+74 0	+120 0	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60	-42 -72	-55 -85	-76 -106	—
65	80	+320 +200	+224 +150	+270 +150																											-32 -62	-48 -78	-64 -94	-91 -121	
80	100	+360 +220	+257 +170	+310 +170	+174 +120	+207 +120	+260 +120	+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+34 +12	+47 +12	+22 0	+35 0	+54 0	+87 0	+140 0	±11	±17.5	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-30 -52	-24 -59	-38 -73	-58 -93	-78 -113	-111 -146	—
100	120	+380 +240	+267 +180	+320 +180																											-41 -76	-66 -101	-91 -126	-131 -166	
120	140	+420 +260	+300 +200	+360 +200	+208 +145	+245 +145	+305 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	+25 0	+40 0	+63 0	+100 0	+160 0	±12.5	±20	+4 -21	+12 -28	-8 -33	0 -40	-20 -45	-12 -52	-36 -61	-28 -68	-48 -88	-77 -117	-107 -147	—	—
140	160	+440 +280	+310 +210	+370 +210																											-50 -90	-85 -125	-119 -159		
160	180	+470 +310	+330 +230	+390 +230																											-53 -93	-93 -133	-131 -171		
180	200	+525 +340	+355 +240	+425 +240	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0	+72 0	+115 0	+185 0	±14.5	±23	+5 -24	+13 -33	-8 -37	0 -46	-22 -51	-14 -60	-41 -70	-33 -79	-60 -106	-105 -151	—	—	—
200	225	+565 +380	+375 +260	+445 +260																											-63 -109	-113 -159			
225	250	+605 +420	+395 +280	+465 +280																											-67 -113	-123 -169			
250	280	+690 +480	+430 +300	+510 +300	+271 +190	+320 +190	+400 +190	+162 +110	+191 +110	+240 +110	+88 +56	+108 +56	+137 +56	+49 +17	+69 +17	+32 0	+52 0	+81 0	+130 0	+210 0	±16	±26	+5 -27	+16 -36	-9 -41	0 -52	-25 -57	-14 -66	-47 -79	-36 -88	-74 -126	—	—	—	—
280	315	+750 +540	+460 +330	+540 +330																											-78 -130				
315	355	+830 +600	+500 +360	+590 +360	+299 +210	+350 +210	+440 +210	+182 +125	+214 +125	+265 +125	+98 +62	+119 +62	+151 +62	+54 +18	+75 +18	+36 0	+57 0	+89 0	+140 0	+230 0	±18	±28.5	+7 -29	+17 -40	-10 -46	0 -57	-26 -62	-16 -73	-51 -87	-41 -98	-87 -144	—	—	—	—
355	400	+910 +680	+540 +400	+630 +400																											-93 -150				
400	450	+1010 +760	+595 +440	+690 +440	+327 +230	+385 +230	+480 +230	+198 +135	+232 +135	+290 +135	+108 +68	+131 +68	+165 +68	+60 +20	+83 +20	+40 0	+63 0	+97 0	+155 0	+250 0	±20	±31.5	+8 -32	+18 -45	-10 -50	0 -63	-27 -67	-17 -80	-55 -95	-45 -108	-103 -166	—	—	—	—
450	500	+1090 +840	+635 +480	+730 +480																											-109 -172				

References

■ Dimensional Tolerance and Fittings [Excerpt from DIN EN ISO 286-1 (2010-11)]

● Standard Fittings for Holes

Reference Hole	Shaft Tolerance Class																
	Gap fitting							Intermediate fitting			Tight fitting						
H6						g5	h5	js5	k5	m5							
					f6	g6	h6	js6	k6	m6	n6*	p6*					
H7					f6	g6	h6	js6	k6	m6	n6	p6*	r6*	s6	t6	u6	x6
				e7	f7		h7	js7									
H8					f7		h7										
				e8	f8		h8										
			d9	e9													
H9			d8	e8			h8										
		c9	d9	e9			h9										
H10	b9	c9	d9														

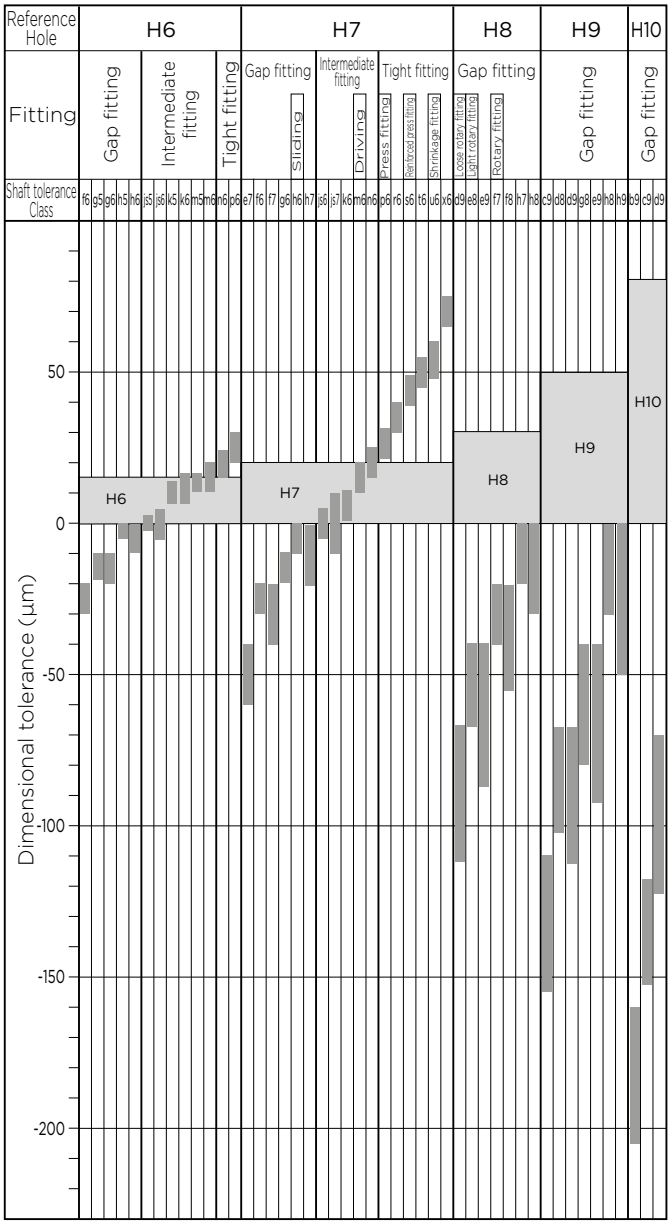
Note: *Exceptions may arise with these fittings depending on the dimension category.

● Standard Fittings for Shafts

Reference Shaft	Hole Tolerance Class																
	Gap fitting							Intermediate fitting			Tight fitting						
h5							H6	JS6	K6	M6	N6*	P6					
h6					F6	G6	H6	JS6	K6	M6	N6	P6*					
					F7	G7	H7	JS7	K7	M7	N7	P7*	R7	S7	T7	U7	X7
h7				E7	F7		H7										
					F8		H8										
h8			D8	E8	F8		H8										
			D9	E9			H9										
h9			D8	E8			H8										
		C9	D9	E9			H9										
	B10	C10	D10														

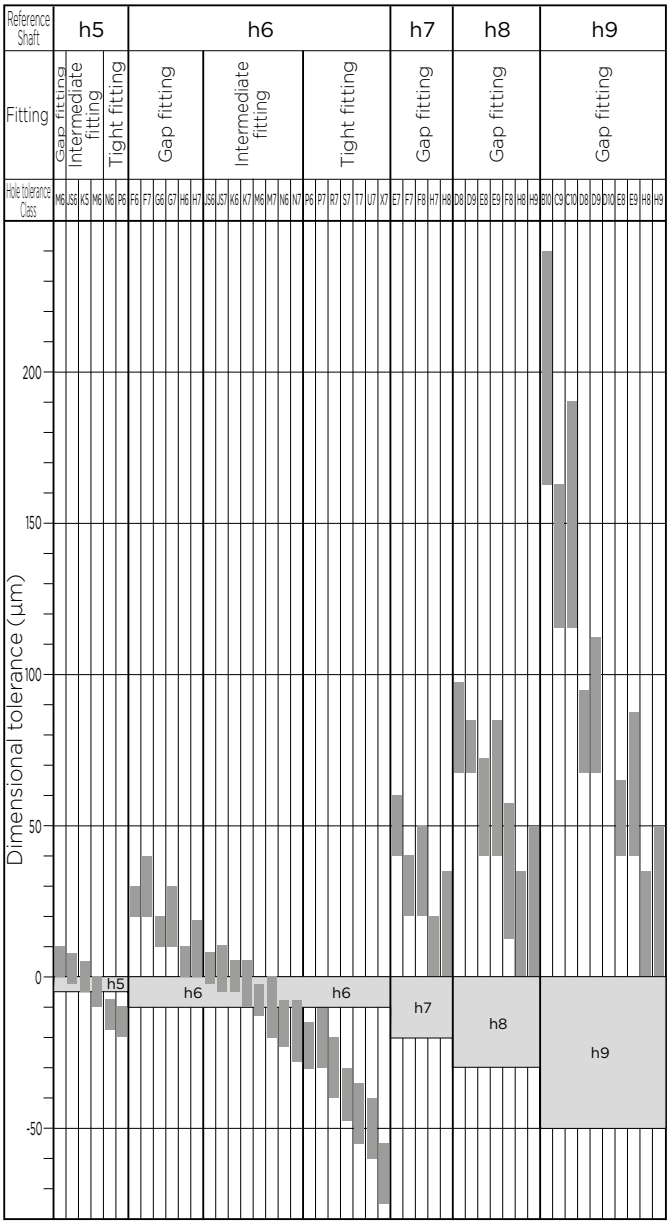
Note: *Exceptions may arise with these fittings depending on the dimension category.

● Correlation of Tolerance Zones in Standard Hole Fittings



Note: The above table is for reference dimensions greater than 18mm up to 30mm.

● Correlation of Tolerance Zones in Standard Shaft Fittings



Note: The above table is for reference dimensions greater than 18mm up to 30mm.

References

■ Standard of Tapers

● Morse Taper

Fig 1 With Tang

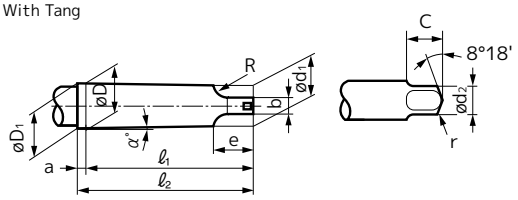
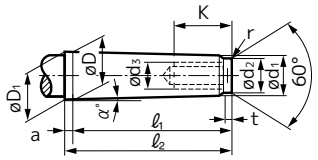


Fig 2 Drawing Thread type



(Unit: mm)

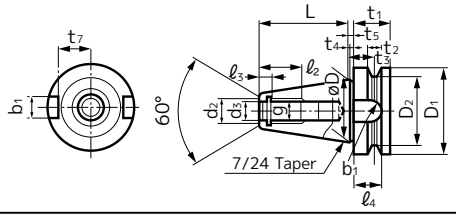
Morse Taper Number	Taper (1)		Taper Angle (α)	Taper						Tang						Fig
				D	a	D1(2) (approx.)	d1(2) (approx.)	ℓ1 (Max)	ℓ2 (Max)	d2 (Max)	b	C (Max)	e (Max)	R	r	
0	1/19.212	0.05205	1° 29′ 27″	9.045	3	9.2	6.1	56.5	59.5	6.0	3.9	6.5	10.5	4	1	1
1	1/20.047	0.04988	1° 25′ 43″	12.065	3.5	12.2	9.0	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2	
2	1/20.020	0.04995	1° 25′ 50″	17.780	5	18.0	14.0	75.0	80.0	13.5	6.3	10	16	6	1.6	
3	1/19.922	0.05020	1° 26′ 16″	23.825	5	24.1	19.1	94.0	99.0	18.5	7.9	13	20	7	2	
4	1/19.245	0.05194	1° 29′ 15″	31.267	6.5	31.6	25.2	117.5	124.0	24.5	11.9	16	24	8	2.5	
5	1/19.002	0.05263	1° 30′ 26″	44.399	6.5	44.7	36.5	149.5	156.0	35.7	15.9	19	29	10	3	
6	1/19.180	0.05214	1° 29′ 36″	63.348	8	63.8	52.4	210.0	218.0	51.0	19.0	27	40	13	4	
7	1/19.231	0.05200	1° 29′ 22″	83.058	10	83.6	68.2	286.0	296.0	66.8	28.6	35	54	19	5	

Morse Taper Number	Taper (1)		Taper Angle (α)	Taper						Screw					Fig
				D	a	D1(2) (approx.)	d1(2) (approx.)	ℓ1 (Max)	ℓ2 (Max)	d2 (Max)	d3	K (Min)	t (Max)	r	
0	1/19.212	0.05205	1° 29′ 27″	9.045	3	9.2	6.4	50	53	6	—	—	4	0.2	2
1	1/20.047	0.04988	1° 25′ 43″	12.065	3.5	12.2	9.4	53.5	57	9	M 6	16	5	0.2	
2	1/20.020	0.04995	1° 25′ 50″	17.780	5	18.0	14.6	64	69	14	M10	24	5	0.2	
3	1/19.922	0.05020	1° 26′ 16″	23.825	5	24.1	19.8	81	86	19	M12	28	7	0.6	
4	1/19.254	0.05194	1° 29′ 15″	31.267	6.5	31.6	25.9	102.5	109	25	M16	32	9	1	
5	1/19.002	0.05263	1° 30′ 26″	44.399	6.5	44.7	37.6	129.5	136	35.7	M20	40	9	2.5	
6	1/19.180	0.05214	1° 29′ 36″	63.348	8	63.8	53.9	182	190	51	M24	50	12	4	
7	1/19.231	0.05200	1° 29′ 22″	83.058	10	83.6	70.0	250	260	65	M33	80	18.5	5	

Note (1) The fractional values are the taper standards.
(2) Diameters D_1 and d_1 are calculated from the diameter D value, the taper, a, and ℓ_1 and rounded up to one decimal place.
Remark 1. Tapers are measured using DIN 229-1 (1963) ring gauges. The contact rate must be at least 75%.
2. Screws must have metric coarse screw thread as per DIN EN ISO 898-1 (2013) and Class 3 precision as per ISO-965-1 (1998).

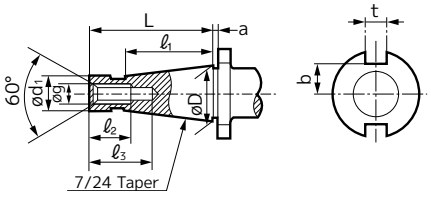
● Bottle Grip Taper

Fig 3



● American Standard Taper (National Taper)

Fig 4



● Bottle Grip Taper

(Units: mm)

Taper No.	D (Standard Dimensions)	D1	D2	t1	t2	t3	t4	t5	d2	d3	L	ℓ2	ℓ3	ℓ4	g	b1	t7	Fig
BT30	31.75	46	38	20	8	13.6	2	2	14	12.5	48.4	24	7	17	M12	16.1	16.3	3
BT35	38.10	53	43	22	10	14.6	2	2	14	12.5	56.4	24	7	20	M12	16.1	19.6	
BT40	44.45	63	53	25	10	16.6	2	2	19	17	65.4	30	8	21	M16	16.1	22.6	
BT45	57.15	85	73	30	12	21.2	3	3	23	21	82.8	36	9	26	M20	19.3	29.1	
BT50	69.85	100	85	35	15	23.2	3	3	27	25	101.8	45	11	31	M24	25.7	35.4	
BT60	107.95	155	135	45	20	28.2	3	3	33	31	161.8	56	12	34	M30	25.7	60.1	

● American Standard Taper (National Taper)

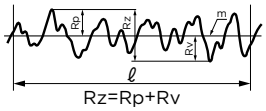
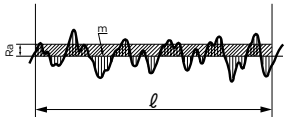
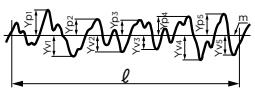
(Units: mm)

Taper No.	Nominal Size	D	d1		L	ℓ1 (Min)	ℓ2 (Min)	ℓ3 (Min)	g	a	t	b	Fig
30	$1^1/_{4}$″	31.750	17.4	-0.29 -0.36	68.4	48.4	24	34	$^1/_{2}$″	1.6	15.9	16	4
40	$1^3/_{4}$″	44.450	25.3	-0.30 -0.384	93.4	65.4	32	43	$^5/_{8}$″	1.6	15.9	22.5	
50	$2^3/_{4}$″	69.850	39.6	-0.31 -0.41	126.8	101.8	47	62	1″	3.2	25.4	35	
60	$4^1/_{4}$″	107.950	60.2	-0.34 -0.46	206.8	161.8	59	76	$1^1/_{4}$″	3.2	25.4	60	

References

■ Surface Roughness

● Types and Definitions of Typical Surface Roughness

Type	Symbol	Method of Determination	Descriptive Figure
R Max.	*1) Rz	This value is found by extracting the reference length in the mean line direction from the surface roughness curve, measuring the intervals between the peaks and valleys in the extracted area in the longitudinal magnification direction of the surface roughness curve, and expressing this value in micrometres (μm). Remarks: When finding Rz, any areas deemed to be scratches are removed before extracting the reference length from an area with no high peaks or low valleys.	 Rz=Rp+Rv
Calculated Roughness	Ra	This value is found by extracting the reference length in the mean line direction from the roughness curve, taking the average line direction of the extracted area as the X-axis and the longitudinal magnification direction as the Y-axis and expressing the value found by the equation below in micrometres (μm) with the roughness curve expressed by y=f(x).	 $Ra = \frac{1}{\ell}\int_0^{\ell}\{f(x)\}dx$
10-point Average Roughness	*2) Rz JIS	This value is found by extracting the reference length in the mean line direction from the roughness curve, finding the sum of the mean absolute peak height taken from the five highest peaks (Yp) and the mean absolute valley height taken from the five lowest valleys (Yv) measured in the longitudinal magnification direction from the mean line direction of the extracted area and expressing this value in micrometres (μm).	 $Rz_{JIS}=\frac{(Yp_1+Yp_2+Yp_3+Yp_4+Yp_5)+(Yv_1+Yv_2+Yv_3+Yv_4+Yv_5)}{5}$

Designated values for the above types of maximum height (Rz)*1), 10-point average roughness (Rz JIS)*2), calculated average roughness (Ra) classifications, and reference length ℓ are shown on the table at right with triangular symbols.

*1) The maximum height symbol (Rz) is calculated according to the new **JIS B 0601**:2001 standard. (This value was Ry under the old standard.)

*2) The 10-point average roughness (Rz JIS) is calculated according to the new **JIS B 0601**:2001 standard. (This value was Rz under the old standard.)

● Relationship with Triangular Symbol Display

Designated values for maximum height *1) (Rz)	Designated values for calculated average roughness (Ra)	Designated values for 10-point average roughness *2) (RzJIS)	Standard reference ℓ length value (mm)	Triangular* Symbols
(0.05) 0.1 0.2 0.4	(0.012) 0.025 0.05 0.10	(0.05) 0.1 0.2 0.4	0.25	▽▽▽▽
0.8	0.20	0.8		
1.6 3.2 6.3	0.40 0.80 1.6	1.6 3.2 6.3	0.8	▽▽▽
12.5 (18) 25	3.2 6.3	12.5 (18) 25	2.5	▽▽
(35) 50 (70) 100	12.5 25	(35) 50 (70) 100	8	▽
(140) 200 (280) 400 (560)	(50) (100)	(140) 200 (280) 400 (560)	—	—

Remarks: The designated values in ( ) do not apply unless otherwise stated.
*Finish symbols (triangular symbol (▽) and tilde (~)) were removed from JIS in the 1994 revision.

A.L.M.T. AL

Diamond Cutting Tools AL1 to AL13









A.L.M.T.
Diamond Cutting Tools

For Next-generation Automobiles (xEV) Cutting
PCD Rotating Tools ····· AL2

For Cylinder Head Cutting
PCD Rotating Tools ····· AL3

For Valve Guide Hole Cutting
PCD Rotating Tools ····· AL5

For Steering Part Cutting
PCD Rotating Tools ····· AL6

For Valve Body Cutting
PCD Rotating Tools ····· AL7

For Aluminum Part Machining
Diamond Cutting Tools New D Holders ··· AL9

For Various Mold Machining (Spherical/Non-Spherical, Camera Lens Molds, etc.)/
For Various Mold Machining (Infrared Lens Molds, etc.)
Ultra-precision Cutting Tool UPC-R ··· AL10

For Optical Sheet Mold Machining, etc.
Ultra-precision Cutting Tool UPC-Nano Groove ··· AL11

For Micro Lens Array Mold Machining, etc.
Ultra-precision Cutting Tool UPC-Nano Ball Endmill ··· AL11

For LCD Light Guide Plate Mold Machining, etc.
Ultra-precision Cutting Tool UPC-Nano Endmill ··· AL12

For Optical Sheet Mold Machining, etc.
Ultra-precision Cutting Tool UPC-Nano Profile ··· AL12

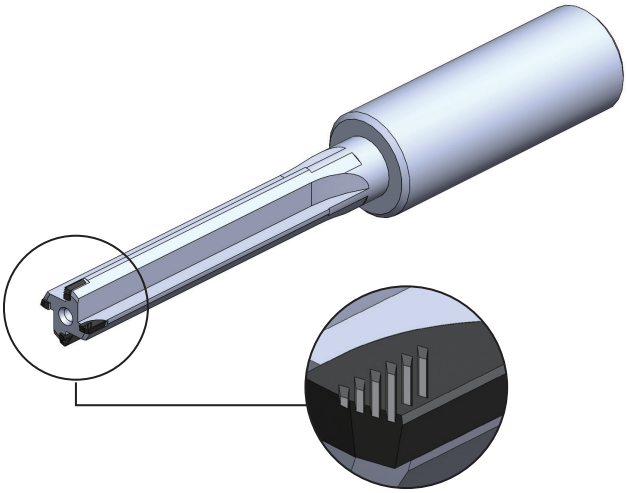
For Spectacle Lens Roughing
PCD Face Milling Cutters ····· AL13

For Spectacle Lens Finishing
New D Holders ····· AL13

A.L.M.T. Corp.

PCD Rotating Tools

For Aluminum Parts Machining / PCD Rotating Tools with Regrindable 3D Chipbreaker Regslash



Close-up

Balances fine chip splitting for aluminum parts and energy cost reduction

This tool breaks cutting chips into small pieces and can be reground, resolving the issues of conventional 3D chipbreakers. It reduces downtime caused by chip problems and reduces energy costs by controlling tool costs, etc.

■ Features

· 3D chipbreaker breaks chips into small pieces and reduces downtime
· Regenerates the chip breaking effect to reduce tool costs and shorten lead times

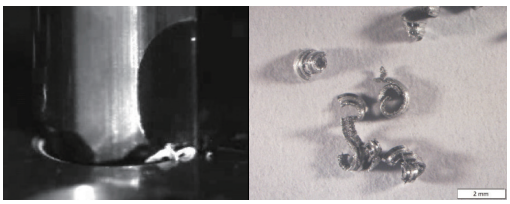
■ Applications

· Hole finishing of aluminum parts

Chip Comparison (ADC12 Workpiece)



Without 3D Chipbreaker



With 3D Chipbreaker

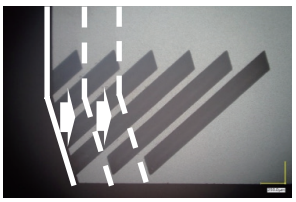
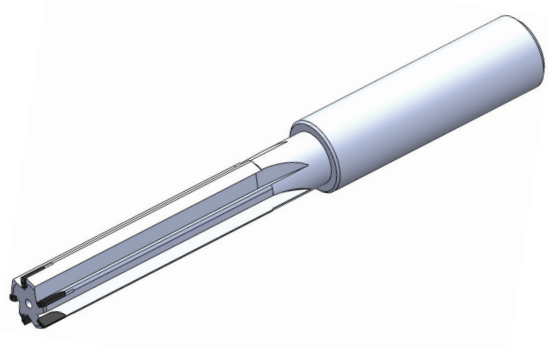


Image of regrinding

For Aluminum Parts Machining / High-efficiency PCD Reamer



New-generation tool promising reduced machining time by several tens of seconds as compared to conventional tools. (*) Achieves highly efficient machining while maintaining the finish quality of deep hole reaming. Contributes to CO_2 reduction by shortening machine operating time.

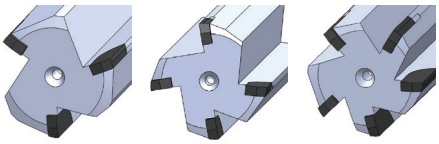
(*) Comparison at Vc 150, f 0.15, ø12, depth 100mm, 6-hole finishing

■ Features

• Sumitomo proprietary “3/4/5-flute irregular-pitched design”
• Promises high-accuracy machining superior to conventional tools in high-feed conditions
• Aluminum parts machining time requiring high-accuracy machining (≈ number of equipment units, operating time, CO_2) can be sharply reduced

■ Specifications

Tool Diameter: ø7 or above No. of Flutes: 3/4/5 flutes
Cutting Edge Material: PCD



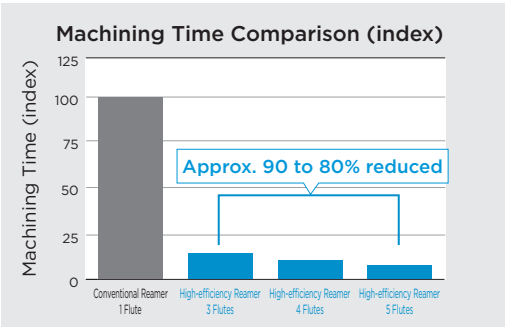
3-Flute 4-Flute 5-Flute

Promises high-efficiency, high-feed machining with any flute number configuration.

● 3-Flute... Affordable type configuration with fewer flutes keeps costs down.
● 4-Flute... Standard configuration with the widest production possibilities as its design does not use guide pads.
● 5-Flute... Feed can be increased up to f 1.0mm/rev.

■ Applications

• Finish reaming of aluminum parts



PCD Rotating Tools

Automotive Components

For Cylinder Head/Block Machining / PCD Rotating Tools

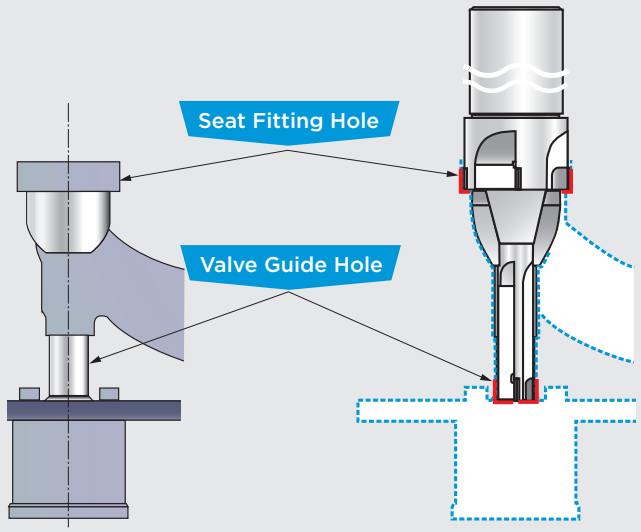


With improved fuel efficiency and weight reduction, aluminum parts for powertrains are becoming thinner and more complex in shape.
We contribute to fulfilling various needs with design proposals for further reducing machining time and costs, such as process integration for multi-stepped holes, one-step machining for roughing and finishing, high feed with multiple teeth, and so on.

■ Features

- Multi-stepped tool profile consolidates hole finishing processes
- Achieving precise and stable accuracy by utilising the sharp edges and wear-resistance properties of diamond material.
- Improves accuracy and machining time through the combination of design and cutting conditions suited to the application

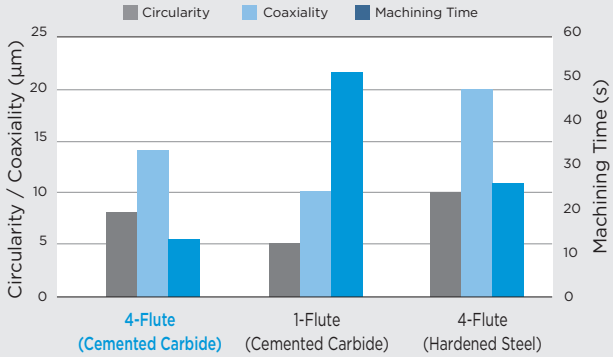
■ Multi-Stepped Hole Finishing (Seat Fitting Hole + Valve Guide Hole)



Work Material Drawing　　Machining Diagram

High-precision / high-efficiency machining is realised through high-quality cutting edges.

■ Multi-Stepped Hole Finishing Performance Differences by Specifications and Shank Material

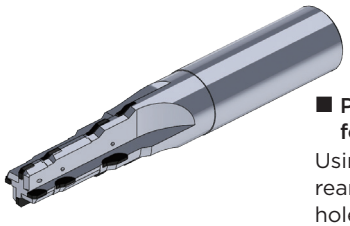


■ Cutting Conditions

Specifications	4-Flute (Cemented Carbide)	1-Flute (Cemented Carbide)	4-Flute (Hardened Steel)
Machine	Horizontal Machining Centre (HSK-A63)		
Cutting Speed Vc (m/min)	400 (ø36)		
Feed Rate f (mm/rev)	0.3	0.075	0.3
Coolant	JIS A1 type Emulsion		

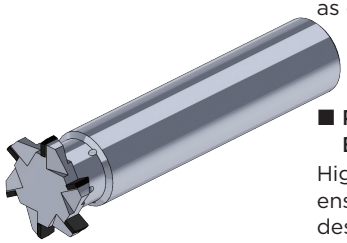
*ø11 to ø36 Finishing Example

PCD Rotating Tools



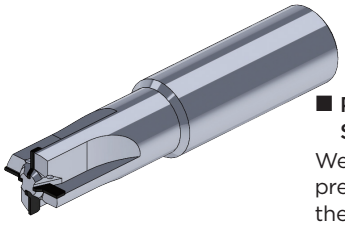
■ PCD Multi-step Reamer for Solenoid Hole Finishing

Using a single multi-stepped reamer to finish multiple holes on a coaxial line reduces machining time by consolidating processes as well as ensuring high coaxiality.



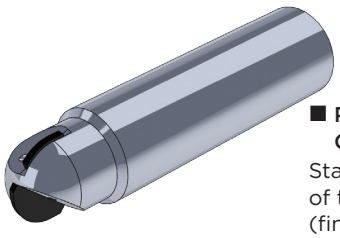
■ PCD Side Cutters for Cam Bearing Oil Hole Grooving

High-accuracy grooving is ensured with cutting edge design that avoids chattering due to cutting force.



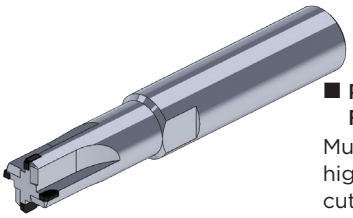
■ PCD Endmill for Spring Seat Seating Surface Machining

We propose a design which prevents chips getting caught in the water jacket and produces a chatter-free seating face.



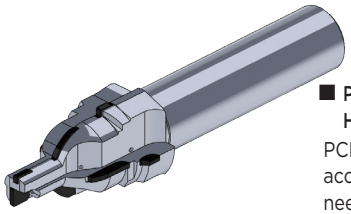
■ PCD Ballnose Endmills for Cam Bearing Machining

Stable machining accuracy of the downstream process (finishing) through using a high shape accuracy PCD material suited for shape creation.



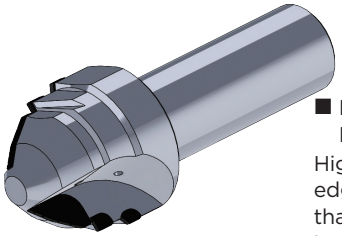
■ PCD Reamer for Sensor Hole Finishing

Multi-tooth design achieves high precision and reduces cutting time for simple drilling.



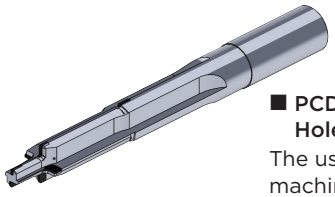
■ PCD Endmill for Valve Guide Press-fit Hole Roughing + Throat Hole Roughing

PCD endmill for roughing, accommodating the allowance needed for high-precision finishing of valve guide press-fit holes and throat holes in the downstream process.



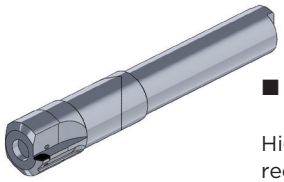
■ PCD Endmill for Throat Hole Finishing

High quality formed cutting edges and an array design that suppresses cutting force improve the accuracy of the throat shape and prevent chip jamming problems, contributing to improved productivity.



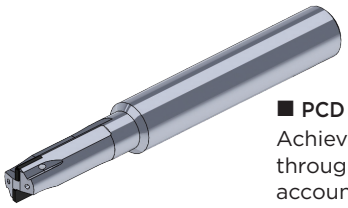
■ PCD Reamer for Spark Plug Hole Finishing

The use of multiple teeth at the machining start point ensures tool restraint and achieves stable machining quality even in shapes with different diameters.



■ PCD Reamer (1-flute) for Valve Lifter Hole Finishing

High-quality hole finishing with reduced chattering is achieved through a design taking account of guide pad arrangement and dynamic balance.



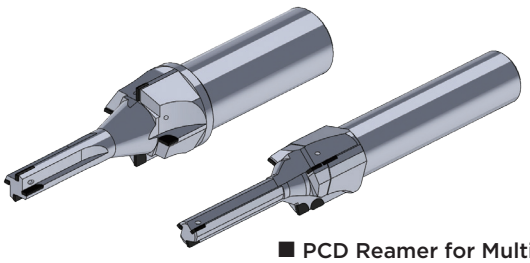
■ PCD Reamer for HLA Machining

Achieves stable accuracy through a design that takes into account the deterioration of quality at disconnected areas such as notches and grooves in the machined hole.

■ HLA Hole Finishing Example

Machine	Horizontal Machining Centre (HSK-A63)
Cutting Speed Vc (m/min)	188 (ø12)
Feed Rate f (mm/rev)	0.34
Allowance (ø)	0.5
Coolant	JIS A1 type Emulsion

*HLA: Abbreviation for hydraulic lash adjuster



■ PCD Reamer for Multi-Stepped Hole Finishing

The use of high-rigidity shank material enables one-step finishing of multi-stepped holes (seat fitting hole + valve guide hole).

■ Multi-Stepped Hole Finishing Conditions Example

High shank rigidity and high cutting edge accuracy resolve issues related to coaxiality and cylindricity.

Machine	Horizontal Machining Centre
Spindle Speed s (min^{-1})	6,000
Feed Rate F (mm/min)	2,880
Feed Rate per Cutting Edge fz (mm/z)	0.12
Allowance (ø)	0.6
Coolant	JIS A1 type Emulsion

PCD Rotating Tools

Automotive Components

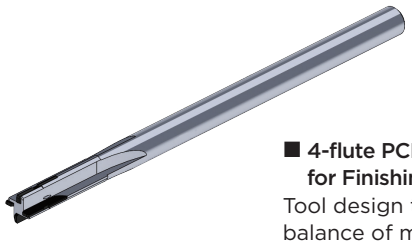
For Valve Guide Hole Finishing / PCD Rotating Tools



Sintered alloy or cast iron is used as valve guide material based on durability and sliding ability for the valve shaft moving at high speed. Finishing of valve guide holes with carbide reamers suffers from rapidly decreasing machining accuracy due to low wear resistance, requiring frequent tool replacement and affecting productivity.
On the other hand, although diamond reacts with iron, it can be used by slowing down the cutting speed, and the issues facing carbide reamers (machining accuracy and productivity) can be resolved.
We can propose tool designs suited to the required quality and cutting conditions.

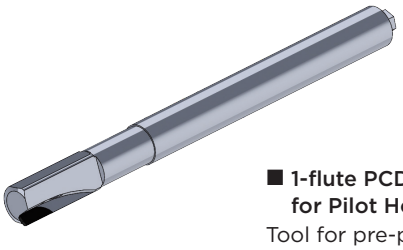
■ Features

- The use of PCD with excellent wear resistance achieves stable machined quality.
- We can propose tool designs suited to the machined quality.



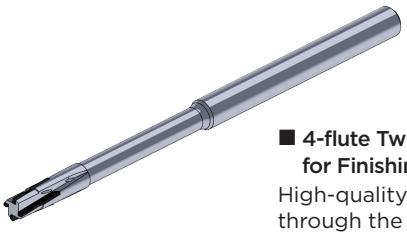
■ 4-flute PCD Reamer for Finishing

Tool design takes into account the balance of multiple teeth and rigidity. Machining time is reduced through high-feed machining.



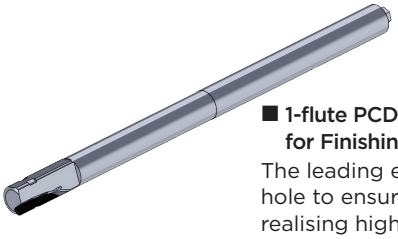
■ 1-flute PCD Reamer for Pilot Hole

Tool for pre-process hole finishing.



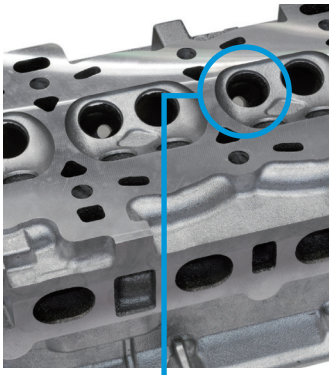
■ 4-flute Twist PCD Reamer for Finishing

High-quality machining is achieved through the chip evacuation effect of multiple teeth and helical flutes.

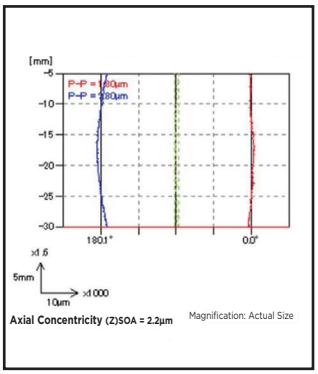


■ 1-flute PCD Reamer for Finishing

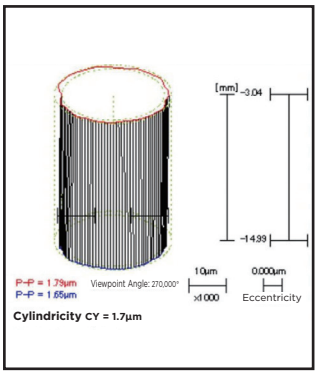
The leading edge fits the pilot hole to ensure a guide effect, realising high-accuracy hole finishing.



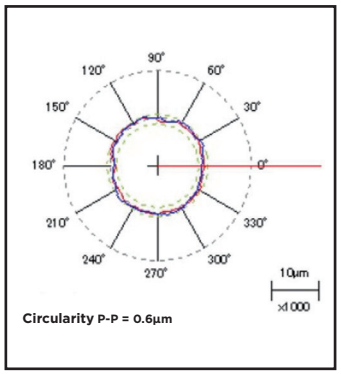




Straightness 2.2μm



Cylindricity 1.7μm



Circularity 0.6μm

PCD Rotating Tools

For Steering Part Machining / PCD Rotating Tools

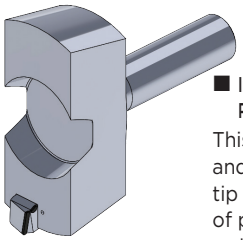


Aluminum parts for steering require not just lighter weight but also reduced force and higher functionality. In addition, as sensors and assistive devices are integrated, the number of machining areas increases and part geometry becomes more complex. Therefore, there is demand for improved productivity and shorter machining time.
Our unique tool designs enable high-quality machining at higher feed rates, and our integrated process designs contribute to improved productivity.

■ Features

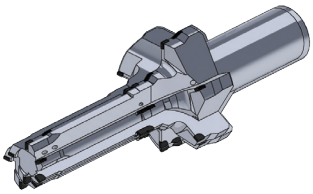
- Due to the quantity of large-diameter hole finishing, we propose designs with attention to lighter weight and dynamic balance.
- Processes can be consolidated through multi-stepped hole finishing and designs combining separate tools such as taps.

Example of Tooling for Steering Part Machining with PCD Rotating Tool



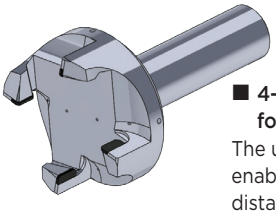
■ Indexable 1-flute PCD Endmill for Protrusion and Seating Surface Machining

This endmill machines protrusions and seating surfaces. The insert tip design enables fine adjustment of protrusion diameters and reduction of initial costs due to cutting edge damage.



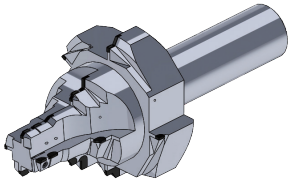
■ 5-flute Irregular-pitched PCD Reamer

Irregularly spaced cutting edge design suppresses chatter and improves circularity.



■ 4-flute Inner Blade PCD Endmill for Cylinder Part Machining

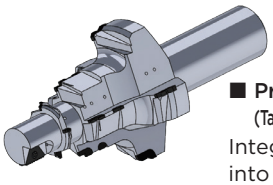
The use of an inner blade design enables contouring, shortening the distances in cylinder part machining and thus reducing machining time.



■ 4-flute + 5-flute Irregular-pitched PCD Reamer

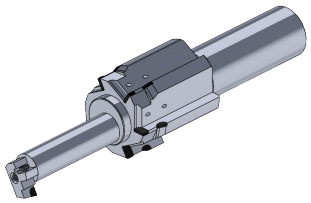
With different numbers of cutting edges for each step as well as irregularly spaced cutting edges, resonance during machining is prevented and high-quality hole finishing realised.

Proposals for Combination Tools Reducing Processes



■ Process Integration
(Tapping + Grooving + Hole Finish Reaming)

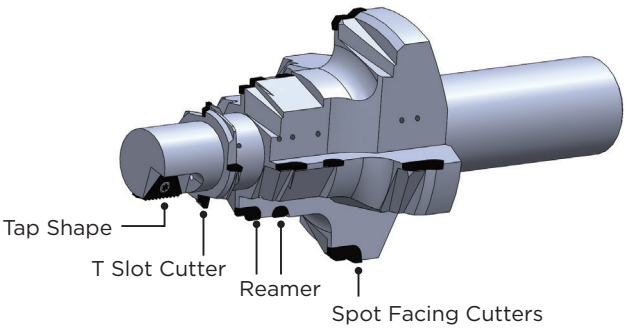
Integrating three processes into one tool shortens tool change time and achieves high-coaxiality machining.

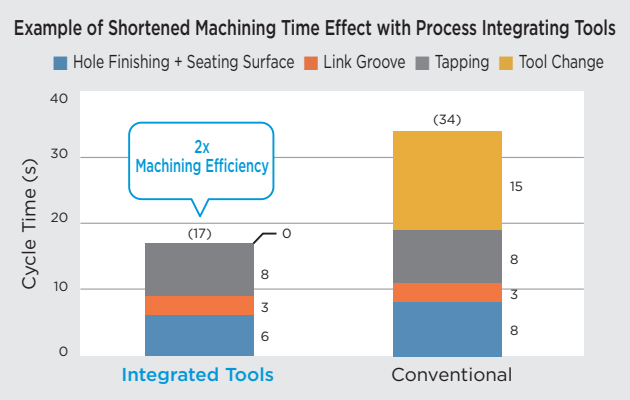


■ Process Integration
(Back Spot Facing + Hole Finish Reaming)

Design integrating hole finishing side and back spot facing. Achieves high-coaxiality machining on the hole finishing and back spot facing sides.

Example of Process Integrating Tools





PCD Rotating Tools

For Valve Body Spool Hole Finishing / PCD Rotating Tools

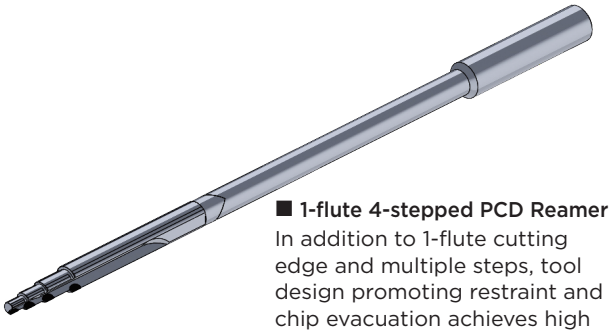


In spool hole finishing for valve bodies, where oil passages intersect the machined area and multiple holes are aligned on the same axis, high machining accuracy is required for critical quality parameters such as surface roughness, circularity, cylindricity, and coaxiality. We provide tool design proposals and advice suited to customer needs through our machining experience and verification.

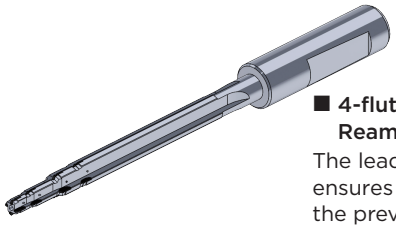
■ Features

- Tool design enabling multi-stepped hole finishing achieves process integration
- Diamond material properties and cutting edge grinding technology produce precise, stable performance
- We offer suggestions to improve machining efficiency by tuning machining conditions.

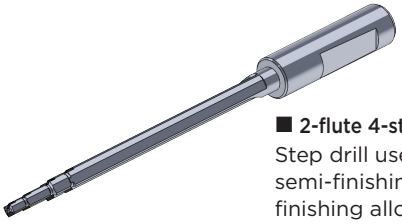
Tooling Examples with PCD Rotating Tool for Valve Body Spool Hole Finishing



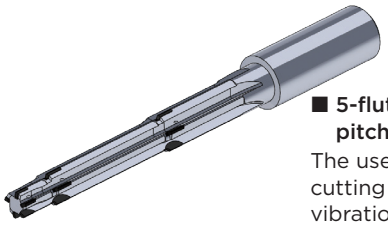
■ 1-flute 4-stepped PCD Reamer
In addition to 1-flute cutting edge and multiple steps, tool design promoting restraint and chip evacuation achieves high circularity and coaxiality.



■ 4-flute 4-stepped PCD Reamer with Leading Edge
The leading edge, which ensures concentricity from the previous process, prevents misalignment and achieves high-quality hole finishing even under high-speed conditions.

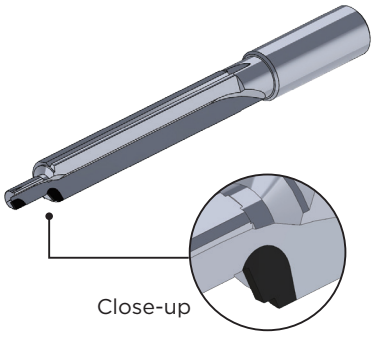


■ 2-flute 4-stepped PCD Step Drill
Step drill used for roughing and semi-finishing. Stabilising the finishing allowance contributes to high-quality hole finishing.

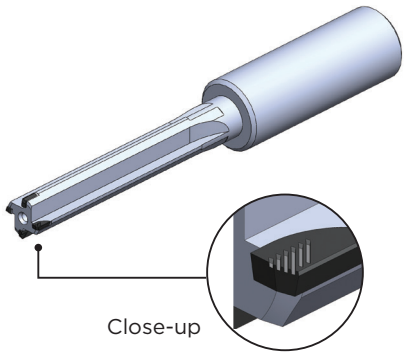


■ 5-flute 3-stepped Irregular-pitched PCD Reamer
The use of irregularly spaced cutting edges suppresses vibration during machining and improves quality such as circularity and cylindricity.

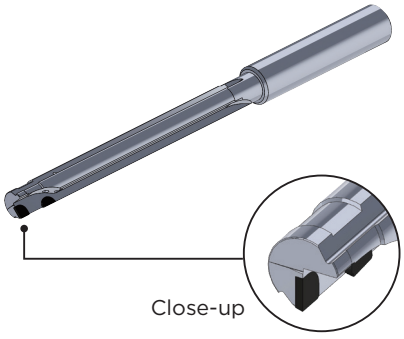
Example of Additional Functions



■ Workpiece Chipping Prevention Function
Because the area around the hole exit is weak, cutting force may cause chipping of the workpiece along with chips or ring-shaped chips that may wrap around the workpiece.
This can be prevented by a cutting edge design that suppresses cutting force.



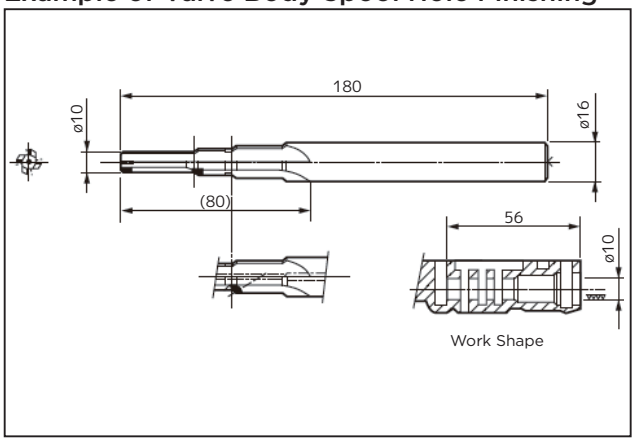
■ Chip Breaking Function
Providing a chip breaking function to the cutting edge prevents quality deterioration due to machining damage and machine stoppages due to chip entanglement around the holder.



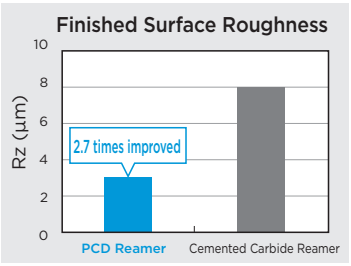
■ Chip Evacuation Function
An evacuation groove is provided in the guide pad section of the single cutting edge to prevent adhesion to the cutting edge, thus preventing quality deterioration.

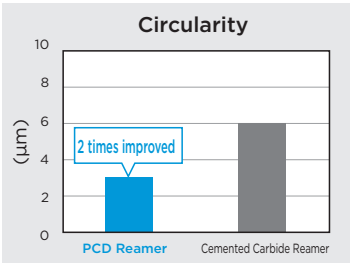
For Valve Body Spool Hole Finishing / PCD Rotating Tools

Example of Valve Body Spool Hole Finishing



Specifications	PCD Reamer	Cemented Carbide Reamer
Cutting Speed Vc (m/min)	120	120
Feed Rate f (mm/rev)	0.2	0.2
Allowance (ø)	0.4	0.4
Coolant	JIS W1 type Emulsion	JIS N2 type Non-water soluble





Proposing High-efficiency Finishing Through Irregular-pitched Design

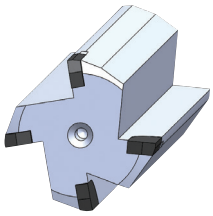
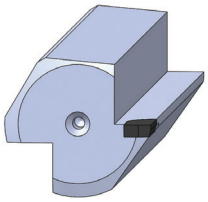
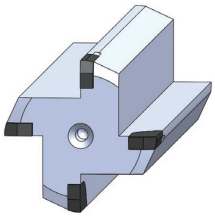
[Issue]

• Cutting force and vibration that occur when using multi-tooth rotating tools affect machining quality

[Measures for Improvement]

• Irregularly spaced cutting edge design with opposing edges which prevent biting into surface finish.
• Biting prevention makes it possible to suppress chatter and improve circularity and cylindricity.
• Multi-tooth design enables higher feed and reduced machining time, achieving high productivity.

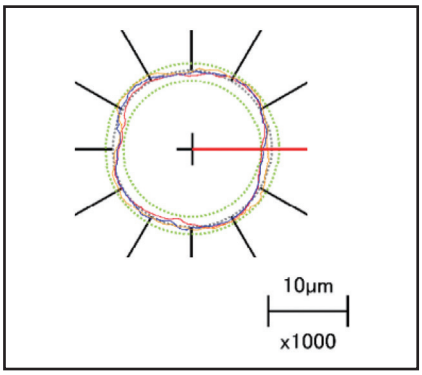
■ Application Examples

	4-flute Irregular-pitched	1-flute Balance Specification	4-flute Regular-pitched
Shape			
Allowance (mm/diameter)	0.4	0.4	0.4
Spindle Speed (min^{-1})	6,600	4,000	4,000
Feed Rate (mm/min)	5,300	400	960
Feed Rate f (mm/rev)	0.8	0.1	0.24
Feed Rate per Cutting Edge fz (mm/z)	0.2	0.1	0.06
Coolant	Emulsion-type water-soluble oil		
Chatter	No	No	Yes
Circularity (µm)	2	3	4
Machining Time (sec)	0.15	2	0.8

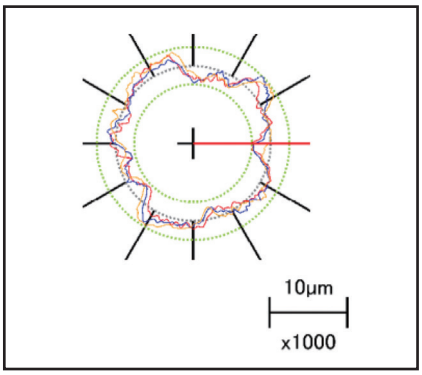
■ Circularity Comparison (Hole Finishing Shape)



*Image only.



Circularity: 4-flute Irregular-pitched

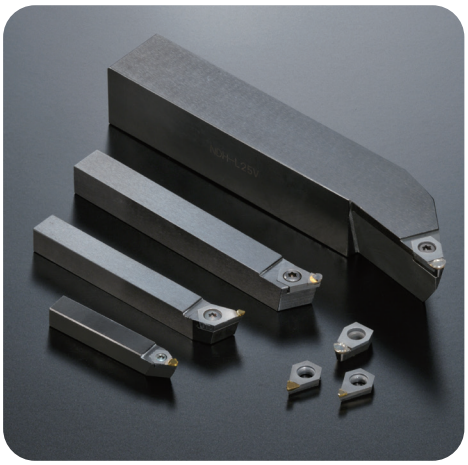


Circularity: 4-flute Regular-pitched

Diamond Cutting Tools New D Holders

Automotive Components

For Aluminum Part Machining, etc. / New D Holder



Achieves stability and long tool life by optimising crystal orientation

Optimised diamond crystal orientation is precisely set and firmly bonded to a uniquely shaped cemented carbide substrate.
The combination of our uniquely designed inserts and holders enables tool setting as easy and accurate as with indexable inserts.

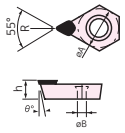
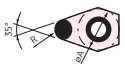
■ Features

- Reduces variation in tool life, a weakness of single-crystal diamond tools, and achieves 1.5 to 2 times longer tool life than conventional tools on average.
- The combination of our uniquely designed inserts and holders enables easy and precise tool setting, just like indexable inserts.
- There are inserts for straight cutting and for curved-surface profiling. The form accuracy of the latter is 5µm.
- The rake face is free from adhesion and accumulation of chips, maintaining high-quality machined surfaces even with continuous use.
- Exhibits high durability even during interrupted cutting.
- Unlike the conventional type with a retaining cap, there is no retaining cap to hold the diamond. This enables chips to move smoothly on the rake face, improving the machining accuracy.

■ Applications

- Automotive components (pistons, aluminum wheels, compressors, commutators, etc.)
- Plastic lenses, resin parts

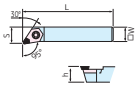
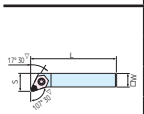
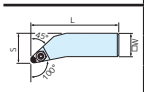
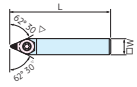
■ Insert Cat. No.

Insert Specification	Cat. No. Long Tool Life type	Cat. No. High-accuracy type *1	Corner Radius R	Relief Angle θ	Inscribed Circle øA (mm)	Hole Dia. øB (mm)	Centre Height h (mm)	Applicable Holder
	NWD-CL302	NWD-CP302	R0.2	7°	ø9.525	ø4.4	4 +0.2 -0	NDH-R1□ -L1□ -N1□ NDH-QR1□ -QL1□
	NWD-CL305	NWD-CP305	R0.5					
	NWD-CL308	NWD-CP308	R0.8					
	NWD-CL310	-	R1.0					
	NWD-CL316	-	R1.6					
	NWD-CL320	-	R2.0					
	NWD-PL302	NWD-PP302	R0.2	11°				
	NWD-PL305	NWD-PP305	R0.5					
	NWD-PL308	NWD-PP308	R0.8					
	NWD-PL202	NWD-PP202	R0.2		ø6.35	ø2.8	3 +0.2 -0	NDH-R0□ -L0□ -N0□
	NWD-PL205	NWD-PP205	R0.5					
	NWD-PL208	NWD-PP208	R0.8					
	NWD-CL416	-	R1.6	7°	ø9.525	ø4.4	5.5 +0.2 -0	NDH-R20V -L20V -R25V -L25V
	NWD-CL416-AW *2	-						
	-	NWD-CP420	R2.0					
	-	NWD-CP420-AW *2						

*1: High accuracy type / cutting edge waviness accuracy 5µm or below *2: With cutting edge treatment for aluminum wheels

■ Holder Cat. No.

Dimensions (mm)

Holder Specification	Cat. No. Right-handed	Cat. No. Left-handed	W	L	S	h	Applicable Insert
	NDH-R06	NDH-L06	6	50	6.5	6	NWD-PP2□□ -PL2□□
	NDH-R08	NDH-L08	8	60	8.5	8	
	NDH-R10	NDH-L10	10	80	10	10	NWD-CL3□□ -PL3□□ -CP3□□ -PP3□□
	NDH-R12	NDH-L12	12	100	12	12	
	NDH-R16	NDH-L16	16	125	16	16	
	NDH-QR10	NDH-QL10	10	80	13	10	
	NDH-QR12	NDH-QL12	12	100	15	12	
	NDH-QR16	NDH-QL16	16	125	19	16	
	NDH-R20V	NDH-L20V	20	150	25	20	NWD-CL416 -CP420
	NDH-R25V	NDH-L25V	25	150	32	25	
	Neutral						NWD-PP2□□ -PL2□□
	NDH-N06		6	50	-	6	
	NDH-N08		8	60	-	8	
	NDH-N10		10	80	-	10	NWD-CL3□□ -PL3□□ -CP3□□ -PP3□□
	NDH-N12		12	100	-	12	
	NDH-N16		16	125	-	16	

Please contact us for specifications not stated above.

Upon Ordering

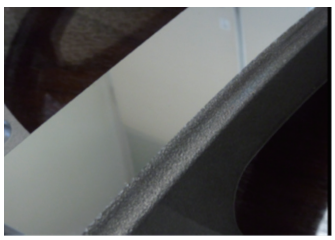
Insert Cat. No.
For NWD-C L 3 02
- Corner Radius R0.2
- Point Angle 55° Inscribed Circle ø9.525
- Long tool life type ("P" for high-precision type)
- Relief angle of 7°

Tool Type
For NDH-R 0 6
- □6
- Right hand ("L" for left hand)

Example of Cast Aluminum Wheel Machining



Shining Surface



Shining Surface

■ Features

- Uniform negative rake face on cutting edge achieves glossy machined surface

■ Machine

- NC Turning Centre

■ Tool

- New D Holder

■ Work Material

- Cast Aluminum (AC-4CH)

Spindle Speed	(min^{-1})	800 to 1,200
Feed Rate	(mm/rev)	0.05 to 0.222
Depth of Cut	(mm)	0.05 to 1
Coolant		Water-soluble Oil

Ultra-precision Cutting Tool UPC-R

For Various Mold Machining (Spherical/Non-Spherical, Camera Lens Molds, etc.) / Ultra-precision Cutting Tool UPC-R



Exhibits Outstanding Performance in Ultra-precision Cutting

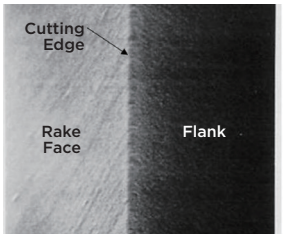
An ultra-precision cutting tool for machining of molds used for products that require extremely high precision, such as spherical/aspherical lenses and camera lenses. The cutting edge, which is polished to a high degree of precision using our proprietary technology, can achieve micro-shape machining of workpieces with high precision on the nanometre level.

■ Features

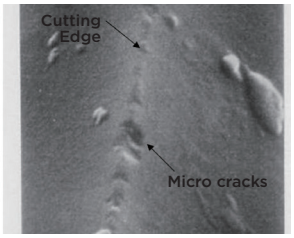
- The cutting edge is uniformly finished in high quality, achieving nanometre-level surface roughness.
- A record of the cutting edge arc waviness is attached with the product for thorough quality control.

■ Applications

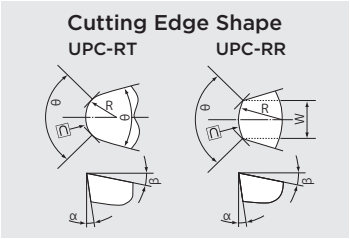
- BD pickup lens molds, digital camera lens molds, camera lens molds for smartphones/computers/tablets, spherical/aspherical mirrors, etc.

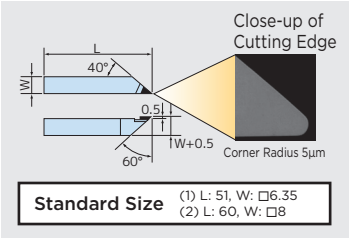


UPC cutting edge



Cutting edge with microscopic irregularities





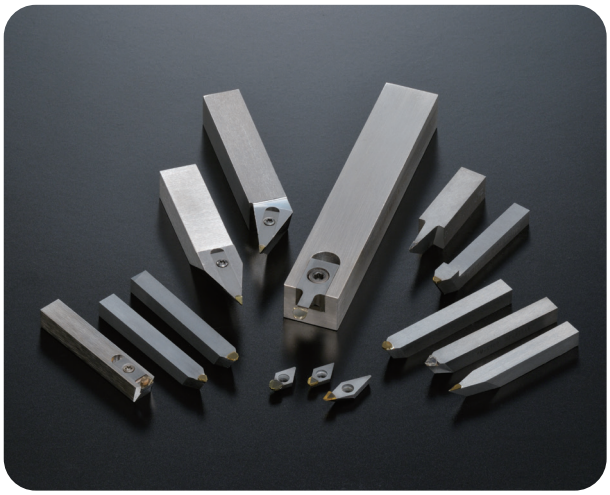
- **Sharp Cutting Edge**
  Machining without deforming or damaging workpieces during fine finishing
  Nanometre-level fine machining is possible
- **Cutting Edge Without Chipping**
  Mirror surface without transfer of irregularities to the workpiece
  Mirror finishing of Ra 5nm or less is possible

■ Dimensions and Limit Accuracy

Cat. No.		Waviness (µm) ∩ θ ≤90°	Waviness (µm) ∩ θ ≤120°	Waviness (µm) ∩ θ ≤150°	Corner Radius R	Cutting Edge Angle θ	Width of Cut W (RR)	Relief Angle α	Rake Angle β
UPC-R	Very High Precision	0.05	0.1	0.20	0.002 to 200	20° or more	0.5 to 5	0° to 20°	-30° to 10°
	High Precision	0.25	0.5	1					

*Consult us regarding dimensions and accuracy, which may vary according to element combinations.

For Various Mold Machining (Infrared Lens Molds, etc.) / Ultra-precision Cutting Tool UPC-R



Makes its presence felt in fine machining of hard brittle material

Tool life was a problem when machining germanium and silicon lenses used in infrared sensors and night-vision lenses. Applying our proprietary micro-edge treatment to a single-crystal diamond cutting edge has significantly extended tool life.

■ Features

- Cutting edge height (centre height) is the same on any conical surface.
- Sharp cutting edge with nanometric precision.
- Cutting edge can achieve 0.05µm waviness precision.
- Also applicable to machining of calcium fluoride or cemented carbide.

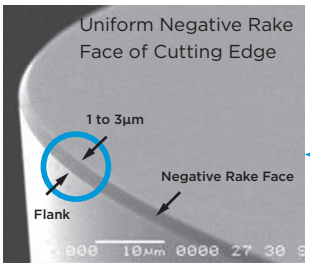
■ Applications

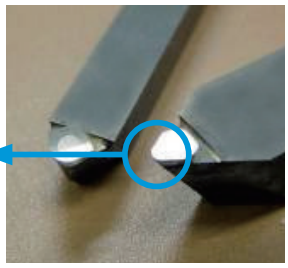
- Infrared sensor lenses, night-vision camera lenses, germanium lenses, silicon lenses, calcium fluoride lenses, cobalt-free carbide molds

■ Comparative Examples

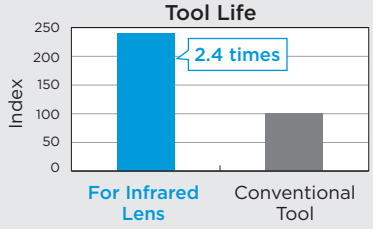
Work Material　Infrared sensor transmissive lens, ø95mm germanium
Tool Specification　Corner Radius 1.5mm, Relief Angle 10°
Cutting Conditions　Rotation Speed: 2,000min^{-1}, Feed Rate: 1.75µm/rev, Allowance: 1.5µm

■ UPC Cutting Edge for Infrared (IR) Lenses and Cemented Carbide Molds





[Results]



Ultra-precision Cutting Tool UPC-Nano Groove/UPC-Nano Ball Endmill

For Optical Sheet Mold Machining / Ultra-precision Cutting Tool UPC-Nano Groove



Enables high-precision linear grooving with a cutting edge width among the world's smallest.

Grooving holder with 5µm minimum groove width. Enables quick high-aspect-ratio machining that cannot be achieved using the photolithography method or ion-beam method. The high-precision, durable cutting edge is the ideal tool for fine, clear grooving of hologram diffraction gratings, linear micro-grooving, LCD light guide plates, and so on.

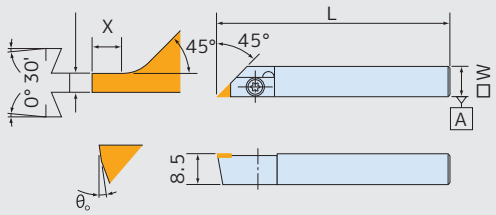
■ Features

- Grooving holder with 5µm minimum groove width.
- Durable cutting edge with high-precision grinding.
- Enables high-precision micro-grooving that cannot be achieved using the photolithography method or ion-beam method.

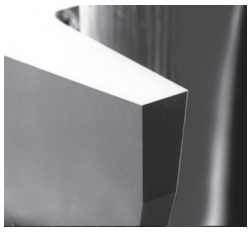
■ Applications

- For linear micro-grooving, optical sheet molds, light guide plate mold machining

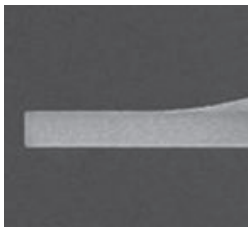
Cutting Edge Shape



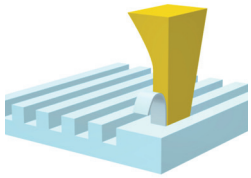
Standard Size	(1) L: 51, W: □6.35 (2) L: 60, W: □8



Cutting Edge Shape



Nano Groove Cutting Edge



For Microlens Array Mold Machining / Ultra-precision Cutting Tool UPC-Nano Ball Endmill



One of the World's Smallest Ballnose Endmills

Enables high-precision 3D machining with its extremely sharp cutting edge.
In addition to being able to speed-machine many micro-spherical holes, it is also possible to machine micro-3D curved surfaces.

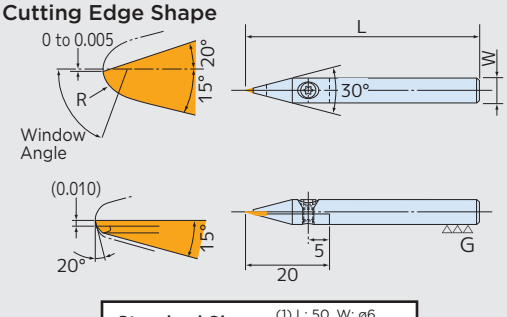
■ Features

- A 30µm-radius ballnose endmill, one of the smallest in the world.
- World-class waviness of 50nm is also possible.
- Enables high-precision 3D machining with its extremely sharp cutting edge.

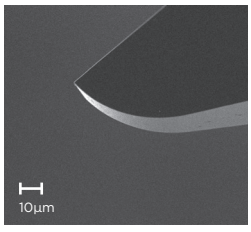
■ Applications

- For micro lens array molds, LCD light guide plate molds, micro-machining molds

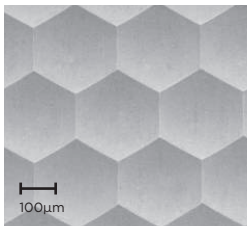
Cutting Edge Shape



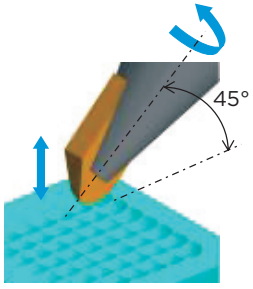
Standard Size	(1) L: 50, W: ø6 (2) L: 40, W: ø4



Cutting Edge Shape



Example of Cutting Using a Nano Ballnose Endmill



Ultra-precision Cutting Tool UPC-Nano Endmill / UPC-Nano Profile

For LCD Light Guide Plate Mold Machining / Ultra-precision Cutting Tool UPC-Nano Endmill



Enables free-form micro-grooving at one of the smallest scales in the world

This endmill enables machining of rectangular grooves along free curves.
Enables quick high-aspect-ratio machining in edged shapes that cannot be achieved using the photolithography method or ion-beam method.

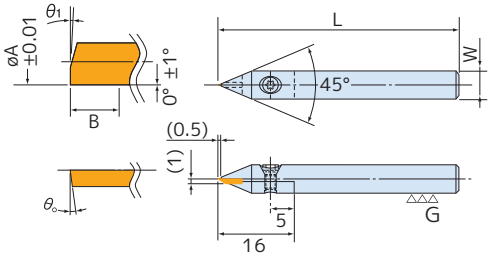
■ Features

- Enables machining with a high aspect ratio 2.5 times the rotation diameter.
- Durable cutting edge with high-precision grinding.
- Enables high-precision micro-grooving that cannot be achieved using the photolithography method or ion-beam method.

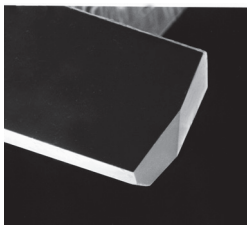
■ Applications

- For machining of LCD light guide plate molds, hologram diffraction grating molds, free curve micro-grooving

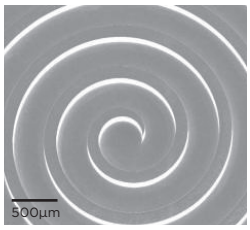
Cutting Edge Shape



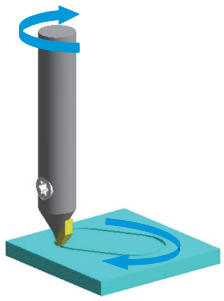
Standard Size	(1) L: 50, W: ø6 (2) L: 40, W: ø4



Cutting Edge Shape



Example of Cutting Using a Nano Endmill



For Optical Sheet Mold Machining / Ultra-precision Cutting Tool UPC-Nano Profile



Formed Single Crystal Diamond Holder with Free-form Cutting Edge

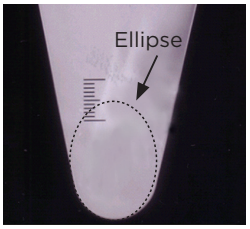
When machining multiple formed grooves or over long distances, it is easier to machine with a formed cutting tool edge. UPC-Nano Profile is an ultra-fine formed cutting tool with a free-formed shape on its single crystal diamond cutting edge.

■ Features

- Enables one-pass machining of free-form surfaces including elliptical and paraboloidal surfaces with a form accuracy of 1µm or less.
- Ensures high shape accuracy in machining of paraboloidal and other free-form surfaces.

■ Applications

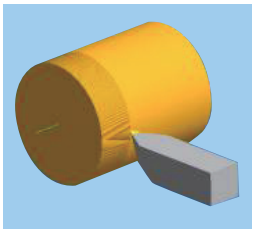
- For optical lens molds, liquid crystal panel optical sheet molds, micro lens array molds

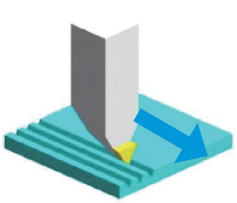


Elliptical Cutting Edge Shape



Concave Round Cutting Edge Shape





PCD Face Milling Cutters / New D Holders

For Spectacle Lens Cutting (Roughing) / PCD Rotating Tools



Tool Indexable Head type Mono-block Tool type

Used for roughing of aspherical shapes for spectacle lenses. Tool head interchangeable type and mono-block type are available upon request.
Regardless of whether it is for spectacle lenses or flat surfaces, we can design milling cutters for groove milling, side cutters etc. according to your requirements and applications.

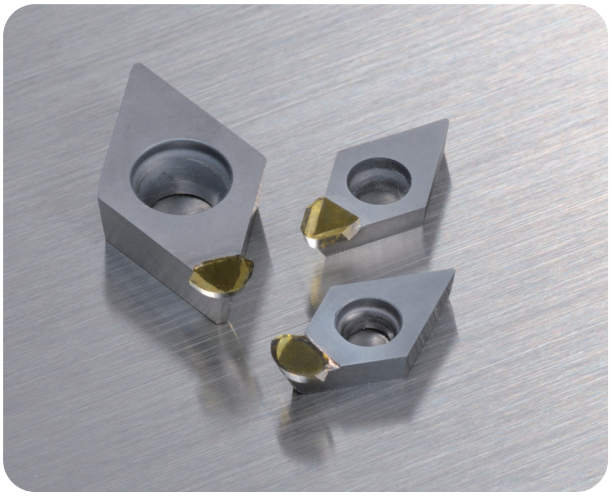
■ Features

- High-quality cutting edge finish suppresses burrs and leads to stable finished surface quality.
- Proprietary tool design realises stable machining.

■ Applications

- Spectacle lens cutting (roughing), resin molded parts, non-ferrous metal parts, etc.

For Spectacle Lens Finishing / New D Holder



The sharp cutting edge achieves the high shape precision and mirror finish required for spectacle lens finishing.

■ Features

- The combination of our uniquely designed inserts and holders enables easy and precise tool setting, just like indexable inserts.
- The rake face is free from adhesion and accumulation of chips, maintaining a high quality in worked surfaces even with continuous use.

■ Applications

- For Spectacle Lens Finishing
- For Resin Part Machining

■ Comparative Examples

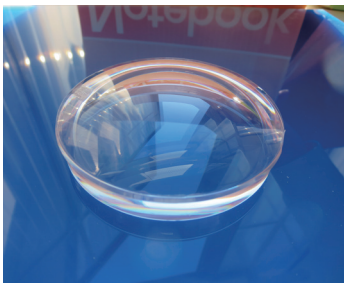
☐ Spectacle Lens Machining Example

Tool Specification : R2.0 Relief Angle 18°
Cutting Speed : 1,200m/min
Feed Rate : 0.25mm/rev
Depth of Cut : 0.08mm

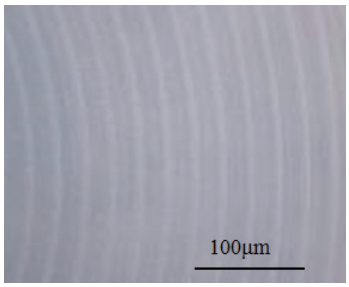
[Results]

Shape Accuracy : 0.8µm
Surface Roughness (Ra) : 0.1µm
No. of Workpieces : 2,000 pcs





Spectacle Lens



Microscope Photo of Machined Surface

SUMITOMO
CARBIDE - CBN - DIAMOND

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